Field Notes: Equity & State Climate Policy



Jeanne Herb The Environmental Analysis & Communications Group, Edward J. Bloustein School of Planning and Public Policy Rutgers, The State University of New Jersey

Marjorie Kaplan, DrPH Rutgers Climate Institute Rutgers, The State University of New Jersey

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I. Executive Summary

This project was undertaken to better understand the challenges and opportunities associated with state and city efforts to intersect climate policy and equity goals. This in-depth analysis, an independent project of the RGGI Project Series, reviews ongoing and planned efforts in a set of states and two cities to direct benefits from their climate and clean energy programs to disadvantaged communities and consumers, in equitable ways. More specifically, the project offers a review of efforts by the nine states participating in the Regional Greenhouse Gas Initiative¹ (RGGI) (ME, NH, VT, MA, RI, CT, NY, MD and DE), and New Jersey and Virginia, which have taken steps to participate in RGGI. The study also reviews efforts in two states (California and Illinois) and two municipalities (Austin, TX and Columbus, OH) to provide perspectives from outside the Northeast and Mid-Atlantic region. Interviews were conducted with state and city representatives as well as diverse stakeholders and thought leaders. A Project Working Group provided the authors with insights during the course of the study.

States within the RGGI region and the other jurisdictions reviewed for this report are highly diverse, each with in their unique history, culture, demographics, geography, public support for climate action, carbon footprint, and underlying authorities and role of government. These dynamics affect the development and design of state climate policy as well as a state's participation in multistate programs. For these reasons, the authors took care not to present the analysis in this report as a comparison among states, which would be misleading. Rather, this study presents a review of different state actions and approaches underway today at this important crossroads of equity and climate goals.

For more than a decade, states and cities across the country have served a leadership role in advancing science-informed climate policy through city, state and multi-state efforts. The rapid pace by which state climate policy is emerging is evidenced by the number of new laws, directives and policies adopted in 2018 and the first half of 2019 alone. Currently, there is an active ongoing dialogue across the U.S. regarding the intersection of climate and equity objectives with efforts targeted at addressing needs of disadvantaged communities and consumers. This climate/equity intersection is due to several factors, including recognition by many cities and states that climate change is and will continue to have a disproportionate impact on certain populations and will exacerbate existing stressors faced by disadvantaged communities and consumers. Research indicates that a greater proportion of environmental burden exists in geographic areas with majority populations of people of color, low-income residents, and/or indigenous people. It is well known that certain households (including some that are low-income, African American, Latino, multi-family and rural) spend a larger portion on their income on home energy costs. States and stakeholders are realizing that a transition to a low-carbon future by mid-century will require significantly increased participation of disadvantaged communities and clean energy programs.

Observations

Several overarching observations emerge from the analysis conducted for this study:

• **Role of government** - Many individuals interviewed for this report pointed to the critically important role that government plays in directing state climate and clean energy program benefits to disadvantaged communities and consumers. Several stakeholders and states noted

¹ RGGI is the first mandatory, multi-state market-based carbon trading program in the U.S. See: https://www.rggi.org/.

that private markets would not, on their own, support significant penetration of renewable and clean energy systems in disadvantaged communities. These leaders pointed to several roles government is and can continue to play to advance deployment of climate and clean energy programs in these target communities: signaling program credibility to traditionally underserved markets; educating and providing incentives to consumers to create greater demand; and developing government-backed innovative funding and financing programs to address gaps in what private markets will deliver;

- **Period of innovation** Now appears to be a "period of innovation" during which states are conducting demonstration and pilot efforts to inform effective "scale up" programs and identify emerging best practices. During this time, states are also building capacity to enhance efforts to incorporate equity considerations into program design and implementation. As a result, there appears to be significant opportunities for RGGI states to learn from each other's efforts, as well as efforts outside the RGGI region;
- **Participatory processes** Government representatives and stakeholders agree that upfront, inclusive processes are essential to increase participation of members of disadvantaged communities in decision-making both at the program design and implementation stages. These processes inform efforts to more intentionally, effectively and creatively integrate equity considerations into state climate policy;
- **Diverse jurisdictions** The states within the RGGI region are highly diverse in many ways, including with regard to needs and challenges faced by their respective disadvantaged consumers and communities. For example, the needs of low-income rural residents may be different from those in urban communities. Some jurisdictions may consider workers displaced by a transition to a clean energy economy as especially vulnerable while others may focus on residents that have limited English proficiency or those living in flood-prone areas. In some jurisdictions, disproportionate environmental burden may be a prominent concern.
- *Multi-sector efforts* Efforts to direct state climate program benefits to disadvantaged communities and consumers entails broad interagency, multi-sector policies that often involve collaboration and intersection of programs. Many state representatives point to the value of interagency climate policy committees as important in building relationships that coordinate climate policies with other government services essential to supporting disadvantaged communities and consumers, such as transportation, health, social services housing and community development.
- Complementary policies There is a growing recognition that state and multi-state climate policies and programs alone, are not designed to address underlying, systematic conditions that cause inequities in disadvantaged communities, such as limited access to financial resources, transportation, disproportionate environmental burden, and health disparities. Within the RGGI region, as well as in the jurisdictions reviewed outside the RGGI region, there is active dialogue about use of complementary policies, in concert with climate programs, to address these inequities. Some stakeholders posit that state and multi-state climate policies should go beyond directing program benefits to disadvantaged communities and consumers to fundamentally address underlying conditions that cause inequities.
- Similar experiences outside RGGI region The review of efforts in two states and two cities outside the RGGI region point to similar experiences and commitments with regard to integrating equity provisions into climate policy and programs. Some of these similar experiences include participatory processes and community-based planning, overcoming financial obstacles to clean

energy deployment in disadvantaged communities, piloting programs, steering climate program financial benefits to targeted communities, setting public goals, assessing and tracking equity impacts, interagency collaboration and developing policies to complement climate programs with specific provisions to address equity considerations.

Current State and City Efforts

Currently, states and cities across the country are actively engaged in efforts to direct climate-related program benefits to disadvantaged communities and consumers. This includes states in the RGGI region as well as the two states and cities reviewed for this report. While the state and city programs are widely diverse, there are common areas of focus, including:

- **Commitments** States and cities are articulating high-level commitments to directing climate program benefits to disadvantaged communities through language included in laws, executive orders, statewide plans, cross-agency partnership and other measures. Public commitments send signals to external stakeholders, as well as provide support to program leaders and innovators in government;
- Mandates States are increasingly mandating that utilities and program agencies maximize or increase public benefits directed to disadvantaged communities and consumers. Some state legislatures are ensuring that a portion of program benefits be directed to these target communities and households;
- *Pilot and demonstration programs* States and cities are undertaking new programs that are specifically intended to benefit disadvantaged communities and households, often through pilot and demonstration programs designed to inform subsequent "scaling up" to full program implementation. Focus areas among states include:
 - Providing resources to address household structural repairs that are needed to make dwellings eligible for federal weatherization programs;
 - Creating non-traditional financing mechanisms to overcome barriers in the private market (credit ratings, access to financing, government-backed loans) to more significantly increase deployment of energy efficiency and renewable energy systems, with a strong focus on solar energy, to low-income households;
 - Dedicating a stipulated portion of program financial benefits to disadvantaged communities and consumers; and
 - .Evaluating impact of programs on disadvantaged communities and consumers.
 - **Participatory Processes** States and cities are initiating non-traditional participatory processes and partnerships to inform policy development and program implementation, including:
 - Building partnerships with local leaders in targeted communities to identify financial barriers and incentives and educational strategies to increase demand for clean energy programs;
 - Holding listening sessions with residents and leaders that represent disadvantaged communities early in the decision-making process to inform program design and distribution of benefits;
 - Developing formal advisory councils and commissions that are focused on the needs of disadvantaged communities and consumers and charged with informing formal government decision-making processes; and

- Piloting community-based climate and energy planning initiatives, including public funding to support community development of plans and strategies to undertake climate and clean energy projects.
- Enhancing interagency efforts Agencies within state government are forming cross-sector collaborative efforts to more systematically direct state climate and clean energy policies and programs to disadvantaged communities and consumers by linking programs related to health, transportation, housing and community development, among others. In many states, these partnerships form through "standing" interagency climate committees that are often established through laws or executive directives.
- **New financing mechanisms** Creating quasi-governmental agencies, such as Green Banks, to maximize government's ability to dedicate clean energy funding in markets, such as low-income residences, that have not been well serviced by the private market;
- Indicators & Metrics States are developing complementary indicators to track co-benefits of climate programs, such as funds directed to low-income communities, as well as to create systems that allow indicators of program outcomes and effectiveness to be transparent and accountable;
- Research States are establishing dedicated resources for research and analyses to inform strategies to overcome financial, language, geographic, demographic, cultural and other barriers associated with directing state climate program benefits to disadvantaged communities and consumers.
- **Complementary Programs** States are increasingly recognizing that RGGI and market-based climate programs alone are not enough to address underlying burdens faced by disadvantaged communities. States are using participatory processes to identify needs of disadvantaged communities and consumers that are beyond the intended design of state market-based programs and are exploring use of other complementary authorities and program resources to address them.

Stakeholders

In general, stakeholders interviewed for this report, like many states, identify a critical need for expansion of upfront, inclusive participatory processes to ensure that equity considerations are an integral part of design and implementation of climate programs. Many point to a need for adequate resources to be provided to support participation by members of disadvantaged communities in such programs. They also seek greater participation in or control of program implementation by community leaders and residents to ensure that programs support community priorities and needs. Many stakeholders point to the importance that multi-sector coalitions play in advancing state climate programs, pointing to passage of several recent state laws and programs that were advanced by diverse coalitions that include "frontline" communities, labor, environmental advocates, faith-based organizations and others.

Priorities articulated by many stakeholders regarding enhanced efforts to integrate equity considerations into state and multi-state climate policies and programs include:

- **Articulated commitments** Many stakeholders indicate that current efforts to direct climate program benefits to disadvantaged communities and consumers needs to be expanded with greater levels of program resources being specifically dedicated to these target communities;
- **Transparent monitoring and tracking** Stakeholders point to the importance of having systems that go beyond tracking CO₂ emissions reductions for state and multi-state climate and programs

to also measure program co-benefits for disadvantaged communities and consumers. For some stakeholders, there is a fundamental concern that market-based state and multi-state climate policies may worsen, not improve, overall environmental conditions in disadvantaged communities pointing to the need for tracking localized environmental conditions, including air emissions;

- **Benefits and impact analysis** Many stakeholders call for state, city and multi-state climate and clean energy programs to use more analytical assessment tools to assess, predict and monitor the benefits and impacts that climate programs have on disadvantaged communities and consumers. Use of such analytical tools would be used to inform current and new program design as well as implementation.
- **Complementary policies** Some stakeholders agree with use of complementary policies and programs to address inequities together with but outside the scope of state market-based climate programs. Others urge that climate policies to be integrated with more comprehensive efforts to address underlying societal issues, such as disproportionate environmental burden in certain communities, health inequities, workforce development, and community development.

Challenges and Opportunities

States in the RGGI region noted several common challenges in directing climate program benefits to disadvantaged communities and consumers:

- Limited resources States indicate that advancing programs, such as those that direct program benefits to disadvantaged communities and consumers, necessitates resources for additional efforts, such as supporting greater interagency efforts, community-based capacity building, and stakeholder engagement;
- **Focus on CO₂ emissions** In many states, climate program outcomes are measured by indicators of CO₂ emissions reductions and, as a result, other important co-benefits are not considered.
- **Public support** Public support for state climate action policies varies among and within the states which may influence program outcomes;
- **Ensuring Low electricity rates** States are ever-aware of the need to balance state policies that address climate change with demands for keeping electricity rates and/or bills low both from a variety of sectors including residents, businesses, and industry; and
- *Multi-state collaboration* With regard to advancing the goals of multi-state climate programs, states point to the need to advance shared policies when, as one state representative said, "The stars line up and the political forces in each state are ready to move."

Opportunities going forward

Opportunities are available to states to enhance efforts to direct climate and clean energy program benefits to disadvantaged communities and consumers. Some opportunities may include:

- Articulating commitments Increasingly, state executive and legislative branches are making commitments to direct state climate and clean energy program benefits to disadvantaged communities and consumers. Opportunities exist to build upon existing commitments as part of state and multi-state climate and clean energy programs, including:
 - Stating commitments to equity objectives as part of state and multi-state climate policies;
 - Expanding efforts that deploy use of upfront, inclusive participatory processes;

- Developing and using analytical tools to assess and evaluate equity benefits and impacts of current and future state climate and clean energy programs on disadvantaged communities and consumers.
- Measuring benefits to and impacts on disadvantaged communities and consumers There is considerable activity underway in U.S. cities and states to direct climate and clean energy program benefits to disadvantaged communities and consumers. States use of evaluative evidence can inform identification of effective best practices for state policy adoption. Evaluating benefits to and impacts of state and multi-state climate policies' on disadvantaged communities and consumerscould include, , but going beyond, CO₂ emissions reductions to consider indicators unique and important to disadvantaged communities and consumers, such as workforce development, and exposures to environmental pollution.
- **Expanding states' shared equity efforts** States within the Mid-Atlantic and Northeast have been and continue to be leaders in advancing informed climate policies. Collaborative, multi-state efforts may provide a strong foundation for enhanced incorporation of equity considerations into state climate and clean energy policies.
- **Developing complementary policies to advance equity objectives.** Even with adoption of more inclusive equity components in state climate and clean energy policies, challenges to address underlying disproportionate environmental burdens may exist in some jurisdictions. States may benefit from an analysis of other legal authorities, in addition to existing state climate and clean energy laws and policies, to better understand whether other programs can be applied to address or supplement gaps specific to the needs and challenges faced by disadvantaged communities and consumers, such as cumulative environmental burdens.
- Addressing equity in state climate emissions and adaptation programs Many of the RGGI states have policies and programs associated with climate change adaptation and resilience, but not all states have comprehensive plans to address impacts of climate change on vulnerable populations. As states within the RGGI region continue to expand their efforts to integrate equity goals into state climate emissions policies, there may be opportunities to intersect those efforts with adaptation and resilience efforts.

States and cities across the United States have been leading the way to develop climate and energy programs. At the city, state and multi-state levels, programs have evolved over time to reflect the most current analytical results, best practices, new mandates, and emerging issues and challenges. For example, states intentionally designed RGGI to allow for periodic program review and modification, a design element that creates opportunities for states to learn from one others' experiences and to implement improvements.

Efforts to evaluate state and multi-state climate program benefits to and impacts on disadvantaged communities and consumers may contribute important insights to inform future program design. Expanded participatory processes, identification and articulation of multi-state shared equity goals, exploration of complementary policies, and articulation of shared objectives to intersect climate policies with equity goals may offer positive outcomes for state programs. States can learn from each other, assess equity impacts of programs, engage directly with stakeholders from disadvantaged communities, and explore broad use of authorities to address equity challenges. Such a portfolio of action may offer important contributions to the ability of states to achieve statewide climate goals.

II. Project Overview

Introduction

Over the past decade, states across the country have served a leadership role in advancing scienceinformed climate policy through individual state initiatives and regional (multistate) efforts. The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory, multistate, market-based program in the United States designed to reduce greenhouse gas emissions. RGGI is a cooperative effort among nine states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont in which a regional cap is set on emissions of carbon dioxide (CO_2) from fossil-fuelfired power generators. Under the RGGI emissions cap, generators must bid for CO_2 allowances in quarterly regional auctions. Inherent to the design of RGGI are several critical features: establishment of a regional cap agreed to by all the states; participation in the program governed by individual state authorities; and decision-making about investment of auction proceeds resting with each individual state, with the collective agreement that each state will spend at least 25% of auction proceeds on "consumer benefit or strategic energy purposes."²

There is an active, ongoing dialogue at the state, regional, and national level regarding the intersection of state-level climate policy with state-level policy efforts targeted at addressing needs of disadvantaged communities and consumers. This dialogue emerges from several perspectives:

Widespread documentation that, while all Americans will be affected by changing climate conditions, certain populations and communities are disproportionately affected. The 2016 Climate and Health Assessment conducted by the U.S. Global Climate Change Research Program provides extensive documentation to indicate that, with very high confidence, "people and communities differ in their exposures, their inherent sensitivity, and their adaptive capacity to respond to and cope with climate change related health threats." ³ Volume II of the Fourth National Climate Assessment, released in 2018, concludes that existing societal inequalities and stressors already faced by certain populations and communities will be greatly exacerbated by climate change. Such inequities may include unequal access to social, community-based, and economic conditions that contribute to health and well-being, disproportionate exposure to environmental hazards, and social isolation (e.g., poor rural communities). The assessment calls for governments to involve populations most affected by climate change into development of policy solutions.⁴

² RGGI, Inc. "Elements of RGGI." The Regional Greenhouse Gas Initiative: An Initiative of the New England and Mid-Atlantic States of the U.S., https://www.rggi.org/program-overview-and-design/elements.

³ Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, 2016: Executive Summary. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. U.S. Global Change Research Program, Washington, DC, page 1–24. http://dx.doi.org/10.7930/JooPoWXS

⁴ USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018

- Extensive research documents that a greater proportion of environmental burden exists in geographic areas that have majority populations of people of color, low-income residents, and/or indigenous people.⁵ In addition to bearing a greater burden of environmental hazards, these populations typically also face additional socioeconomic stressors.⁶ Research also points to the intersection of these stressors with other social, economic, environmental, and community factors that influence health inequities.⁷
- Evidence that low-income, African American, Latino, low-income multifamily, and rental households spend a larger portion of their income on home energy costs than do other households,^{8,9} and low-income rural populations incur disproportionately high energy costs.¹⁰ A 2015 survey by the U.S. Energy Information Administration (EIA) reported that "nearly one-third of U.S. households (31%) reported facing a challenge in paying energy bills or sustaining adequate heating and cooling in their homes in 2015." The study also found that "about one in five households reported reducing or forgoing necessities such as food and medicine to pay an energy bill, and 14% reported receiving a disconnection notice for energy service." Nearly one-third of U.S. households reported challenges paying energy bills.¹¹
- Widespread recognition that achieving a transition away from fossil fuels to efficiency and clean energy necessitates significantly increased participation of low-income households in receiving the benefits of state climate and clean energy programs.^{12,13} Across the U.S., low-income customers make up close to a third of the nation's households. They also account for over 20% of

⁵ Examples include:

- Bullard, Robert D. "Equity, Unnatural Disasters, and Race: Why Environmental Justice Matters," *Research in Social Problems and Public Policy* (RSPPP) Special Issue on Equity and the Environment, 15 (Winter 2008): 51-85.
- Cutter, S. L., Boruff, B. J. and Shirley, W. L. (2003), Social Vulnerability to Environmental Hazards. Social Science Quarterly, 84: 242-261. doi:10.1111/1540-6237.8402002
- Understanding The Cumulative Impacts of Inequalities In Environmental Health: Implications For Policy. Rachel Morello-Frosch, Miriam Zuk, Michael Jerrett, Bhavna Shamasunder, and Amy D. Kyle. Health Affairs 201130:5, 879-887

⁶ United States Environmental Protection Agency; Office of Research and Development. Environmental Justice Research Roadmap. EPA 601/R-16/006.2016.

⁷ Brulle, Robert & Pellow, David. (2006). Environmental Justice: Human Health and Environmental Inequalities. Annual review of public health. 27. 103-24. 10.1146/annurev.publhealth.27.021405.102124.

⁸ United States Department of Energy, Office of Energy Efficiency and Renewable Energy. Low-Income Household Energy Burden Varies Among States — Efficiency Can Help In All of Them. DOE/GO-102018-5122. December 2018. Last accessed May 15, 2019. https://www.energy.gov/sites/prod/files/2019/01/f58/WIP-Energy-Burden_final.pdf

⁹ Drehobl, Ariel, L. Ross. Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities. 2016. American Council for an Energy-Efficient Economy. Available at: https://aceee.org/sites/default/files/publications/researchreports/u1602.pdf

¹⁰ Ross, Lauren, A. Drehobl, B. Stickles. The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency. 2018. American Council for an Energy-Efficient Economy. Available at: https://aceee.org/sites/default/files/publications/researchreports/u1806.pdf.

¹¹ United States Energy Information Agency. 2015 Residential Energy Consumption Survey. Last accessed July 7, 2019: https://www.eia.gov/consumption/residential/reports/2015/energybills/

¹² Coreina Chan, Kendall Ernst, and James Newcomb, Breaking Ground: New Models That Deliver Energy Solutions to Low-Income Customers (Rocky Mountain Institute, 2016), http://www.rmi.org/elab_leap_resources. Available at: https://rmi.org/wp-content/uploads/2017/04/eLabLeap_Breaking-Ground-report-2016.pdf ¹³ Low-Income Energy Efficiency A Pathway to Clean, Affordable Energy for All. 2018. Environmental Defense Fund. Available at: https://www.edf.org/sites/default/files/documents/liee_national_summary.pdf

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residential energy use in the United States, by conservative estimates. States also recognize that traditional design and implementation of state climate, clean energy and energy efficiency programs are not necessarily transferrable to disadvantaged communities and consumers. For example, there is increasing evidence that traditionally delivered renewable energy and energy efficiency programs do not necessarily penetrate low-income markets. Additional evidence points to historically limited access to energy efficiency and renewable energy programs by under-resourced and underserved communities.^{14,15} One study found that, 49 million households earning less than \$40,000 per year in 2011 accounted for less than 5% of solar installations, and few received assistance with energy efficiency improvements.¹⁶

As a result, considerable attention is being paid to advancing societal equity goals as part of state climate and clean energy policies.^{17,18} Some of this work is focused on addressing the needs of socially vulnerable populations as part of efforts to enhance adaptive capacity of communities in light of changing climate conditions.^{19,20,21,22} Others focus more on integration of equity into climate mitigation and energy policy.^{23,24} Overall, states and stakeholders alike recognize the intersection of state level climate and clean energy policy and objectives to advance social equity. This topic was frequently raised as part of the most recent RGGI Model Rule listening sessions and stakeholder hearings in 2017. Public comments called for a variety of actions on the part of the RGGI states, including but not limited to: performance of a regional Environmental Justice analysis as part of the RGGI program review, investment of a majority of RGGI auction proceeds to benefit vulnerable populations, and establishment of a stricter cap designed to benefit vulnerable populations.²⁵

https://kresge.org/content/climate-resilience-and-urban-opportunity-o

¹⁴ Sunter, D. A., Castellanos, S., & Kammen, D. M. (2019). Disparities in rooftop photovoltaics deployment in the United states by race and ethnicity. Nature Sustainability, 2 (1), 71-76.

¹⁵ https://www.energy.gov/eere/slsc/low-income-community-energy-solutions

¹⁶ Mueller, James A. and Ronan, Amit. Bridging the Solar Income Gap: Working Paper. George Washington Solar Institute. The George Washington University. 2015.

¹⁷ Building Climate Equity: Creating a New Approach from the Ground Up. David Waskow, Wendi Bevins, Eliza Northrop, Laura Weatherer, Paul Joffe, Dr. Sonja Klinsky, Assistant Professor, School of Sustainability, Arizona State University and Robert Kutter, Founder, Kutter Consulting - June 2015. World Resources Institute.

¹⁸Steichenv, Lorah, J. Jacqueline Patterson, K. Taylor. In the Eye of the Storm: A People's Guide to Transforming Crisis and Advancing Equity in the Disaster Continuum. National Association for the Advancement of Colored People. 2018.

¹⁹ Moser, Susanne, J. Coffee, A. Seville. Rising to the Challenge Together. A Review and Critical Assessment of the State of the US Climate Adaptation Field: A Report Prepared for the Kresge Foundation. 2017.

²⁰ "Climate Resilience and Urban Opportunity." The Kresge Foundation. Last accessed July 1, 2019.

²¹ "Guide to Equitable, Community-driven Climate Preparedness Planning." Urban Sustainability Directors Network. Raimi & Associates. 2017.

²² Social Equity Report 2019, Carbon Free Boston. Last accessed June 28, 2019.

http://sites.bu.edu/cfb/files/2019/06/CFB_Social_Equity_Report_053119.pdf

²³ Schlosberg, D. and Collins, L. B. (2014), From environmental to climate justice: climate change and the discourse of environmental justice. WIREs Clim Change, 5: 359-374. doi:10.1002/wcc.275

²⁴ Franklin, Marcus, M. Alksnis, C. Younger. Just Energy Policies: Model Energy Policies Guide. National Association for the Advancement of Colored People. Last accessed July 6, 2019. https://www.naacp.org/wp-content/uploads/2014/03/Just-Energy-Policies Model-Energy-Policies-Guide NAACP.pdf

²⁵ Program Review Stakeholder Comments, 2017. RGGI, Inc. Last accessed June 8, 2019.

https://www.rggi.org/program -overview -and -design/stakeholder -comments

Project Objectives and Approach

This project has two objectives:

- To better understand efforts in the nine RGGI states, New Jersey, Virginia, and two states and cities outside the RGGI region to direct climate program benefits towards disadvantaged communities and consumers;
- To identify opportunities and challenges associated with enhancing state-level climate policy efforts to benefit disadvantaged communities and consumers.

Throughout this project, the authors engaged RGGI and non-RGGI state representatives, representatives from two local governments, and stakeholders in discussions about the equitable distribution of RGGI and state climate program benefits to disadvantaged communities and consumers. For the purpose of this project, the term disadvantaged communities and consumers is used to be inclusive and to ensure that all definitions used by the states and stakeholders are incorporated, such as low-income, low-to-moderateincome,^{26,27} Environmental Justice,²⁸ disadvantaged, socially vulnerable,²⁹ etc. Additionally, because the term refers to communities and consumers, the project scope includes community-wide topics, not just individuals. As part of this project, the research team also broadly defined the term "benefits" to include, but not be limited to, how states direct revenue generated from RGGI auction proceeds as well as other benefits such as: clean energy program components, efforts to complement state's climate programs with use of other regulatory authorities; articulation of policy priorities to highlight social equity priorities; establishment of stakeholder processes designed to systematically integrate equity considerations into state climate policy; establishment of cross-sector government processes to intersect climate policies and programs with other state programs designed to address underlying social inequities; and establishment of transparent monitoring and measurement programs to track the extent to which programs benefit disadvantaged communities and consumers.

A project working group with experts from advocacy, academic, community, and consulting organizations was assembled to advise the researchers on the general approach of the project and development of insights and observations. Project working group members served as a "sounding board" for the research team and did not direct the development of project tasks or findings.

The approach taken by the research team includes the following tasks:

- 1. Conduct a review of grey and peer-reviewed literature to better understand issues associated with the project. Note that insights from the literature review are integrated throughout the report;
- 2. Review materials associated with each state's RGGI and overall climate programs, including written comments submitted as part of the 2017 RGGI Program Review;³⁰

²⁸ United States Environmental Protection Agency. Environmental Justice. Last accessed June 1, 2019

²⁶ United States Department of Health and Human Services, Office of Community Services. Low Income Home Energy Assistance Program. Last accessed June 1, 2019. https://www.acf.hhs.gov/ocs/programs/liheap

²⁷ United States Department of Energy, Office of Energy Efficiency and Renewable Energy, Weatherization and Intergovernmental Programs Office. Weatherization Assistance Program. Last accessed May 2, 2019. https://www.energy.gov/eere/wipo/weatherization-assistance-program

²⁹United States Centers for Disease Control. CDC's Social Vulnerability Index (SVI). Last accessed May 23, 2019. https://svi.cdc.gov/

³⁰ RGGI, Inc. 2017

- **3.** Conduct interviews with state representatives to better understand program design and delivery. The research team prepared a summary of each state's program which are included in the appendices to this report;
- **4.** Review materials and conduct interviews with representatives in four jurisdictions outside the RGGI region (California; Illinois; Columbus, Ohio; and Austin, Texas) in order to illustrate efforts elsewhere;
- Conduct a set of key informant interviews with nongovernmental stakeholders within and outside the RGGI region, including stakeholders in the advocacy community and clean energy practitioners;
- **6.** Participate in a May 2019 transportation and climate workshop, Advancing Equity & Creating Opportunities for All Communities; ³¹
- **7.** Consult with the project working group on observations and insights gained from project tasks to inform preparation of this final report.

Interviews with states and stakeholders were conducted in conformance with requirements of the Rutgers University Institutional Review Board in which interviewees were provided informed consent stipulating that participation in the interview was voluntary, that no risks were presented to the interviewees, and that the interview would be treated as confidential, meaning not for attribution in this final report. A list of individuals consulted is included in Section VIII.

Overview of the Report

This overview section of the report provides a brief introduction, a summary of the project objectives and approach, and a contextual summary of state-level climate policy. All citations used throughout the report are contained in page footnotes. This overview section is followed by five additional report sections:

- Summary of RGGI state efforts to direct program benefits to disadvantaged communities and consumers. Note that the states of New Jersey and Virginia are included in this report given their respective efforts to participate in RGGI;
- Summary of efforts in four other jurisdictions outside the RGGI region (California; Illinois, Austin, TX; Columbus, OH);
- Stakeholder perspectives. For the purpose of this report, the authors consider stakeholders to be individuals who are not representatives of state or city governments;
- Observations and opportunities based on review of materials in RGGI and non-RGGI jurisdictions, interviews with government representatives and stakeholders, and review of the literature;
- Appendices include:
 - A A summary of definitions used in the RGGI states, New Jersey, and Virginia relevant to equity considerations;
 - B A brief synopsis of current efforts in the nine RGGI states, plus New Jersey and Virginia. These appendices are not intended to give an exhaustive overview of state climate

³¹ TCI Workshop: Advancing Equity & Creating Opportunities for All Communities. June 2, 2019. Last accessed June 25, 2019. https://www.transportationandclimate.org/tci-workshop-advancing-equity-creating-opportunities-all-communities

programs and policies. They focus instead on efforts within the states to direct RGGI and state climate program benefits to disadvantaged communities and consumers. These appendices have been reviewed by each state;

- C Analysis of efforts in select jurisdictions (two states and two cities) outside the RGGI region; and
- D A summary of new climate legislation enacted in five states in the RGGI region from April to July 2019.

III. Overview of Climate Policy in RGGI States

Summary of RGGI

RGGI is the first multistate, mandatory market-based program in the United States designed to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to set a regional, declining cap on CO₂ emissions from electric power plants 25 megawatts or greater. A core model rule is used by participating states to adopt individual state program regulations that may vary given individual state statutory authority. Each state is assigned allowances for regulated facilities. Regulated power plants may acquire allowances by purchasing them at regional auctions or through secondary markets. ³² In 2005, seven states (Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont) signed a memorandum of understanding (MOU) outlining the initial framework for a RGGI model rule. Massachusetts, Rhode Island, and Maryland signed the RGGI MOU in 2007. Among other provisions, the 2005 RGGI Memorandum of Understanding (MOU) outlined the initial framework for a RGGI Model Rule, which sets forth the central organizing principles for the program today. Among other provisions, the MOU stipulated that each participating state would direct at least 25% of its assigned proceeds from regional auctions of allowances to consumer benefit or strategic energy purposes, defined as:

The use of the allowances to promote energy efficiency, to directly mitigate electricity ratepayer impacts, to promote renewable or non-carbon-emitting energy technologies, to stimulate or reward investment in the development of innovative carbon emissions abatement technologies with significant carbon reduction potential, and/or to fund administration of this Program.³³

Through statutes or regulations based on the RGGI model rule, each state establishes its CO_2 budget trading programs and standards for management of auction proceeds. In 2019, New Jersey adopted regulations to rejoin RGGI, effective January 1, 2020, after withdrawing in 2011.³⁴ Also in 2019, the Virginia Air Pollution Control Board approved regulations for Virginia to participate in the RGGI CO_2 budget-trading program through a direct allocation program³⁵ although, currently, Virginia's RGGI participation is currently curtailed due to a 2019 statutory prohibition.

The multistate structure of RGGI provides the participating states with a common trading platform and a carbon emission cap while retaining each state's autonomy to make decisions with regard to investment of RGGI auction proceeds for public benefit and to meet state priorities. As such, the multistate collaborative effort allows for innovation at the regional level and within programmatic delivery in individual states. In general, the RGGI design is intended to contribute to reduction of greenhouse gas emissions through the regionally declining cap and state investment of auction proceeds in programs and initiatives that are designed to reduce emissions. With regard to the latter, investment

³² Elements of RGGI. Available at: https://www.rggi.org/program-overview-and-design/elements

³³ Model Rule and MOU Revisions. RGGI, Inc. Last accessed June 15, 2019. https://www.rggi.org/program - overview-and-design/design-archive/mou-model-rule

³⁴ Notice of Withdrawal of Agreement to the RGGI Memorandum of Understanding. Last accessed July 7, 2019. https://www.rggi.org/sites/default/files/Uploads/Design-Archive/MOU/MOU_NJ_Withdrawal_11_29_11.pdf

³⁵ Greenhouse Gases. Virginia Department of Environmental Quality. Available at:

https://www.deq.virginia.gov/Programs/Air/GreenhouseGasPlan.aspx

of auction proceeds is dictated by each individual RGGI state with varying levels of statutory authority and directives. While the states have committed to dedicating a minimum of 25% of auction proceeds to consumer benefit, the practice among the states demonstrates a greater commitment of 70%.³⁶

According to a status report released by the Acadia Center in 2016, RGGI has been successful in its goal of overall emissions reduction in the region since it was established in 2008. Electricity prices were also found to be lower in the region, and emissions of health-threatening pollutants such as sulfur dioxide and nitrogen oxides had gone down. Acadia also found that the majority of state program revenue (59% between 2012 and 2014) had been invested in energy efficiency programs to reduce electricity bills and demand for power.³⁷

Energy efficiency continued be the dominant to investment auction of proceeds in 2016, according to RGGI's most recent report on investment of proceeds, with 55% of investments going to this area (58% over RGGI's duration.) Every RGGI member state 2016 in invested in efficiency programs to some degree. Some investments accrued benefits particular to disadvantaged communities and consumers. Clean and renewable energy made up 17% of RGGI investments in



Figure 1: RGGI Investments in 2016, courtesy of RGGI, Inc.

2016 (14% of cumulative investments). Greenhouse gas abatement made up 11% of RGGI investments in 2016 (8% of cumulative investments), including programs such as rebates for electric and hybrid vehicles. The fourth major category of RGGI investments is direct bill assistance, which provides credits to electricity consumers. Direct bill assistance made up 11% of RGGI investments in 2016 (14% cumulative), much of which is targeted at low-income consumers. States typically combine RGGI proceeds with other funding sources to run climate or energy-related programs. For example, in the case of direct bill assistance, the federal Low Income Home Energy Assistance Program (LIHEAP) provides a significant funding source. Figure 1 shows the areas of RGGI investments in 2016 and the categories of beneficiaries, indicating 11% of proceeds going towards "low-income" recipients.³⁸ For the purposes of the RGGI report on investment of proceeds, the category "low-income" is the best fit for this report's terminology of "disadvantaged consumers or communities," meaning that RGGI does not track the extent to which RGGI

³⁶ A Pioneering Approach to Carbon Markets How the Northeast States Redefined Cap and Trade for the Benefit of Consumers. MJ Bradley & Associates. 2017. Last accessed May 26, 2019.

https://www.mjbradley.com/sites/default/files/rggimarketso2-15-2017.pdf

³⁷ Stutt, Jordan, Peter Shattuck, Varun Kumar, and Daniel L. Sosland. Acadia Center 2016. *Regional Greenhouse Gas Initiative Status Report*.

³⁸ The Investment of RGGI Proceeds in 2016. RGGI, Inc. September 2018. Last accessed June 8, 2019. https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2016.pdf

proceeds may be directed to other disadvantaged consumers or communities, including Environmental Justice or socially vulnerable populations.

A 2018 study by the Analysis Group reports that, since the start of RGGI auctions in 2009 up to 2017, nearly \$2.8 billion from auction proceeds were invested in energy efficiency and renewable energy efforts, greenhouse gas emissions abatement programs, electricity consumer bill assistance, and education and job training programs. Investments of auction proceeds in the entire RGGI region break down as follows: 52% on energy efficiency; 18% on renewable energy projects; 13% on bill-payment assistance to consumers; 7% on program administration; 4% on GHG-emission reduction programs; 3% on clean technology research and development; 2% on education, outreach, and job training; and 1% for payments into a general fund.³⁹

Benefits to Disadvantaged Communities and Consumers

A summary of state efforts within the RGGI region to direct benefits of state RGGI and other climate programs to disadvantaged communities and consumers is included in the individual state sections of Appendix B. RGGI is one program in the states' overall efforts to reduce greenhouse gas emissions. All nine states currently participating in RGGI have some form of statutory, regulatory, or administratively set statewide limits or goals to reduce greenhouse gas emissions, as does New Jersey. States complement discrete climate policies and programs with use of public service and energy authorities to advance statewide climate goals and limits. These include state, as well as utility-managed, programs. As part of efforts to attain those statewide limits or goals, each state maintains a portfolio of programs and policies.

In addition to discrete climate policies, states deploy public service and energy authorities to advance both state- and utility-managed programs designed to increase energy efficiency and use of clean energy, which result in reductions of greenhouse gas emissions. Almost all the states have deregulated, competitive energy markets and use their public service authorities to direct utilities to implement programs, including programs designed to benefit disadvantaged consumers using such methods as discount electricity rates to low-income households; low- and moderate-income weatherization and energy efficiency services; and consumer education. All the states have electricity bill surcharges that fund a variety of programs for the "public good," including Universal Service Funds to help low-income customers pay energy bills, and to fund energy efficiency and renewable energy programs. All the states in the RGGI region have mandatory Renewable Portfolio Standards.⁴⁰ Several states have Energy Efficiency Portfolio Standards.⁴¹

All the RGGI states participate in and administer the federal Low Income Home Energy Assistance Program (LIHEAP) administered by the U.S. Department of Health and Human Services and the U.S. Department of Energy Weatherization Assistance Program (WAP).

³⁹ Hibbard, Paul J., S.F.Tierney, P.G. Darling, S. Cullinan. The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States. 2018. The Analysis Group. Available at:

https://www.analysisgroup.com/globalassets/uploadedfiles/content/insights/publishing/analysis_group_rggi_rep ort_april_2018.pdf.

⁴⁰ State Renewable Portfolio Standards and Goals. National Conference of State Legislatures. Last accessed June 15, 2019. http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx

⁴¹ Energy Efficiency Resource Standard. American Council for an Energy Efficient Economy. Last Accessed July 3, 2019. https://aceee.org/topics/energy-efficiency-resource-standard-eers

LIHEAP programs are designed to assist low-income households, particularly those with the lowest incomes that pay a high proportion of household income for home energy, in meeting immediate home energy needs. States administering the federal LIHEAP program must cap income-eligibility at no more than the greater of 150% of the federal poverty guidelines or 60% of the state median income and no less than 110% of the federal poverty guidelines. They must also give higher benefits to households with the greatest home energy need in relation to household income and number of household members. Grantees also must target benefits to households with members who are elderly, disabled, and/or a young child. States participating in the federal LIHEAP program receive a federal block grant to administer the program based on a formula considering the state's weather conditions, fuel prices, and low-income population. Federal funds must be used for crisis assistance, and states have the option use funds for programs related to home cooling, weatherization, and/or energy-related low-cost home repairs or replacements.

- WAP programs direct resources to energy efficiency projects in low-income households. State programs are administered through local nonprofit community action agencies. Each year, WAP income-eligibility guidelines are issued following congressional approval of the federal WAP appropriation. For fiscal year 2019, the federal definition of "low income" means that the income in relationship to family size is:
 - At or below 200% of the poverty level determined in accordance with criteria established by the Office of Management and Budget, except if otherwise established by the HHS Secretary;
 - The basis on which cash assistance payments have been paid during the preceding 12month period under Titles IV and XVI of the Social Security Act or applicable State or local law; or
 - The basis for eligibility for assistance under the Low Income Home Energy Assistance Act of 1981, provided that such basis is at least 200% of the poverty level determined in accordance with criteria established by the Office of Management and Budget.⁴²

Many of the states have sought to complement the federal LIHEAP and WAP with a combination of utility-directed programs and state-led programs funded through RGGI, RPS alternative compliance payments, compliance settlements, and surcharges on electricity customers. These complementary programs address limitations in federal programs to fully meet challenges of low-income consumers that have been identified by the states, including:

- Insufficient funds to meet demand, resulting in long waiting lists for services. On average, about 20% of households qualified for LIHEAP receive benefits;⁴³
- Limited integration of the programs into other state climate, housing, energy efficiency, and renewable energy programs as well as other social services. States point to limited nimbleness of

⁴² United States Department of Energy. Weatherization Program Notice 19-3. February 6, 2019. Last accessed June 29, 2019. https://www.energy.gov/sites/prod/files/2019/02/f59/wpn-19-3-poverty-income-guidelines.pdf ⁴³ United States Department of Health and Human Services, Office of Community Services. LIHEAP Q&A for Consumers. Last accessed July 1, 2019. https://www.acf.hhs.gov/ocs/resource/consumer-frquently-askedquestions#Q11

the federal programs in state efforts to present "one stop" services, especially to low-income customers;⁴⁴

- Ineligibility of a resident to reenter the federal WAP for an extended period of time after initial use;
- Eligibility requirements that disqualify homes from weatherization services if the dwelling requires basic infrastructure repair;
- Federal poverty-level indicators do not reflect current increases in household costs (such as housing and transportation), nor do they reflect populations that are above the federal poverty level but unable to meet household expenses.^{45,46}

⁴⁴ Hernández, D., & Bird, S. (2010). Energy Burden and the Need for Integrated Low-Income Housing and Energy Policy. Poverty & public policy, 2(4), 5–25. doi:10.2202/1944-2858.1095

⁴⁵ National Center for Children in Poverty; Bank Street School for Graduate Education. Measuring Poverty. Last accessed May 25, 2019. http://www.nccp.org/topics/measuringpoverty.html

⁴⁶ United Way of Northern New Jersey. Meet Alice. Last accessed May 25, 2019. https://www.unitedforalice.org/home

IV. Efforts in RGGI States

Currently, states in the RGGI region are actively engaged in efforts to direct benefits of RGGI and state climate programs to disadvantaged communities and consumers. An extensive amount of new state climate statutes and executive actions have been adopted in 2018 and 2019 alone, some of which include specific provisions intended to incorporate equity elements. The states appear to be in a period of innovation and capacity building with regard to directing RGGI and state climate program benefits to disadvantaged communities and consumers.

The RGGI states focus on lowering electricity bills for low and low-to-moderate-income households with a mix of policies that are designed to increase access to energy efficiency programs. U.S. average retail price per kilowatt hour is 10.48 cents. Rates within the RGGI region vary, with Virginia and Maryland having the lowest rates in 2016 of 9.18 and 11.98, respectively, and Massachusetts and Connecticut having the highest rates of 17.12 and 17.55, respectively.⁴⁷ For these reasons, states identify increasing energy efficiency in low- and moderate-income households as delivering the immediate benefit and, as such, these appear to be among the most mature state programs. States are also focused on addressing issues associated with rate design to not only reduce consumer costs, particularly for low-income consumers, but to also foster energy efficiency through policies such as low fixed customer charges, cost-based usage charges, and revenue decoupling.^{48,49,50}

Several states are also changing traditional utility regulations to create mandates for utilities to maximize public benefit. Such mandates include the Reforming the Energy Vision (REV) policy in New York and orders in Massachusetts to submit 10-year grid modernization plans, including net metering. Several states indicate that utilities respond to mandates from state government with regard to delivering programs designed to address needs of low-income households. Such mandates to utilities are often precipitated by a statewide policy commitment that has a focus on equity or the direction of program benefits to disadvantaged communities and consumers.

Additionally, states are also focused on addressing market challenges to advance penetration of solar energy in low- and moderate-income households. In many cases, these efforts include elements to address the needs of rental and multifamily dwellings, as evidenced by the emergence of state community solar initiatives with financing mechanisms designed to address challenges faced by low- and moderate-income households. Both with regard to low-income energy efficiency and solar initiatives, states are building programs that are comprised of three elements: mandates for achieving threshold of penetration for state programs and/or utilities, innovative financing tools, and education of targeted

⁴⁷ State Electricity Profiles. United States Energy Information Administration. 2019. Available at: https://www.eia.gov/electricity/state/

⁴⁸ Lazar, J., L. Schwartz, R. Allen. Pricing Do's and Don'ts: Designing Retail Rates As if Efficiency Counts. 2011. Regulatory Assistance Project. Available at: http://www.raponline.org/wp-content/uploads/2016/05/rap-lazarpricingdosanddonts-2011-04.pdf

⁴⁹ Whited, Melissa, T. Woolf, J. Daniel. Caught in a Fix The Problem with Fixed Charges for Electricity. 2016. Synapse Energy Economics. Available at: https://www.synapse-energy.com/sites/default/files/Caught-in-a-Fix.pdf

⁵⁰ Littell, D., C. Kadoch, P. Baker, R. Bharvirkar, M. Dupuy, B. Hausauer, C. Linvill, J. Migden-Ostrander, J. Rosenow, and W. Xuan. Next-Generation Performance Based Regulation Emphasizing Utility Performance to Unleash Power Sector Innovation. Regulatory Assistance Project. 2017. National Renewable Energy Laboratory/TP-6A50-68512. Available at: https://www.nrel.gov/docs/fy170sti/68512.pdf.

communities and community-based partnerships to build trust and market demand. ⁵¹ These efforts are intended to present a portfolio of program offerings to address multiple challenges faced by low-income and multifamily dwellings with respect to advancing energy efficiency and solar. Challenges are significant as evidenced by a 2018 survey by the Smart Electric Power Alliance found that less than half of U.S. community solar projects have any participation from low-income households. Of projects that do, only about 5% involve a sizable share, or more than 10%. ⁵² States continue to modify programs to incorporate elements in program designed, such as provisions in several states community solar programs outlined in this report. These state observations are echoed in a recent study that points to three "takeaways:"

- "Affordable multifamily energy efficiency programs can achieve significant and cost-effective energy savings in both hot and cold climates;
- Effective program designs for affordable multifamily housing feature practices like financing and incentives, technical assistance, collaboration among partners and stakeholders, and effective outreach.
- The most important component of an effective affordable multifamily program is providing property owners and managers with technical assistance throughout the retrofit process." ⁵³

Several states are establishing programs that offer loan guarantees to renewable energy developers and affordable housing developers that are mission-focused on delivering energy efficiency and renewable energy products to low-income communities. Some states are working with affordable housing developers to identify the most effective point of intervention during the financing process to advance significant energy efficiency and clean energy enhancements. Several states are offering no income or credit limits for clean energy and/or energy efficiency services, or online billing for payback of energy efficiency upgrades; zero- or low-interest loans; mandatory limits on the percent of household income allowed for energy costs; modified Power Purchase Agreements designed to meet the needs of renters; interest rate buy-downs; and other efforts.^{54,55}

States are establishing innovative funding and financing mechanisms to support low- and low-tomoderate-income market penetration of energy efficiency and renewable programs. Several RGGI states (New York, Connecticut, Rhode Island) have established "green banks" to maximize their ability to dedicate capacity and funding for clean energy projects in order to overcome barriers to climate and clean energy investment in low- and moderate-income households. State green banks operate as nonprofit, publicly capitalized entities that are mission-focused on advancing in-state low-carbon programs that traditional financing institutions would not typically support. Experiences in the United

⁵¹ Nowak, Seth, M. Kushler, P. Witte. The New Leaders of the Pack: ACEEE's Fourth National Review of Exemplary Energy Efficiency Programs. American Council for an Energy Efficient Economy. January 2019. Report U1901

⁵² Community Solar Program Design Models. Smart Electric Power Alliance. 2018. Available at:

 $file: ///C: /Users / Jeanne / Downloads / Community_Solar_Program_Design_Models.pdf$

⁵³ Samarripas, Stefen, D. York. Closing the Gap in Energy Efficiency Programs for Affordable Multifamily Housing. April 2019 Report U1903 © American Council for an Energy-Efficient Economy.

⁵⁴ Chace, Diana, J. Cooper, N. Hausman, W. Leon, H. Sekhon, TG. Terry, J. Wadleigh. A Directory of State Clean Energy Programs and Policies for Low- and Moderate-Income Residents. Clean Energy States Alliance. December 2018.

⁵⁵ Paulos, Bentham. Bringing the Benefits of Solar Energy to Low-Income Consumers A Guide for States & Municipalities. Clean Energy States Alliance. May 2017.

States point to the ability for green banks to incent greater public and private clean energy investment and efficient leveraging of public monies with private funds.⁵⁶ Established in 2011, the Connecticut Green Bank is the first in the country. For every \$1 the Green Bank invests, it brings in another \$6 in private investments.⁵⁷ State representatives and some stakeholders indicate that the organizational design of green banks, in general, allows for creation of more innovative financing programs targeted at under-resourced communities with greater efficiency and timeliness than traditional state financing programs.

Some states in the RGGI region are undertaking initiatives to complement market-based mechanisms with directives designed to: address environmental issues in communities disproportionately burdened by environmental factors; require increasingly larger portions of program resources to invest in disadvantaged communities; advance programs that address underlying social determinants of health exacerbated by changing climate conditions; and develop workforce training and job placement opportunities for residents of under-resourced communities.

Current State Efforts

State efforts to direct climate program benefits to disadvantaged communities and consumers can be categorized in three ways:

- Development, design, and articulation of state policies and programs:
 - Articulate and/or frame the needs of disadvantaged communities and consumers as a priority within state climate policy;
 - Engage disadvantaged communities and consumers through participatory processes;
 - Establish formal mechanisms through which government processes systematically provide a mechanism for input from disadvantaged communities and consumers as part of government decision-making processes; and
 - Establish interagency efforts designed to advance programs that address the needs of disadvantaged communities and consumers, such as integration of climate and/or clean energy elements into state health, housing, and/or community development programs.
- Design and delivery of program benefits:
 - Develop innovative funding mechanisms designed to overcome barriers in traditional financing strategies;
 - Develop programs to complement state climate programs for the purpose of addressing needs of disadvantaged communities and consumers; and
 - Develop outreach and education
- Monitoring and tracking program progress:
 - Quantitatively or qualitatively monitor or track efforts of state climate programs to address needs of disadvantaged communities and consumers;

⁵⁶ What is a Green Bank? Coalition for Green Capital. Available at: http://coalitionforgreencapital.com/whats-a-green-bank-html/

⁵⁷ Building a Stronger Connecticut: Connecticut Green Bank 2016 Annual Report. Available at: https://www.ctgreenbank.com/wp-content/uploads/2017/07/CGB_2016AR__FINAL_070717_reduced.pdf

• Develop indicators of program co-benefits including and/or in addition to measurement of CO₂ emissions reductions.

Examples for these three major categories of state efforts are outlined below. These examples are not intended to be an exhaustive inventory of programs in the states but, rather, illustrative of the types of initiatives under way and planned within the RGGI states. Furthermore, these examples illustrate the novelty, capacity-building, and degree of learning under way in the states. More in-depth discussions of states efforts are included in the individual state summaries in Appendix B of this report.

APPROACH		EXAMPLES
Articulate and/or frame the needs of disadvantaged communities and consumers as a priority within state climate policy – including articulating equity objectives as part of state climate policy.	0	In 2016, the Rhode Island Executive Climate Change Coordinating Council (EC4) issued the Rhode Island Greenhouse Gas Emissions Reduction Plan that outlines strategies to meet the statewide emissions limits. The plan provides, "[p]olicymakers should give particular attention to engaging with low-income and vulnerable communities to ensure that all citizens have opportunities to participate in and benefit from the new clean energy economy." In 2017, the Governor's Executive Order 17-10 directs the state's Chief Resilience Officer to develop a comprehensive plan to "recommend key actions to make Rhode Island's residents, economy, infrastructure, health system, and natural resources more resilient to the impacts of climate change and directs that the plan use a "social equity lens to help inform the vision, goals, and actions of the plan." Connecticut's 2018 Comprehensive Energy Strategy outlines state priorities to guide executive and legislative actions, including that state policy focus on reducing the energy burden of low -income households and addressing health and safety barriers to "further unlock efficiency and create healthier homes," by, among other things, addressing housing structural barriers. Additionally, the Governor's Council on Climate Change issued a set of principles to guide efforts to achieve the state's 2030 emissions target, including factoring in co-benefits (improved health and quality of life) and addressing racial, class, gender, geographic, and generational equity in costs and benefits. In a 2018 report, the council recommended expanding the current residential clean energy pilot program with a focus on renters, affordable housing facilities, and low-income service organizations. The January 2018 Executive Order directing the New Jersey Department of Environmental Protection to rejoin RGGI stipulates that guidelines regarding allocation of RGGI auction proceeds "shall include, as a primary consideration of the State agencies charged with allocating said funds, factors that will ensure t
	ο	 and the environmental degradation and climate change, and which will alleviate the negative effects on human health and the environment resulting therefrom." The 2018 Virginia Energy Plan states, "Virginia is dedicated to ensuring that there are not disproportionate impacts on economically-disadvantaged or minority communities during the siting of energy resources. Ensuring that certain populations are not disproportionately impacted during energy development is critical to environmental justice efforts. The siting of projects is one aspect of environmental justice, but there are broader environmental justice initiatives percolating and developing within the Commonwealth." It further states, "Virginia is dedicated to ensuring that there are not disproportionate impacts on economically-disadvantaged or minority communities during the siting of energy resources.

Development, design, and articulation of state policies and programs

disproportionately impacted during energy development is critical to environmental justice efforts." In August 2019, the Virginia Secretary of Natural Resources issued final report to the Governor with recommended actions for enhancing environmental and public health protections as required by the 2018 Executive Order 6. The report provides a summary of actions already taken by state agencies pursuant to Executive Order 6 and outlines recommendations for additional actions. Examples of recommendations are to improve air quality monitoring with a focus on Environmental Justice Communities; conduct a robust analysis of existing and potential "hot spots" in Environmental Justice Communities; enhance public engagement efforts, and pursue legislation to charge fees for CO2 pollution.

- Created by the 2008 Green Communities Act, the Massachusetts Energy Efficiency Advisory Council EEAC is charged with developing a long-term vision for the Commonwealth's energy future. Among the priorities set by the EEAC for 2019 is for the state to: "demonstrate equitable participation in energy efficiency programs through enhanced delivery models with a special focus on renters, moderate income, non-English speaking, and small business customers."
- Delaware created a 501(c)3 independent agency to administer RGGI auction proceeds and other clean energy and energy efficiency monies. Among its articulated values are to be "community-based" and "socially equitable." The agency's 2015 strategic plan identified as a priority is the creation of energy efficiency and renewable energy programs to benefit low- and moderate-income people of Delaware and to build partnerships with housing authorities, faith-based organizations, and other community-based organizations to provide financial support for income-eligible renters, homeowners on fixed incomes, and low-income owners and residents of multiple family units. The program established a partnership with member banks to offer lowinterest loans to nonprofit housing providers serving low-income communities to undertake energy efficiency programs.
- Vermont's 2016 Comprehensive Energy Plan articulates two goals: ensuring "an equitable distribution of benefits and burdens by assisting those least able to pay the increasing costs of energy and the up-front costs for investments in efficiency and fuel switching," and promoting healthy Vermonters by assessing "health impacts of our energy system in order to avoid or mitigate potential negative impacts, especially for the most vulnerable population groups such as the elderly, low-income households, and those with chronic or pre-existing conditions."
- The 2014 New Hampshire 10-year State Energy Strategy recognized that "New Hampshire's low-income residents are the most vulnerable to high energy costs, as they spend a higher proportion of their income on energy yet have the least access to funding to make efficiency improvements to reduce those costs."

- Among other objectives, the New York Reforming the Energy Vision plan seeks to "help communities disproportionately impacted by air pollution pursue a clean energy future." The legislative findings in the state's new Climate Leadership and Community Protection Act indicates that "climate change especially heightens the vulnerability of disadvantaged communities, which bear environmental and socioeconomic burdens as well as legacies of racial and ethnic discrimination. Actions undertaken by New York State to mitigate greenhouse gas emissions should prioritize the safety and health of disadvantaged communities, control potential regressive impacts of future climate change mitigation and adaptation policies on these communities, and prioritize the allocation of public investments in these areas."
- The 2018 Maryland Commission on Climate Change report indicates that full consideration was given to climate change impacts on communities of concern including Environmental Justice communities. It also points to the identification of "populations of concern" by the U.S. Global Change Research Program, including "those with low income, some communities of color, immigrant groups and limited English proficient populations, indigenous people, children and pregnant women, older adults, vulnerable occupational groups, people with disabilities, and people with chronic medical conditions."
- When the quasi-governmental, nonprofit Energize Delaware began to focus programs on low- and moderateincome households, it held listening session-type workshops to inform development of its strategic plan, which has a strong emphasis on building partnership with community-based organizations.
- Rhode Island has held several listening sessions with stakeholders regarding impacts of local emissions associated with the transportation sector.
- The Massachusetts Department of Environmental Protection worked with its Environmental Justice Office to host evening public meetings in Environmental Justice communities during RGGI's second program review to outline trends in emissions of power plants located in proximity to Environmental Justice communities.
- New York's RGGI regulations require state agencies to annually convene stakeholders to advise on priorities for the upcoming year's operating plan. The state has structured engagement with stakeholders to inform not only the annual RGGI operating plan but state climate change and clean energy programs in general. Based in part on stakeholder engagement, the state's 2019 operating plan identifies several priorities, including continued investment in the state's Green Jobs-Green New York program and support for economic transition of communities reliant on power plants as a source of financial support. Established by executive order, the state's Environmental Justice and Just Transition Working Group advised on development of the state's new Climate Leadership and Community Protection Act.

Engage disadvantaged communities and consumers through participatory processes - including state efforts to undertake nontraditional processes to engage stakeholders in climate policy development. In many cases, these appear to rely on less formal "listening session" formats than traditional formal public hearings. • Prior to the release of the state's proposal to rejoin RGGI, the New Jersey Office of Environmental Justice hosted a special meeting of the Environmental Justice Advisory Council, along with public stakeholders, to outline concepts that the agency anticipated would be reflected in its rule proposal. The agency also hosted a dedicated Environmental Justice public information session/webinar regarding the rule proposal.

Establish systematic mechanisms for input from disadvantaged communities and consumers as part of government decision-making processes -including institutionalizing mechanisms in formal government processes that are specifically designed to create avenues for input on equity issues. These efforts include establishment of committees or commissions that include multi-agency representation as well as members of the public.

- Connecticut's Low-Income Energy Advisory Board is institutionally structured to advise on the planning, development, implementation, and coordination of energy-assistance-related programs and policies and lowincome weatherization assistance programs and policies. The Board also advises on the impact of utility rates and policies on low-income residents. The Board membership includes state agencies as well as social service agencies and nonprofit organizations that work closely with low-income households. It has been proactive in promoting the establishment of programs to address structural repairs to allow low-income homes to gain eligibility to the state's implementation of the federal Weatherization Assistance Program.
- The Massachusetts Energy Efficiency Advisory Board and its Global Warming Solutions Act Advisory Committee serve to advise the state administration on implementation of state climate and energy efficiency policies. Both include cabinet-level members as well as appointed members of the public representing a variety of sectors. Additionally, the state's interagency Affordable Access to Clean and Efficient Energy Initiative task force was collaboratively led by the state's housing and energy agencies and consulted with affordable housing developers, nonprofit community development groups, and community-based organizations to develop its strategic plan.
- The Maryland Commission on Climate Change includes cabinet level members and appointed public members from a variety of sectors. It has been advised by the state Commission on Environmental Justice and Sustainable Communities, which is also comprised of cabinet-level members and public appointees.
- The Energize Delaware Oversight Board, which is comprised of cabinet members and public appointees, that oversees programs managed by the nonprofit Energize Delaware, for which RGGI auction proceeds are the largest source of revenue.
- New York's Low-Income Forum on Energy includes state agencies, community action agencies, utilities, and others that are specifically charged with offering recommendations on policies, programs, and other actions to increase penetration of energy efficiency and clean energy programs in low-income households. The forum recently hosted regional listening sessions across the state to hear about needs of low-income households and service providers. New York also established an Environmental Justice and Just Transition Working Group that

Establish interagency efforts designed to advance programs that address the needs of disadvantaged communities and consumers, such as integration of climate and/or clean energy elements into state health, housing, and/or community development programs including staff and/or cabinet-level interagency forums as a means to build the type of multisector capacity needed to address historic inequities in under-resourced communities, including developing collaborative initiatives with agencies focused on housing, community development, health, and other areas.

informed development of state policies as well as the state's new Climate Leadership and Community Protection Act.

- Vermont reconstituted its previous Climate Cabinet as the Vermont Climate Action Commission, including cabinet-level members as well as public appointees. One of the fundamental principles of the Commission's charge is to reduce greenhouse gas emissions in ways that "engage all Vermonters, so no individual or group of Vermonters is unduly burdened."⁵⁸
- Virginia's state Advisory Council on Environmental Justice identified its first priority to be "to identify information and outreach needs associated with Executive Directive 11 (Reducing Carbon Dioxide Emissions from Electric Power Facilities and Growing Virginia's Clean Energy Economy) to ensure that environmental justice concerns and issues are addressed." Additionally, the council has had a focus on identifying concerns associated with potential natural gas infrastructure impacts on Environmental Justice communities, including issuance of an August 2018 set of recommendations to the governor.
- Many of the RGGI and incoming RGGI states have standing interagency committees designed to foster crossprogram collaboration. Examples include the Rhode Island Executive Climate Change Coordinating Council, the Connecticut Governor's Council on Climate Change, the Massachusetts Global Warming Solutions Act Implementation Advisory Committee, New York's interagency Low-Income Task Force, a multi-agency working group in New Jersey to develop a strategic plan for spending RGGI auction proceeds, the newly created Climate Council in Maine, and the newly created Climate Action Council in New York.
- In Massachusetts, state agencies point to the organizational structure of the executive branch as fostering collaboration, given that six environmental, natural resource, and energy regulatory agencies are housed within the Executive Office of Energy and Environmental Affairs. Similar comments were heard regarding the value of organizationally coordinated programs in other states, including Connecticut, New York, Delaware, and Maryland.
- Part of the mission of the New York State Energy Research and Development Authority (NYSERDA) is to work in partnership with multiple state agencies to invest Clean Energy Fund monies into priorities established in other agency plans, regulations, and orders, thus creating ongoing collaboration among the agencies.

⁵⁸ Vermont Climate Action Commission. Report to the Governor. July 31, 2018. Available at: https://anr.vermont.gov/sites/anr/files/Final%20VCAC%20Report.pdf

Design and	l delivery o	of program	benefits
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Approach	Examples
Approach Creating funding mechanisms and planning strategies to invest RGGI and other state funds more systematically in under-resourced communities – including steering funds to disadvantaged communities and consumers.	 Rhode Island law allows investment of RGGI auction proceeds in cost-effective direct rate relief for consumers but does not require a cost-effectiveness standard for direct rate relief for low-income consumers. To date, no funds have been allocated for ratepayer relief. New York's recently enacted Climate Leadership and Community Protection Act sets a target for the state to direct 40%, but not less than 35%, of state climate program benefits to disadvantaged communities. In partnership with the state Department of Housing and its Housing Finance Authority, the Connecticut Green Bank now requires low-income multifamily property owners to apply for energy efficiency incentives before seeking low-income tax credits. The state reports that the program has been transformative in the multifamily market with funded projects achieving energy savings of up to almost 40%. Most of Vermont's RGGI auction proceeds are managed by the statutorily established energy efficiency utility, Efficiency Vermont. Programs include a multifamily energy efficiency retrofit initiative to offset costs to more than 80% of the state's multifamily units, 70% of which are occupied by low-income markets. Rhode Island and Connecticut, along with several non-RGGI states (Minnesota, New Mexico, and Oregon), are working with the Alliance to enhance the state' capacity to advance solar adoption in low-to-moderate-income communities. The effort involves the states engaging stakeholders to better asses effective strategies for their jurisdictions.⁵⁹ A multi-agency effort in Connecticut resulted in development of a strategic action plan, the Clean Energy affor dability gap for low-income households, expanding financing for energy efficiency and solar for low -and moderate-income communities. Accelerator Action Plan for Connecticut. The plan represents the shared work of several state agencies, and it sets three primary objectives for coordinated, multi-agency effort in connecticut resulted in development
	development of new programs that receive support from the Green Bank, such as:

⁵⁹ Low and Moderate Clean Energy. Clean Energy States Alliance. Last accessed July 9, 2019. https://cesa.org/projects/low-income-clean-energy/

- A variety of programs designed to promote adoption of solar in low- and moderate- income, owner-occupied households. These include a "Solar for All" partnership in which there are no income or credit limits for low- and moderate-income households. 60 Additionally, the programs establish financial incentives for third-party owned lease solar to low- and moderate-income residents as well as dedicated low-interest loan programs for low-income multifamily dwellings and Power Purchase Agreements that include specific provisions to address needs of low-income renters;
- Heating Equipment Replacement loan program which provides low-interest loans for a three- to ten-year term, repaid using on-bill repayment with the only credit requirement being six months of paid electric bills;
- Availability of low-interest predevelopment loans for significant energy improvements in multi-unit dwellings that are designed for projects that do not have up-front capital available for project scoping.
- Financing programs that offer unsecured loans to multifamily units for energy efficiency, health and safety, and renewable energy projects. One program provides low-cost, unsecured loans for up to 20-year terms that are available to developments with at least 60% of the units serving tenants at 80% of area median income. Another program for owner-occupied multifamily dwellings includes a loan loss reserve, debt-to-income ratios not typically qualified in the marketplace, extended loan terms, the use of utility bills as the repayment mechanism, 61 and other elements for "credit-challenged" applicants.
- o New York's 2015 State Energy Plan sets a priority on helping "communities disproportionately impacted by air pollution pursue a clean energy future." In 2017, the New York Public Service Commission issued an order adopting a Universal Energy Affordability Policy, which limits energy costs for New York's Low-to-moderate-income households to no more than 6% of household income. As part of the order, the Commission directs that utilities open their low-income discount programs to all households that currently receive the Home Energy Assistance Program (HEAP), regardless of fuel or benefit type. In concert with the Commission's adoption of the Energy Affordability Policy, a task force was established to develop new strategies to reduce the energy burden and increase access to clean energy benefits for all of the state's low-income households. Other initiatives in New York include commitments in the state's 2016 Executive Order 166 establishing the Clean Energy Fund to provide more than \$230 million for programs in the low-to-moderate-income sector and establishment of job training and apprenticeship programs in partnership with utilities and labor groups.

⁶⁰ Financial Partnership Secures Growth of Nation's Leading Low-income Residential Solar Provider. Connecticut Green Bank. Last Accessed July 1, 2019. https://ctgreenbank.com/posigen-libremax-capital-ipc-cgb-credit-facility/

⁶¹ On-bill Energy Efficiency. American Council for an Energy Efficient-Economy. Available at: https://aceee.org/sector/state-policy/toolkit/on-bill-financing

- o The Massachusetts 2016 Solar Energy Act requires the establishment of differentiated incentive levels to support deployment of cost-effective solar statewide, including community and low-income solar. Tariffs earmark certain percentages of solar generation: At least 50% of energy output is allocated to low-income customers in the form of bill credit; 100% of generation of a unit less than 25kW must be allowed to low-income households; units with more than 25kW must provide 100% of its generation to public housing authorities or to customers where at least 25% of the housing served is rental units with residents who are at or below stipulated median incomes. Massachusetts also offers low-income households a solar loan program that includes a 1.5% interest rate buy down; access to a loan loss reserve for residents with insufficient credit records; and up to 30% reduction on loans up to \$10,500.
- New Hampshire law places a \$1 cap on the sale of each RGGI CO₂ allowance and directs proceeds above the cap to be rebated to electric ratepayers in the form of bill assistance. Subsequent law requires that 15% of the auction proceeds below the \$1 allowance sale cap be directed to the state's low-income energy efficiency program.
- The Massachusetts Affordable Access to Clean and Efficient Energy Initiative (AACEEE) was launched in 2016 with the mission of increasing access of low- and moderate-income residents to energy efficiency and clean energy technologies. With an initial \$15 million funding commitment, the plan focuses on three categories of actions:
 - Work in partnership with affordable housing developers to maximize energy efficiency and renewable investments during key points in the capital cycle.
 - Target energy efficiency and clean energy funds to better serve low- and moderate-income residents. Examples of projects include demonstration and pilot programs to build zero-energy modular homes; grants for innovative projects to demonstrate new models for uptake of renewables in low-income dwellings; funding for renewable systems for recipients of the state's energy assistance program; installation of renewable systems in public housing units; and others.
 - Strengthen clean energy demand among low- and moderate-income homeowners and housing developers.
- Rhode Island uses a portion of RGGI auction funds to support programs in which the state's largest utility is directed to offer programs that are delivered via the state's Community Action Agencies to eligible low-income households to subsidize electricity and heating costs;
- New Jersey's draft Energy Master Plan, issued in June 2019, focuses on several strategies that are specifically intended to address disadvantaged communities and consumers, including:
 - Accelerate deployment of renewable and distributed energy with a focus on historically underserved populations.
 - Support community energy planning and action in underserved communities.
 - Expand the state's clean energy economy by conducting a clean energy workforce needs assessment, expanding the clean energy job-training program, and exploring establishment of a green bank.

Additionally, New Jersey's statute stipulates that 20% of auction proceeds be directed to low- and moderate-income residential programs. The RGGI rules adopted by New Jersey in June 2019 direct the Board of Public Utilities, Economic Development Authority, and Department of Environmental Protection to develop a strategic funding plan for use of the auction proceeds that is consistent with six objectives. These objectives include being "directly responsive to the negative effects on human health and the environment in communities that are disproportionately impacted by the effects of environmental degradation and climate change," and providing "co-benefits to the state." The rules stipulate that funded projects will have at least one objective ranked by the State as "critical" and that at least one funded initiative will be critical for each objective. Rhode Island's 2019 plan for distribution of RGGI auction proceeds includes \$150,000 to support a pilot program with Rhode Island Housing and the state's largest utility to increase energy efficiency and renewable, thermal, and solar technologies to low- and moderate-income households. The project will create a replicable zero-net energy building design and install solar PV and air source heat pumps in residential low- to moderate-income properties that have installed a number of energy efficiency measures;

- Maryland's RGGI auction proceeds are distributed by the state's independent Strategic Energy Investment Fund (SEIF), to which RGGI auction proceeds are the largest contributor. At least 50% of SEIF funds are dedicated to lowincome households, 20% for energy efficiency half of which is dedicated for low-and-moderate income households. A portion of SEIF funds are used for competitive energy efficiency projects in low- and moderate-income communities. Funds are awarded to nonprofit organizations, such as housing organizations, with distribution depending on the number of low-to-moderate-income residents served.
- Quasi-governmental, nonprofit Energize Delaware is implementing recommendations of its 2015 strategic plan to expand energy efficiency and renewable energy offerings to low-to-moderate-income households, including multifamily and rental dwellings. As part of this effort, Energize Delaware and the state housing authority worked together to add energy efficiency requirements to the state's low-income tax credit program. Energize Delaware offers low-interest construction loans and other financial benefits to offset the additional cost of new energy efficiency requirements. The program is being made available for renewables projects as well. The program is available for dwellings in which 80% of residents are at the area median income. Delaware is also supporting a pilot project with a city housing development corporation, a modular home developer, and a nonprofit energy services provider. The project provides down-payment assistance and low-interest financing to low- and moderate-income homeowners purchasing zero-energy modular homes. RGGI auction proceeds and other clean energy funds are used to offset the differential costs associated with energy efficiency upgrades, solar panels, and Energy Star appliances.

- Programs designed for low-income households in Maine include: income-blind incentives to purchase and install efficient heat-pump water heaters, and direct shipping of kits to self-install LED lightbulbs, and energy- and watersaving aerators and showerheads.
- The 1997 law that restructured and deregulated the energy industry in Massachusetts established a low-income conservation fund with a per kWh charge on electric customers. In 2010, the program received additional funding through the 2008 Green Communities Act, which required that 10% of electric utility program funds and 20% of gas program funds be spent on comprehensive low-income energy efficiency and education programs. The legislation further directed that these programs be implemented through the low-income weatherization and fuel assistance network with the objective of standardizing implementation among all utilities and maximizing ease of access for residents. Services to low-income residents occur through the Massachusetts Low-Income Energy Affordability Network and are implemented by local community action agencies.
- Maryland uses its Strategic Energy Investment Fund to support several programs targeted at low-income households, including electric utility payment assistance. Additionally, the state requires utilities to establish energy efficiency programs that equal 2% of their retail electric sales.
- Several states are undertaking community renewables programs, ⁶² including:
 - The Rhode Island Commerce Corporation is conducting a Community Renewables Pilot Program. The program is a first-come-first-served, rolling-basis application process for low-to-moderate-income (as defined by the A-60 category of the National Grid Rate Code) and Basic Residential (A-16 National Grid Rate Code) customers. A-60 customers will receive \$500, and A-16 customers will receive a \$300 flat rebate amount on their Community Solar bill.
 - In 2017, New Hampshire passed the New Hampshire Clean Energy Jobs and Opportunity Act, which intends to eliminate market barriers to solar energy that low-to-moderate-income residential customers face. The state issued a request for proposals in March 2018 to establish community solar projects with a focus on low-and moderate-income residential electric customers that are funded by Renewable Portfolio Standard alternative compliance payments. During the first round of grants, \$400,000 in projects were selected. A second request for proposals with \$650,000 in grants was issued in spring 2019.
 - New Jersey adopted rules in January 2019 to implement the state's 2018 Community Solar Energy Pilot Program. The three-year pilot program reserves 40% of the overall program capacity for low-to-moderateincome households. The state gives preference to applications for Environmental Justice projects; projects

⁶² The vision for U.S. Community Solar: A Roadmap to 2030. GTM Research. 2018. Prepared for Vote Solar. Last Accessed June 29, 2019. https://votesolar.org/policy/policy-guides/shared-renewables-policy/csvisionstudy/

for which at least 51% of capacity is for low- and moderate-income subscribers; and projects that are a partnership with a municipality, local community organization, or affordable housing provider.

• NY-Sun is New York's overarching program to advance accessibility of solar to all residents through community solar and other financing mechanisms. Several initiatives are currently under way, including a grant program to community-based organizations, affordable housing developers, and technical assistance providers for predevelopment costs to establish multifamily, affordable-housing solar projects; establishment of a loss reserve program; and the "Solar for All" program providing income-eligible households with monthly credits on utility bills and no up-front costs to participate in community solar projects. The state also directs utilities to allow recipients of income-gualified utility bill discounts to participate in community solar programs;

• Maryland has established several provisions in its community-based solar programs to increase solar in low-tomoderate-income households, including: up-front grants to community solar subscriber organizations in low-tomoderate-income communities; incentives in Power Purchase Agreements for low-to-moderate-income residents, including ease of cancellation and transferability intended to address the needs of renters; and a loan guarantee program designed to reduce financial risk to solar financiers, including those related to requirements for credit scores. The state's 2017 approved solar tariffs require that 30% of the state's pilot residential community solar program be dedicated to low- and moderate-income projects with at least 10% going to low-income households.

Connecticut is involved in a two-year pilot program to advance the development of community-based renewables, referred to in Connecticut as "shared clean energy facilities (SCEFs)," with an objective of expanding access to clean energy by low- and moderate-income consumers, renters, and others. In 2018, the legislature enacted a law to institutionalize the program building off the initial pilot program. The law requires that no less than 10% of the total capacity of each facility must be dedicated to low-income customers specifically and that no less than an additional 10% of total capacity of each facility must be subscribed to low-income customers, moderate-income customers, or low-income service organizations. Additionally, the law allows DEEP to establish program preferences for projects that serve low-income customers and SCEFs that benefit customers who reside in Environmental Justice communities.

Complement state climate programs with use of other legal authorities or resources to address the needs of under-resourced communities – including interagency efforts.

- In April 2019, the Rhode Island governor announced a \$650,000 grant from the Doris Duke Charitable Foundation to form a partnership with the national nonprofit American Forests to implement forestry projects that meet the criteria of beautifying urban areas, mitigating climate change and heat island effect in urban areas, and improving public health.
- At least two states are undertaking efforts to develop programs that would complement RGGI and address emissions from utilities in use during peak demand periods:
- Pursuant to its 2018 Act to Advance Clean Energy, Massachusetts is developing a Clean Peak Standard, which would provide incentives to clean energy technologies that can supply electricity or reduce demand during seasonal peak demand periods. Some environmental advocates have expressed concern about provisions that authorize use of "waste-to-energy" facilities as allowable clean energy under the program. There was a similar concern on the part of the advocacy community with regard to provisions in Maryland's recent 2019 Clean Energy Jobs Act.
- Noting that peaking facilities often exist in Environmental Justice communities, the New York Department of Environmental Conservation proposed a regulation in March 2019 that would lower thresholds for nitrogen oxide (NOx) emissions and phase in control requirements giving facilities options to meet the new standards by installing renewables or batteries.
- Delaware uses a portion of RGGI auction funds earmarked for program administration to establish a state agency competitive grant program, the Strategic Opportunity Fund for Adaptation (SOFA). The grant program is intended to "support state agencies' progress toward implementing actions that will strengthen the state's preparedness and ability to adapt to current and future effects of climate change." The program's guidance identifies efforts to protect vulnerable populations or communities from health and safety risks related to climate change as a priority. Vulnerable populations include minority, low-income, and immigrant communities; children; pregnant women; seniors; individuals with disabilities or health conditions; outdoor workers; maintenance staff who work in unconditioned work spaces; and emergency responders. Efforts funded through SOFA include grants to:
 - The State Housing Authority to support its efforts to enhance energy efficiency in qualified rental housing units. The agency required property owners applying for low-income tax credits to meet a higher standard of energy efficiency; created a partnership with several affordable housing developments that were under review for low-income tax credits to promote energy efficiency measures; and is conducting a spatial analysis of 200 to 300 public and private low-income housing units to assess exposure to flood hazards. RGGI auction proceeds and other clean energy funds are used to offset the incremental cost of adding energy efficiency features. The state supports two nonprofit energy efficiency technical assistance providers to deliver services to participating developers. Affordable multifamily residential properties with five or more units are eligible.
 - The State Division of Public Health to create a climate change and vulnerable populations project as part of a newly created state Environmental Public Health Tracking Network in which geospatial data targets communities where vulnerable populations may have greater exposure to climate-related hazards, including temperature variations.

- Several states have proactively developed programs to offer resources for structural repairs needed to make low-tomoderate-income residences eligible for the federal weatherization assistance program (WAP)
 - Delaware agencies have collaborated to create a "pre-weatherization" program in which income-eligible homes denied for weatherization assistance due to the need for structural repairs (e.g., plumbing, windows, roof repairs) are identified, and RGGI auction proceeds are used to conduct the necessary upgrades to prepare the home for the weatherization program. Repairs range from \$3,000 to \$4,000 per home and may reach \$7,500. Once the home has been 'pre-weatherized,' it is automatically referred back to the Weatherization Program for energy efficiency upgrades. Approximately 250 homes have received free pre-weatherization repairs.
 - Connecticut has established several programs designed to address structural and health and safety repairs in
 homes to increase their eligibility for participation in the state's implementation of the federal WAP. Funding
 is made available through the state's Community Action Agency Network for structural home improvements;
 at least 60% of multifamily units must serve tenants at 80% of median income or below. Additional funds are
 available via a revolving health and safety loan fund for multifamily projects in the state.
 - Maryland allows use of its Strategic Energy Investment Fund for health-and-safety-related preweatherization costs in low-income dwellings.
- The Rhode Island Department of Health (DOH) Health Equity Zone Initiative directs more than \$10.4 million in funding from the federal Centers for Disease Control towards nine community-led Health Equity Zones designed to promote the building of healthier, more resilient communities. As part of the program, the state identified nine communities with high rates of health disparities and is collaborating with local officials and community-based partners to develop community-specific action plans. Three of the nine zones also have focused efforts on assessing climate change impacts on public health.
- New York's REVitalize program is intended to inform the state's efforts to address challenges of low-to-moderateincome and Environmental Justice communities in planning and developing community-scale clean energy programs. In its current program, the state awarded grants to community-based organizations that are providing services and working in partnership with state agencies to develop models for community engagement, ownership, and financing structures, customer enrollment, site selection, and other mechanics of effective community-based energy programs.
- A portion of RGGI auction proceeds is earmarked in Delaware to fund pilot carbon abatement programs with a focus on under-resourced communities:

Expansion of the state's Urban and Community Forestry Grant program, which includes evaluation criteria that prioritizes first-time applicants and establishment and/or maintenance of urban tree canopy. State staff conducted outreach to

urbanized communities with low percentage of tree canopy and staff assisted under resourced communities with the application process.

Establishment of the Delaware Sustainable Communities Planning Grant Program that provides grants for sustainable community planning. Fifteen of the 100-point selection criteria are given for equity factors, including demonstration that the project involves and engages vulnerable populations (including minority, low-income, non-native English speakers, etc.) and/or considers the needs of vulnerable populations and leads to actions that improve quality of life or reduce risks to vulnerable populations.

- Several states have dedicated programs that involve outreach and education programs and partnerships with community-based organizations designed to educate disadvantaged communities and consumers about availability of clean energy and energy efficiency resources:
 - Following a model that was successful in Philadelphia, Pennsylvania, Delaware has established neighborhood energy centers in communities with high poverty rates in partnership with faith-based organizations, community centers, boys' and girls' clubs, libraries, and other community-based organizations. Visitors to the centers will receive energy counseling and a "lite" version of a home energy assessment.
 - The Massachusetts Environmental Justice Program is housed within the Secretariat of Energy and Environment and oversees implementation of the state's formal Environmental Justice Policy that was updated in 2002 and revised in 2017. The program works closely with other agencies on design and implementation of clean energy and climate programs, including holding meetings in identified Environmental Justice communities as part of RGGI program reviews.
 - Maryland funds local third-party organizations to conduct outreach and education to low- and moderateincome households regarding community solar, including the availability of targeted financing mechanisms to increase participation.
 - New York uses Clean Energy Fund monies to support nonprofit and community-based organizations to promote awareness of benefits of and resources available to promote adoption of energy efficiency and clean energy in low-to-moderate-income communities.

APPROACH	EXAMPLES
Formally and/or informally monitoring or tracking efforts of RGGI and state climate programs to address program impacts on disadvantaged communities and consumers.	 During the second RGGI program review, Environmental Justice advocates asked Massachusetts to conduct an equity analysis of the program. In response, the Massachusetts Department of Environmental Protection (MassDEP) conducted a mapping exercise in which it overlaid emission trends of several pollutants (CO₂, NO₂, SO₂) with the state's data regarding Environmental Justice communities. The outcomes were shared with the public and in several public meetings in Environmental Justice communities. The Massachusetts Environmental Energy Efficiency Advisory Council maintains a website with utilities' program reports, including on low-income programs, the overall program's Annual Report to the Legislature, and a quarterly dashboard. The state's Income Eligible Coordinated Delivery Initiative requires utility quarterly reporting to the state Energy Efficiency Advisory Council. Reports include income-eligible programs and are maintained on the council's website. Maryland has established several systems designed to track programs and policies. Several reports track efforts to address low-and-moderate-income sectors. These reports include: An overall annual report of the state Energy Administration on annual spending of the Strategic Energy Investment Fund and a separate annual report on its low-to-moderate-income grant program; Annual report of the Maryland Commission on climate change; Annual report of the Maryland Public Service Commission; Annual report of the State Department of Housing and Community Development on the agency's financial investments, including those targeted at low-and-moderate- income dwellings. Article 10 of Virginia's adopted RGGI rule requires the state to "evaluate impacts of the programspecific to Virginia, including economic, energy, and environmental impacts and impacts on environmental justice communities. The department

Monitoring and tracking program progress

- In 2011, Connecticut established a statutory requirement stipulating that the Green Bank must determine that an equitable amount of combined clean energy funds have been distributed to small and large customers with a maximum monthly peak demand of 100 kilowatts in census tracts in which the median income is not more than 60% of the state median income. The law also directs the state Department of Energy and Environmental Protection to issue an annual report determining an equitable share of clean energy funds. Since passage of the law, the state has issued three reports, the first of which highlighted the need to conduct marketing, outreach, and mentoring efforts to encourage low-income household participation in clean energy programs.
 - To assess data on housing types, fuel sources, and housing vintage for low-income households, partners in Connecticut used the Low-Income Energy Affordability Data tool available via the Department of Energy Clean Energy for Low-income Communities program, which contains data on energy burden and housing for low-income households and can be used for energy policy and program planning.
 - Connecticut's Energy Efficiency Dashboard provides online access to energy usage and savings statewide with the ability to track trends at the municipal level and for the state's two energy distribution companies.

State Perspectives

In general, there appears to be widespread commitment among the RGGI states to direct state climate program benefits, in some form, to disadvantaged communities and consumers. A strong focus of those efforts appears to be on establishing funding and targeted financing programs to support penetration of energy efficiency and renewable energy programs to benefit disadvantaged communities and consumers. All states pointed to challenges faced by low-income households to adopt energy efficiency and renewable energy, including the need for pre-weatherization repairs and the need to split financial incentives for renters between landlords and tenants. Given the status of federal leadership on climate policies, states expressed a commitment to advance bold, swift climate action both individually and at the multistate level.

Challenges

States point to several challenges in expanding their efforts to direct RGGI and state climate program benefits to disadvantaged communities and consumers:

- Limited resources States indicate that advancing innovative programs, such as those that direct program benefits to disadvantaged communities and consumers, necessitates resources for additional efforts, such as supporting greater interagency efforts, community-based capacity building, and stakeholder engagement. For some states, program support is affected by hiring freezes and periodic efforts to direct RGGI revenue to general funds.
- Focus on CO₂ emissions In many states, climate program outcomes are measured by indicators of CO₂ emissions reductions and, as a result, CO₂ reductions are the key measured program outcome. States are developing complementary indicators to track program co-benefits, such as funds directed to low-income communities.
- Broad challenges For mission-driven state agencies, efforts to direct program benefits to disadvantaged communities and consumers involves much broader multi-agency, multisector policies that involve greater collaboration and program integration with other state and local agencies as well as capacity building beyond a single agency's traditional mission.
- Public support for state climate action policies varies among and within the states, as would be expected for diverse states and priorities. Public support can inform the nature of climate action in a state and, for those states with limited resources, advancing even core programs can be a challenge.
- Ensuring low electricity rates States are acutely aware of the need to balance state policies that address climate change with demands for keeping electricity rates low both from a variety of consumer sectors, including the business community, homeowners, etc.
- Multistate collaboration With regard to advancing multistate climate programs, states point to the need to advance shared policies when, as one state representative said, "The stars line up and the political forces in each state are ready to move."

Pilot and Demonstration Efforts

Given increased state efforts over the past several years to systematically direct climate program benefits to disadvantaged communities and consumers, many states are undertaking pilot and demonstration programs before adopting fully scaled policies and programs. States in the RGGI region are aware that now is a "period of innovation" from which best practices will likely emerge. States express a need to have the time to undertake demonstration and pilot projects and build interagency and public partnerships before identifying "one-size-fits-all" best practices. They are eager to learn from each other. States indicated that it would be beneficial if outcomes of successful demonstration and pilot efforts were evaluated using additional indicators that complement CO₂ emissions reductions (such as health benefits or community-based economic benefits), as well as professionally curated so that states can more easily learn from each other's efforts.⁶³

Leadership

State staff indicate that articulating policy priorities from the highest levels of government sends important signals that drive innovation at the program staff level. For states where legislative and/or executive branches mandate or articulate the value of directing program benefits to disadvantaged communities and consumers, there is a clear expectation that agency programs will respond. Responses may include: staff-initiated new efforts; seeking out partners in other agencies (e.g., housing, community development, social services, etc.) that can support multisector efforts; and/or devising an innovative use of an existing authority. Every state agency has staff who are especially self-motivated innovators and who respond to leadership signals, especially when it involves new and/or innovative program initiatives.

Clarity on Defining Beneficiaries of Policies

Among and within the states is a broad array of definitions used to indicate disadvantaged communities and consumers, including definitions and references to:

- Low income
- Low and moderate income
- Residents eligible for affordable housing
- Poverty and "working poor" or "asset limited, income restrained, employed"
- Socially vulnerable with regard to climate change impacts
- Environmental Justice communities
- Minority
- Socially disadvantaged or disadvantaged communities
- Under represented and/or under resourced
- Residents with a high proportion of health disparities or health inequities

For some terms, formal definitions and even spatial identification (e.g., mapping of Environmental Justice communities) is available. For other terms, there is no specific definition or identification. In some cases, references to populations versus communities appear to be unclear.

Value of Participatory Processes and Stakeholder Engagement

In general, the states indicate a strong appreciation for participatory processes and stakeholder engagement and a willingness to receive a variety of perspectives from members of the public, even when challenged. States indicate that they would benefit from, and welcome, a deeper understanding of methods to foster meaningful and efficient participatory processes and stakeholder engagement. States also generally welcome constructive efforts to enhance their understanding of strategies to consider equity issues associated with state climate policy. To this end, several states have adopted the

⁶³ Cook, Jeffrey J. L. Bird. Unlocking Solar for Low- and Moderate-Income Residents: A Matrix of Financing Options by Resident, Provider, and Housing Type. National Renewable Energy Laboratory; United States Department of Energy. NREL/TP-6A20-70477. January 2018.

practice of hosting "listening sessions" with populations and communities for which they intend to target program benefits. New York's Low-Income Forum on Energy recently held listening sessions that pointed to messages similar to those reported by other states, including Maryland, Massachusetts, New Jersey, Virginia:

- Energy affordability is an issue affected by many factors, including income, educational attainment, access to energy options, affordable housing and transportation access, etc. Clean energy and energy efficiency interventions should be approached in a holistic manner to address root causes of lack of affordability.
- Coordination among state programs is critical and must be improved. Design of government programs must involve collaboration with trusted local and community-based organizations and must consider local characteristics.
- Public funding to support climate change, energy efficiency, and clean energy should be equitably, not equally, distributed.
- Programs should not be designed only as "hand-outs." Instead, programs should be designed to build capacity and self-sufficiency among traditionally disadvantaged communities and consumers through workforce development and training.
- Traditional financing programs are not effective for low-income households
- Increased awareness of the value of energy efficiency and clean energy programs is needed along with consistent education and outreach about the availability and benefits of government programs.
- State government provides an important role in adding "credibility" to programs.

States point to several examples where participatory processes contributed to informing state climate policies and programs, including development of community solar programs and climate and health initiatives; establishing programs to address repairs needed to make a household eligible for federal weatherization and energy assistance programs; developing alternative financing mechanisms for energy efficiency and renewable energy upgrades in low-income communities; and developing regulatory initiatives to address emissions at power plants below the RGGI 25 megawatt threshold.

The 2019 fourth edition of the American Council for an Energy-Efficient Economy City Clean Energy Scorecard compiles information on local policies and actions to advance clean energy, comparing 75 large cities across five policy areas. In the 2019 report, the cities ranked in the top 10 overall for all five policy areas include Boston, MA and New York City, NY. Hartford, CT and Providence, RI are considered "cities to watch," given their recent policy activity. The report's discussion on equity-driven approaches to clean energy planning, implementation and evaluation, examines efforts to advance equity through four approaches developed for the Urban Sustainability Directors Network:

- Procedural equity through which cities offer inclusive, accessible, authentic engagement and representation in processes to develop or implement sustainability programs and policies.
- Distributional equity in which programs result in fair distribution of benefits and burdens across all segments of a community, prioritizing those with highest need
- Structural equity through which decision-making institutionalizes the recognition of historical, cultural, and institutional dynamics that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups; and

• Transgenerational equity – in which decisions consider generational impacts and avoid placing unfair burdens on future generations.⁶⁴

In its review of cities efforts to advance procedural and structural equity, the report focused on efforts associated with planning, implementation, and evaluation of their city programs using the following three indicators:

- Equity-driven community engagement (i.e. the city has structured its public engagement strategies to increase feedback from marginalized groups);
- Equitable decision-making (i.e. the city has given marginalized residents a formal role in decision-making processes for sustainability initiatives); and
- Accountability for Equity (i.e. the city has adopted structural equity procedures).

Based on those criteria, the report found that three cities in the RGGI region, Baltimore, Boston and New York, scored in one of the three categories and the City of Providence, RI scored in all three categories.⁶⁵

Role of Climate Policies in Context of Environmental Programs in General

Some stakeholders, particularly those who are engaged with frontline and Environmental Justice communities, take the position that state climate policy should not only be a vehicle to address the adverse impacts of climate change on existing stressors such as environmental burden, but that state climate policy should also address root causes of the existence of those stressors. This creates a challenge for states in which oversight of climate programs is a distinct element within a larger structure of environmental authorities. Additionally, localized impacts are not necessarily a focus of multistate climate efforts in which a broader carbon emissions cap is set for each state over a region rather than on individual, local sources of carbon and other emissions. States indicate a willingness to explore the development of state-based approaches to supplement multistate regional climate policies with complementary programs designed to address challenges faced by disadvantaged communities and consumers. Examples identified by states include: urban forestry programs; community-based health equity efforts; greater investment in under-resourced communities from climate programs and through coordination with programs in other state agencies; and use of other existing state authorities to address concerns about localized sources of air pollution, such as emissions from peaking power plants under the RGGI 25 megawatt threshold limit.

⁶⁴ Park, Angela. Equity in Sustainability: An Equity Scan of Local Government Sustainability Programs. Urban Sustainability Directors Network. 2014. Available at:

https://www.usdn.org/uploads/cms/documents/usdn_equity_scan_sept_2014_final.pdf

⁶⁵ Ribeiro, David, S. Samarripas, K. Tanabe, H. Bastian, E. Cooper, A. Drehobl, S. Vaidyanathan, A. Jarrah, and M. Shoemaker. The 2019 City Clean Energy Scorecard (Table 18) 2019. American Council for an Energy-Efficient Economy. Available at: https://aceee.org/sites/default/files/publications/researchreports/u1904.pdf

V. Efforts Outside the RGGI Region

As part of this project, efforts to direct state climate policy and program benefits to disadvantaged communities and consumers were reviewed in four diverse jurisdictions – two states and two cities – outside the RGGI region:

- State of California
- State of Illinois
- Austin, Texas
- o Columbus, Ohio

Similar to the review of efforts in the RGGI states in Chapter IV, this section is not intended to be exhaustive of all efforts under way in these states or cities, or indeed, representative of state efforts generally outside the RGGI region of Northeastern and Mid-Atlantic states. Rather, this select analysis is intended to be illustrative of the nature of efforts in progress in these four different parts of the country. More detailed summaries of efforts initiated in these jurisdictions can be found in Appendix C.

Current Efforts of Select Jurisdictions Outside the RGGI Region

Common among these four jurisdictions outside the RGGI region is leadership commitment to address issues around disadvantaged communities and consumers that go beyond economics. In these jurisdictions, policies and programs are inherently designed to address historic barriers that populations face with respect to equity and fairness and recognize the interconnectedness of climate and/or energy programs with health, housing, and transportation. They also recognize the significance of engagement with these communities and consumers through design and implementation of state or local initiatives. Several examples follow:

Development, design, and articulation of policies and programs

- Articulation of equity objectives as part of state or local climate policy
 - California's *Global Warming Solutions Act of 2006*, frequently referred to as AB 32, establishes a statewide and economy-wide carbon reduction and trading program. The law requires the state Air Resources Board to ensure that, to the extent feasible, greenhouse gas emissions regulations, programs, mechanisms, and incentives direct public and private investment toward the most disadvantaged communities in California. Proceeds from sale of state-owned carbon allowances are deposited into the Greenhouse Gas Reduction Fund, which is coordinated under the *California Climate Investments Initiative*. State law requires that, at minimum, 35% of "priority population investments" from cap and trade revenues be directed as follows: 25% to projects located in and benefiting individuals living in disadvantaged communities anywhere in the state; and an additional 5% for projects located in and benefiting low-income communities within a half mile of a disadvantaged community.
 - Research Priority 1 of California's Strategic Growth Council's *Climate Change Research Program's Investment Plan* notes that projects should be designed to address and facilitate achieving climate outcomes in low-income and disadvantaged communities; community engagement is a component of the criteria for funding evaluation of research proposals.

- California Public Utilities Commission (CPUC) adopted an *Environmental and Social Justice Equity Plan* with goals and a workplan for integrating equity and access across all CPUC proceedings.
- California Energy Commission's *Diversity Resolution* is designed to increase fair and equal opportunities for small businesses, and women-, disabled veteran-, minority- and LGBT-owned businesses, as well as economically disadvantaged and underserved communities, to participate in and benefit from commission programs.
- The Illinois *Future Energy and Jobs Act* establishes provisions in the state's Renewable Portfolio Standard planning framework providing opportunities for low-income customers and communities; minimum spending for energy efficiency programs targeted at lowincome customers; and incentives in the Illinois's Solar for All Program designed to overcome barriers to participation in renewable energy programs that low-income customers have historically faced.
- Austin Energy (publicly owned municipal electric utility) has an *Energy Resource Generation and Climate Protection Plan* that establishes targets for renewables, energy use reduction, etc. It also establishes an affordability goal and an affordability statement that "Austin Energy must be financially sound, the cost of electric service must be affordable for all classes of customers (with particular attention to the low income and underserved customers), and rates must be competitive to ensure the retention and attraction of businesses for a strong local economy."
- Austin's *Community Climate Plan* has a goal of ensuring that affordable housing and residential neighborhoods are within a quarter mile of existing or funded new transit options. The city's Strategic Housing Blueprint cites achieving an equitable housing environment in which integration, diversity, and inclusion are championed. While the Blueprint and subsequent Implementation Plan are not driven by specific climate goals, the planning and implementation processes to address affordable housing are connected with mobility, transit, and energy policies. Scoring criteria have been strengthened for affordable housing development assistance and land acquisition to prioritize affordable housing near transit.
- Consideration of equity has been incorporated into the growth criteria for the high-capacity corridors identified in Capital Metro's (central Texas's regional public transit agency) Project Connect Plan. Austin is a key partner in Project Connect, which is intended to reduce congestion in the City of Austin by building out a high-capacity public transit system.
- Smart Columbus's *Project Management Plan* recognizes equitable access to transportation as an integral piece to solving congestion, vehicle crashes, infant mortality, poverty, and unemployment and has identified two of four demonstration areas as important for addressing equity issues.
- Engage disadvantaged communities and consumers as part of participatory processes
 - California's Strategic Growth Council administers the *Transformative Climate Community* grant program to support community-driven, collaborative projects within a five-square-mile area to empower the communities most impacted by pollution to choose their community vision, strategies, and projects. The majority of a project must be within the top 5% of the most disadvantaged communities, with the remainder occurring within a disadvantaged or low-income community. For example, an award of \$33.5 million was

given to the Watts Rising Collaborative, led by the Housing Authority of the City of Los Angeles, to support low-carbon transportation options, affordable housing, and thousands of street trees.

- Participants and organizations in Environmental Justice and historically underserved communities are to be included in development of criteria for evaluating the *Solar for All Program* in Illinois.
- Stakeholders from the disadvantaged community in which Smart Columbus's autonomous vehicle pilot has been developed were consulted in project development.
- Formal government processes
 - California's utility and energy commissions jointly approved members of the *Disadvantaged Communities Advisory Group* established by law. This Advisory Group includes representatives of disadvantaged communities who provide advice on state programs proposed to achieve clean energy and pollution reduction. In its first year, the Group identified *Energy Equity Indicators* and their further development as a critical tool; adopted an Equity Framework; proposed changes to the utility commission's Draft *Environmental and Social Justice Action Plan*; drafted recommendations to aid in implementation of another complementary air quality law dealing with non-vehicular air pollution, criteria air pollutants, and toxic air contaminants; and provided recommendations regarding the utility commission's proceedings on affordable energy options in San Joaquin Valley communities.
 - The Illinois Future Energy and Jobs Act has goals for Environmental Justice communities and gives discretion to the state Power Agency to define Environmental Justice community. In addition to designating Environmental Justice communities, the agency established a process by which a community may self-designate.
 - Illinois's *Income Qualified Energy Efficiency Advisory Committee* includes two subgroups (one for each geographic region of the state) to assist in design and evaluation of income qualified energy efficiency programs. The groups receive input from community-based organizations, implementation contractors, utilities administering income qualified energy efficiency programs in Illinois, and other interested stakeholders.
- Interagency collaboration
 - The California *Climate Investments Initiative* coordinates investments from the state's cap and trade programs across state government with more than 20 state agencies involved in program development, project selection, and implementation of 60 programs. While 60% of California's funds are appropriated to the California High Speed Rail Authority, Strategic Growth Council, and California State Transportation Agency, additional annual investments are made through the state Budget Act.
 - Along with Austin's Neighborhood Housing and Community Development Department, Austin Energy works with local housing repair nonprofit partners to support a referral network to perform home repairs for low-income customers and provide no-cost energy home improvements.
 - Smart Columbus is an initiative of the mayor's office co-located with a nonprofit partnership of business leaders that also coordinates with the city's Division of Fleet and Sustainable Columbus office. The city leads the delivery of work associated with grants (Smart City Challenge, Paul G. Allen Foundation, and American Climate Change Challenge) and leverages resources and

platforms with the Columbus Partnership. Efforts are designed to address overarching equity objectives

Design and delivery of program benefits

- Funding mechanisms
 - California has invested more than 57% of its California Climate Investments, approximately \$1.5 billion, towards priority populations since the program's first appropriation in 2014. Priority population investments include programs in Transportation and Sustainable Communities, such as resident mobility vouchers; vouchers for truck and bus fleets to purchase ZEVS and near-ZEVs; grants for community car shares, bike shares, van pools, and ride sourcing; public van pools for agricultural workers; affordable housing near public transit; and natural resources and waste diversion, such as support for the state's program that provides career development training for 18- to 25-year-old adults, a majority of whom are from disadvantaged and/or low-income households, through a year of paid state service to support energy conservation, fire prevention, forest health, and urban greening. Other examples are funding for on-site renewable energy technologies for agricultural operations in which almost 40% of the awards are in disadvantaged communities and almost 60% is in low-income communities.
 - California's new program to advance solar on multifamily affordable housing provides approximately \$100 million for projects in disadvantaged communities or where 80% of households on the property are low income. Participants must complete an energy audit or have recently participated in an energy efficiency program. A program-specific advisory council will contribute to program development and implementation, monitor progress, and provide advice to ensure benefits to low-income-housing tenants and disadvantaged communities are maximized.
 - Illinois provides incentives to expand the low-income solar market. Its goal is to allocate 25% of incentives to projects within Environmental Justice communities on-site solar projects, community solar projects and on-site generation for non-profits and public facilities. The state's low-income community solar pilot project is competitively bid and must meet certain criteria, including economic benefits for members of the community where the project is located and partnership with an existing community-based nonprofit organization. Some funds under this program must include a project partnership that includes ownership by project subscribers.
 - Austin Energy has changed its residential solar rebate from a capacity-based program to a flat rate and has observed penetration is no longer concentrated in areas that are more affluent. It provides higher incentive levels for solar at multifamily affordable housing and provides discounted community solar rates for low-income customers.
- Other program elements specifically intended to direct state or local climate policy and program benefits to disadvantaged communities and consumers
 - Under the VW Settlement, California's lead agency (CARB) noted that "guiding principles for ZEV Access could include investments that accomplish the goal of broadening access to ZEVs, including making them available to disadvantaged and disproportionally impacted communities, lower income groups, and those with limited access to personal transportation." CARB urged VW to dedicate at least 35% of ZEV funds for investment in

disadvantaged, low-income, underserved, and disproportionally impacted communities. Electrify America, the VW subsidiary responsible for administering the settlement, noted its intention to follow this guidance.

- Austin's Equity Office has developed an *Equity Assessment Tool*⁶⁶ to be used by all city departments to identify opportunities to improve equity; among the first cohort to use the tool, the Transportation Department developed its first Annual Equity Action Plan for 2019.
- Columbus is conducting targeted outreach to historically disadvantaged neighborhoods with high energy burdens, employing residents as community energy advocates to motivate participation in its Energy Savers program. This program incentivizes community members to save energy by receiving a community-chosen reward (e.g., neighborhood schools receive hot water heater upgrades) if the neighborhood meets a certain level of participation. The advocates receive energy auditor training as a pathway to longer-term employment.
- Smart Columbus is piloting two projects: a trip assistance project to provide prenatal medical visits for women in areas with high infant mortality rates to decrease infant mortality and racial disparity, and a micro-transit autonomous vehicle project in disadvantaged neighborhoods to connect the public on short trips where other transit modes are not available.
- Programs to complement climate policies and programs
 - As a complement to its carbon-trading program, CARB is required by law to develop a community emissions reduction program to measure and reduce criteria and toxic air pollutants from mobile and stationary sources at the neighborhood level in disproportionately burdened or low-income communities. The state's auction revenue fund supports the Community Air Grants program in helping local organizations build capacity to become partners in identifying, evaluating, and reducing air pollutant exposure. For example, in one project, a community-based organization is leading an effort to better understand and reduce air quality impacts from vehicle exhaust at the San Ysidro Port of Entry. The organization will be able to sustain and expand a current network of community-operated air monitors, providing residents, the local air district, and state and federal agencies with data to better understand air quality impacts from vehicular border crossing at the new Port of Entry.
 - Through California's Department of Community Services and Development, Climate Investment funds are being used for the Low-Income Weatherization Program that will focus on direct installation of energy efficiency measures and solar PVs for low-income farmworker households at no cost to residents; some LIHEAP providers serve as partner agencies on the projects and therefore have the ability to augment services with LIHEAP funding.
 - California's Food Waste Prevention Program not only diverts waste from landfills and prevents greenhouse gas emissions but also promotes distribution of rescued food to support hunger relief agencies and employment. For example, one project funded through the state's Climate Investment initiative is supporting a new "Produce Depot" near the Los

⁶⁶ Note: Austin's Equity Assessment Tool was initially developed as a pilot effort. A review was conducted to inform future use of the tool. See: http://www.austintexas.gov/edims/pio/document.cfm?id=300307.

Angeles wholesale produce market, doubling its food recovery capacity and enabling it to better serve hunger relief agencies.

- Illinois law allows up to 6% of utility energy efficiency and demand response program revenue to be used for research, development, or pilot deployment of new equipment or measures. One utility launched 12 projects, totaling \$5.6 million, which are focused on improving program delivery, outreach, recruitment, and energy and costs savings to income-eligible customers as well as better understanding the intersection of health and energy efficiency opportunities. One health-based study includes research to evaluate three types of home ventilation systems and asthma outcomes, including measurement of indoor air quality metrics, monitoring asthma symptoms, and measurement of energy impacts.
- Illinois's EPA Office of Energy strives to achieve energy equity by investing in energy efficiency and clean energy technologies for municipal wastewater treatment that realize significant financial savings for localities which then pass savings on and reduce residents' energy burden. The program collaborates with University of Illinois to provide no-cost energy efficiency assessments that identify opportunities for energy, cost and emission reductions, and water quality improvements. Illinois EPA operates a grant program for municipalities to implement assessment recommendations.
- Outreach and education

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- Austin Energy's EVs Are for EVeryone program is an outreach program in support of lowincome and/or historically underserved communities, including alternatives to light duty vehicles such as electric bikes, motors, and scooters. The EVs for Schools program targets economically disadvantaged students and includes a STEM curriculum for middle and high school students, coupled with deployment of EV charging at schools.
- Austin Energy holds multiple community education and engagement activities. Examples: An annual Community Connections Resource Fair with a focus on high poverty zip codes as a holistic customer service approach and an annual Affordable Policy Summit that targets local social service providers, nonprofits, faith-based groups, government agencies, advocacy groups, and low-income-housing representatives.
- Sustainable Columbus's GreenSpot is a citywide program to engage peer-to-peer action to promote sustainability practices through recognition as well as rebates; targeted engagement includes local disadvantaged neighborhoods.
- Monitoring and tracking program progress This category includes sample efforts in the four jurisdictions outside RGGI to informally and/or formally monitor or track efforts of state or local climate programs to address needs of disadvantaged communities and consumers. Examples include:
 - California Energy Commission has developed Energy Equity Indicators to identify
 opportunities to improve access to clean energy technologies for low-income customers
 and disadvantaged communities; increase clean energy investment in those communities;
 and improve community resilience to grid outages and extreme events. Example indicators
 offered in an interactive mapping tool include: low-income areas with highest August
 electric bill; energy affordability; high-cost heating fuel use in low-income areas; areas with
 lowest utility investments; areas with low solar capacity per capita; areas with electric

vehicles coincident with solar capacity; electric vehicle infrastructure investment by location; asthma emergency room visits; heat-related illness; and temperature projections.

- The California Solar Initiative maintains a website that includes data for all solar photovoltaic systems interconnected through California investor-owned utilities' net energy metering tariffs. The utilities annually report their cumulative incentivized capacity to the California Energy Commission, and these values are added to the website annually.
- Agencies that administer revenue generated from California's cap and trade program must adhere to state funding guidelines. These guidelines include facilitating greenhouse gas emissions reductions; maximizing benefits to disadvantaged communities; targeting investments to disadvantaged and low-income communities and households; ensuring accountability and transparency; and supporting consistency among programs. California's Air Resources Board annually submits a report on spending from the state cap and trade revenue investments that includes an accounting of funded projects; measurements of program effectiveness; leveraging from other funding sources; assessment of investment demands; and program outcomes.
- Utility-based energy efficiency programs required to meet Illinois's Energy Efficiency Portfolio Standard are statutorily required to be evaluated independently, including detailed metrics for energy efficiency programs and energy savings specific to incomequalified customers.
- Illinois Power Agency must have an independent evaluator review the Solar for All Program every two years, including the impact of the program on the energy costs of participants.
- Austin's Office of Sustainability reports progress on its Community Climate Plan to the city's Joint Sustainability Committee and other pertinent Boards and Commissions.
- Austin Energy synthesizes data on its assistance program for low-income customers, including links between needs and services and program improvement ideas. Austin Energy shares this information at its Annual Energy Summit.
- The sponsor of Columbus's Community Energy Savers program has conducted an analysis of the first eight participating communities, finding each exceeded its goals.

Perspectives of Jurisdictions Outside the RGGI Region

Interviewees from all four jurisdictions commented on a series of common questions, including: what was working well, challenges they were facing, what they considered innovative, and what other advice they might like to give to colleagues. The questions were framed within the concept of benefits to disadvantaged consumers and communities, but the subjects were not discouraged from discussing broad topics as well. Below is a summary of their responses.

1. What is working well?

- Achieving meaningful emissions reductions.
- Providing consumer protections as part of climate and clean energy programs, including through disclosure forms, marketing, and consumer protection guidelines.
- Integrating weatherization with home repairs.
- Developing relationships with nonprofits and community stakeholders.

• Providing for responsivity to community groups and citizens, including equity concerns when city council directs a municipal utility. Interviewees believe that such a model ensures that the utility is responsive to the needs of residents more so than in a model of an investor-owned utility.

2. What challenges are you facing?

- Interviewees pointed to several challenges associated with identification and engagement of targeted populations, including challenges associated with:
 - Defining and identifying constituencies of concern. For example, it was suggested that some analytical approaches may leave out certain populations, such as low-income and/or rural residents who are in definite need of assistance.
 - Reaching disadvantaged communities and consumers. It is sometimes difficult to engage with income-qualified citizens to help them better understand the programs they can benefit from due to language barriers and lack of trust. Interviewees also pointed to the challenge in connecting communities to available opportunities, such as grants. They also noted that a team approach to engagement is required to address a range of these outreach needs.
 - Alignment of priorities. Interviewees pointed to the challenge of aligning investment priorities with the priorities of disadvantaged consumers and communities. For example, there may not be a one-size-fits-all electric vehicle infrastructure investment, and/or there may be other higher priority low-carbon transportation mobility options within a disadvantaged community than electric vehicles (e.g., community-based ride shares).
 - Cultural sensitivity. One interviewee recalled an organization's plan to tailor a guide specifically to new residents who were recent immigrants to the United States. After meeting with representatives from these communities, the organization members learned these residents only wanted a translation of existing guides rather than something specifically tailored to their communities, because the residents wanted to assimilate into the community.
 - Investment disparity. How to channel investments in disadvantaged neighborhoods is a challenge. One solution that was suggested is to require companies that want to operate a certain transportation mode, such as a bike share, to provide services in disadvantaged neighborhoods.
 - Shifting a cultural belief in some communities that automobile ownership equals independence.
- Technical and technology issues present the following challenges noted by interviewees:
 - Addressing older housing stock that is in disrepair requires effort that goes beyond fuel switching.
 - Community solar projects may not be serving the intended communities, such as in situations where the projects are legally allowed to be hundreds of miles away from the target community even though they are in the same utility service territory.
 - Historically underserved communities can be left behind in accessing new technology.
- Timeliness: Several interviewees noted that participatory processes and coordination among agencies and with stakeholders requires a time commitment. One interviewee also noted that

the time it takes for organizations to change activities or programs that may not be working well can also be a challenge.

• Workforce issues are a challenge with respect to:

- Providing access to new types of employment for workers in fading fossil fuel industries, especially in rural areas where demand for workers is not as high.
- Hiring employees with appropriate skill sets to address evolving technology as well as language skills other than English; finding recent graduates to fill positions as the workforce ages and to work in locations that are outside of big cities and, therefore, less attractive to younger employees...
- Affordability and scale are a challenge as follows:
 - Lack of affordable housing and exponential population growth leads to affordability challenges and displacement. Rapid population growth also leads to traffic congestion as each new person who brings a car increases wait time and increases carbon emissions, adding challenges to addressing equity, such as air quality impacts from such land use trends.
 - Nonprofits cannot take advantage of federal tax credits for solar. One interviewee noted the need to develop creative partnerships with third-party providers who can take advantage of federal tax credits. Such tax credits allow for a long-term power purchase agreement with customers, like nonprofits, who would not otherwise be able to participate in solar.
 - Lack of capital for home repair requires alternatives for low-income citizens to fully benefit from energy efficiency and renewable energy programs.
 - One interviewee noted the next big challenge for addressing long-term emission reduction goals will be to scale up programs for sequestration of carbon through natural lands as carbon sinks. This interviewee indicated that the public sector will need to leverage more private investment to achieve large-scale carbon sequestration, given the needed number of acres and forest management.
- Measurement challenges: One interviewee noted that although one can measure and obtain meaningful greenhouse gas emissions reductions, it is a challenge to communicate to legislators the broader benefits beyond current ability to measure and quantify such benefits.

3. What do you consider innovative?

- Organization: Several interviewees mentioned the extent to which addressing equity issues had become an overarching priority, such as having every division in an agency identify an equity "point person" or ensuring that equity is addressed in key planning documents.
- Programs: One interviewee pointed to community-based planning efforts in under-resourced communities as being innovative, highlighting programmatic opportunities to build capacity for accessing funding to enable such community-based efforts.
- Technology: Several interviewees mentioned having new technologies that can provide options in mobility, connected homes, lighting controls, and around the energy-water nexus.

• Options: Interviewees mentioned having a portfolio of options available to serve all customers as well as providing a whole-house approach for low-income customers to address energy efficiency.

4. What other advice might you like to give to colleagues?

- It is essential to consider equity, vulnerable communities, and your stakeholders at the early stages of a program, including program design.
- Multiple interviewees made the point that engaging stakeholders early and often is key to implementing a program and can change the dynamic between communities and government.
- Many interviewees noted that it is important for multiple agencies to coordinate programs to provide opportunities for leveraging resources, sharing information, and maximizing benefits for targeted constituencies.
- Interviewees pointed to the importance of continually evaluating programs and being open to making changes, being creative, testing, and looking for continual process improvement.

VI. Stakeholder Perspectives

The intersection of state climate policy with objectives to advance social equity is a dominant topic among stakeholders interviewed for this report. Interviews were conducted with leaders and advocacy organizations, consultants, and subject matter experts. For the purposes of this assessment, the authors have organized perspectives gleaned from stakeholders as well as identified six general themes in the literature: up-front participatory processes; the role of equity in states' efforts to advance climate action; the role of residents in identifying strategies to address climate change locally; providing equitable opportunities for investments; underlying limitations in the environmental regulatory system; and the role and function of government. Each theme is expanded upon below.

Up-front participatory processes

A consistent issue identified by all stakeholders is the benefit of, and need for, state and multistate efforts to more systematically undertake meaningful participatory processes to inform state policies and programs. Stakeholders indicate that current state and multistate processes can be improved to create mechanisms in which residents and community leaders are engaged in the up-front design of state climate policy through procedures that maximize participation. In addition to assessing greenhouse gas emissions reductions, stakeholders urge states to ask equity-based questions when forming state climate policies and participatory processes to inform state policies, such as:

- Who will be advantaged/disadvantaged the most by the decision?
- What do residents identify as priorities? One stakeholder pointed to the difference between asking where bikeshare bicycles should be located in a community versus asking residents whether a bikeshare is a priority for the community.
- Are those populations/communities most disadvantaged by a decision/program design historically disadvantaged, thus putting them at an unequal starting point for adoption of program benefits, which might inform program design?
- Can/should the decision/program design mitigate historic disadvantage?
- Is there the possibility that the decision or program design might be less effective for disadvantaged populations? One stakeholder pointed to electric vehicle rebates that are less likely to benefit low-income populations who do not have resources for up-front vehicle purchases and may lack the resources to apply for rebates. The question prompts consideration of how to make this option or others more equitable.
- Is the participatory process structured in a way that allows full participation of disadvantaged populations/communities?
- Who is "at the table" making the decision? Are the communities/populations most disadvantaged equitably at the table, and do those representing communities truly reflect the residents?
- Do all stakeholders have a "level playing field," meaning do disadvantaged communities and populations have all the capacity needed to be full participants in the process?
- Does the decision setting or messenger establish trust with disadvantaged populations and communities? If not, is a trusted intermediary needed?

Stakeholders point to strategies that are outlined in a variety of "toolkits" as well as research in the peer reviewed literature regarding elements of effective participatory processes.^{67,68,69,70} The federal Clean Power Plan rule, proposed by the previous administration, explained that meaningful involvement goes beyond traditional public hearings. Instead, it engages vulnerable populations in critical junctures in policy formation and ensures that overburdened communities have a strong understanding of the potential benefits and potential adverse impacts of a state policy.⁷¹ Stakeholders point to several characteristics that ensure the effectiveness of participatory processes:

- Up-front Disadvantaged communities and consumers are consulted prior to a policy decision or direction being made.
- Barrier free Meetings are structured in ways that eliminate barriers to full participation. Barriers
 may include: late notice of meetings; inaccessible locations; meetings held during work hours;
 lack of translation at meetings, lack of childcare and transportation services; and limited
 opportunity for discussion and questions.
- Collaborative Participatory processes are designed in collaboration with frontline communities and community-based organizations to assess what community engagement strategies will be most effective as well as to ensure that all disadvantaged populations are identified for engagement in meetings. Co-hosting meetings with community partners is advised.
- Inclusive Participatory processes involve community leaders and residents that are most affected by social inequities and climate change and are culturally sensitive.
- Ongoing Stakeholders also pointed to the benefit of states building ongoing relations with leaders in disadvantaged communities to ensure ongoing dialogue. They also recommend conducting routine debriefings with community-based organizations following participatory processes to confirm that community leaders and agencies "heard" consistent messages. Ongoing dialogue was also identified as a mechanism to ensure that state agencies do not misinterpret what may be communicated by residents and to formulate input that states may receive from residents into actionable policy and programs.

⁶⁷ Scruggs, Jessica Juarez, R. Navarra, S. Williams Tack, L. Abbott, L. Boldman. Meaningful Community Engagement in the Clean Power Plan. People's Action Institute, US Climate Action Network, Kentucky Conservation Committee. Last accessed July 8, 2019.

https://d3n8a8pro7vhmx.cloudfront.net/greenforall/pages/7020/attachments/original/1467401106/TOOLKIT_2_-___Meaningful_Engagement.pdf

⁶⁸ United States Environmental Protection Agency. "Guide on Consultation and Collaboration with Indian Tribal Governments and the Public Participation of Indigenous Groups and Tribal Members in Environmental Decision Making. Prepared by the National Environmental Justice Advisory Council Indigenous Peoples Subcommittee, a federal advisory committee to the U.S. Environmental Protection Agency. November 2000.

⁶⁹ Shepard, Peggy M., M.E. Northridge, S. Prakash, G. Stover. Advancing Environmental Justice through Community-Based Participatory Research. Environmental Health Perspectives. Volume 110, Supplement 2. April 2002.

⁷⁰ Participatory Budgeting: Next Generation Democracy. Participatory Budgeting Project. 2016. Available at: https://www.participatorybudgeting.org/

⁷¹ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units. 40 C.F.R. § 60, 2015.

In addition, stakeholders point to the need to build capacity within disadvantaged communities to ensure that residents and community leaders have the information and tools needed to participate in discussions about state climate policies. Several stakeholders indicate that inviting disadvantaged communities and consumers to meetings is important, but ensuring that they have all of the tools they need to effectively participate is critical. They point to efforts such as providing materials prior to the meeting as helpful (translated as needed for the particular community) and coordination with community-based organizations in advance to identify what issues may be of most concern to the community so that they are addressed at the meeting. Many stakeholders pointed to the need for states and foundations to provide resources to community-based organizations so that they can have the capacity to be fully engaged in participatory processes.

Many stakeholders raised concerns about limited representation of disadvantaged communities and consumers on boards and commissions that oversee state climate and clean energy decision-making processes.

The Role of Equity in States' Efforts to Advance Climate Action

Many of the states in the RGGI region have been and continue to be national leaders in advancing climate policy in the United States. Given the status of current federal climate policy, ^{72,73,74} compelling predictions of the most recent climate science, ⁷⁵ and evidence about the economic opportunities of clean energy technologies, states are increasingly taking on the responsibility to advance climate policies both at the individual and multistate levels. Many stakeholders point to the outcome of multistate climate efforts as having the benefit of broader environmental and economic impact, a greater ability to influence the private market, and programmatic efficiency. They recognize that the development of multistate efforts necessitates parity, bipartisan collaboration, and investment of time and resources to achieve multiple state commitments.

Several stakeholders articulated the perspective that the inherent nature of climate programs need to have, at their core, commitments to address current societal inequities that are exacerbated by changing climate conditions. They also indicate that advancing comprehensive climate programs at the state level can best be achieved realistically through support of coalitions between frontline communities, labor, environmental and Environmental Justice advocates, and socially vulnerable populations. One stakeholder referred to an African proverb – "If you want to go fast, go alone; if you want to go far, go together" – in explaining the contribution that multisector coalitions offer to states to advance efforts to address climate change. They point to the coalition that promoted passage of the New York Climate Leadership and Community Protection Act⁷⁶ and a broad coalition advancing the Illinois Future Energy

⁷² Statement by President Trump on the Paris Climate Accord. June 1, 2018. Available at:

https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/

⁷³ Presidential Executive Order on Promoting Energy Independence and Economic Growth. March 28, 2017.

Available at: https://www.whitehouse.gov/presidential-actions/presidential-executive-order-promoting-energy-independence-economic-growth/

⁷⁴ Electric Utility Generating Units: Repealing the Clean Power Plan. June 19, 2019. Available at:

https://www.epa.gov/stationary-sources-air-pollution/electric-utility-generating-units-repealing-clean-power-plan

⁷⁵NASA Jet Propulsion Laboratory; California Institute of Technology. Scientific Consensus: Earth's Climate is Warming. Last accessed June 30, 2019. https://climate.nasa.gov/scientific-consensus/

⁷⁶ New York Renews. Our Coalition. Last accessed June 25, 2019. http://www.nyrenews.org/our-coalition

Jobs Act.⁷⁷ Additionally, stakeholders point to the experience in California where initial passage of California's Global Warming Solutions Act, Assembly Bill 32, did not include comprehensive equity provisions that led to a subsequent patchwork of other laws designed to address equity concerns.

The recent passage of the 2019 Maryland Clean Jobs Act illustrates the concerns raised by several advocacy organizations regarding the relationship of state climate policy with impacts to local communities. Passed at the end of the 2019 legislative session, the new law increases the goals of the state's Renewable Portfolio Standard, establishes a fund for disadvantaged businesses to enter the clean energy economy, and authorizes funds for workforce development. The law includes a controversial provision that continues to allow waste-to-energy facilities to be considered renewable resources pursuant to the state's Renewable Portfolio Standard. Under Maryland law, a bill that passes both houses of the legislature at the end of the legislative session and is not signed by the governor within 30 days automatically becomes law. The Maryland governor did not sign the law, citing support for the law's larger goals but expressing concern that the bill was not sufficiently aggressive in promoting clean energy and creating clean-energy-related jobs. In his letter explaining his decision not to sign the law, the governor committed to advance new legislation to create a Clean and Renewable Energy Standard to achieve zero carbon emissions statewide.^{78,79}

The Role of Residents in Identifying Strategies to Address Climate Change Locally

Many stakeholders, particularly those that are engaged in community-based efforts, want to see greater control of local implementation of state clean energy and climate policies and programs by community residents. Separate from broader participatory processes to inform overall state climate policy, many community-based stakeholders call for processes in which residents can more meaningfully influence or direct how state climate policies are implemented at the local level. This request is premised on the assumption that residents will know best what will be effective in their community. Stakeholders invoke the phrase historically used in the disability rights movement – "Nothing about us without us" – to call for states to consult with local residents about implementation of climate and clean energy policies, including building standards; tree planting and installation of natural infrastructure; delivery of energy efficiency programs and investments in community-based renewable programs; and community design, among others. Some stakeholders point to the approach taken by California's 2017 law that tasked the state with developing, in partnership with communities, an emissions reduction program to measure and reduce air pollution from mobile and stationary sources (criteria air pollutants and toxic air contaminants) at the neighborhood level in locations most impacted by air pollutants. As part of the program, the state is mandated to work with local air districts and communities to establish neighborhood air quality monitoring networks and a community emissions reduction program in selected locations. The program provides grants to community-based organizations for technical assistance and to support communitybased organizations. New York's new law has similar provisions regarding community-based planning.

⁷⁷ Illinois Clean Jobs Coalition. Future Energy Jobs Act. Available at: https://ilcleanjobs.org/who-we-are/energy-jobs-act/

⁷⁸ State of Maryland, Office of the Governor. Memorandum from Governor Larry Hogan. May 22, 2019. Available at: https://governor.maryland.gov/wp-content/uploads/2019/05/RPS-Letter-to-President-Miller-5-22-19.pdf ⁷⁹ The Maryland Clean Energy Jobs Act: A Great Bill with Unfinished Business on Waste Incineration. Chesapeake Climate Action Network. April 15, 2019. Available at: https://chesapeakeclimate.org/blog/the-maryland-cleanenergy-jobs-act-a-great-bill-with-unfinished-business-on-waste-incineration/

New Jersey's Energy Master Plan indicates that the state will explore approaches to community-based energy planning.

Providing Equitable Opportunities for Investments

Many stakeholders recognize that states and multistate programs direct some funding to disadvantaged communities and consumers but indicate that the funding levels are inadequate to address current need. They point to California's requirement to allocate 35% of the state's cap and trade revenue to priority populations, the goal in New York's Climate Leadership and Community Protection Act to direct 40% of program resources to disadvantaged communities, and the goal in Illinois's Future Energy Jobs Act to direct 25% of program resources to Environmental Justice communities for low-income distributed solar projects. Stakeholders call for multistate programs to agree to earmark a greater portion of funds to be directed to disadvantaged communities and consumers. Stakeholders suggest several ideas to increase available funding among RGGI states: dedicating a minimum portion of funds for defined disadvantaged communities and consumers of allowances and requiring electric distribution companies to sell the allowances explicitly for programs in disadvantaged communities.

Additionally, stakeholders pointed to challenges that disadvantaged communities and consumers face with regard to financing associated with accessing renewable energy, energy efficiency, and other climate solutions. Stakeholders stressed the need for state climate and clean energy policy to work with state financing agencies to address inherent challenges associated with limited access to credit or the inability to meet credit and/or income thresholds to be eligible for clean energy financing. They also point to the concept of funding community-based planning efforts to support implementation of climate change, energy efficiency, and clean energy programs. Other stakeholders advocate for more states to set enforceable limits on the percentage of income that low-income households pay towards energy, as several RGGI states and Ohio do.⁸⁰

Stakeholders want states to develop and use assessment tools to evaluate the impact that current state climate policies have on disadvantaged communities and consumers as well as to assess the impact that new and modified policies will have. More specifically, stakeholders want states to conduct what they refer to as an equity "impact analysis" or "equity assessment" on current state and multistate climate policies, including RGGI, to identify any disproportionate impacts of climate change in disadvantaged communities and their causes, sources, and possible solutions as they relate to the climate policy under review and/or other complementary measures that will advance equity. For example, in 2016, USEPA identified development of decision support tools to inform Environmental Justice and equity impact analysis as a priority area of applied research for the agency.⁸¹ In the rule adopting the Clean Power Plan, USEPA indicated that an equity analysis need not be an exhaustive modeling effort but that, at minimum, it include analysis of direct and indirect pollution, and health and socioeconomic impacts on communities, including those with residents of color, low-income residents, and indigenous populations. More specifically, stakeholders note the value of conducting an equity-based analysis of RGGI to inform future program modifications. The concept of a mechanism to predict potential impacts of new and modified state climate policies on disadvantaged communities and consumers is akin to the practice of Health Impact Assessment (HIA). HIA has a structured focus on vulnerable populations and is designed

⁸⁰ Percentage of Income Payment Plan. www.ohio.gov. Last accessed July 4, 2019.

⁸¹ United States Environmental Protection Agency. Environmental Justice Research Roadmap. 2016.

to include up-front participatory processes.^{82,83} Additionally, HIAs are conducted prospectively on proposed policies and programs so that the results can be used to inform the decision and improve health, wellness, and health equity outcomes of a decision prior to it being made.^{84,85,86}

Austin, Texas, has adopted an equity assessment tool to inform policy development and implementation, and California's Energy Commission has developed energy equity indicators to inform clean energy investment for low-income customers and disadvantaged communities. ^{87, 88} Stakeholders indicate that, similar to other state and federal review processes that are intended to assess environmental impacts of projects and policies, the use of a structured equity lens by the states will ensure that up-front design of state programs and policies inherently integrate equity considerations. ⁸⁹

Underlying Social Inequities

Stakeholders that are mission-focused on environmental and social justice point to the extensively researched impacts that climate change will have on existing societal inequities^{90, 91,92} and the need for state and multistate climate policy to be designed in ways that address those historic inequities. Many stakeholders interviewed for this report cite structural inequities, community underinvestment, and limited access to resources faced by disadvantaged communities and consumers that worsen with changing climate conditions. They expressed frustration with what they perceive to be limited commitment on the part of federal and state government to nest state climate and clean energy policies in broader commitments to address underlying societal issues.

⁸² Stakeholder Participation Working Group of the 2010 HIA in the Americas Workshop. Best Practices for Stakeholder Participation in Health Impact Assessment. Oakland, CA, October 2011.

⁸³ Negev, Maya & Davidovitch, Nadav & Garb, Yaakov & Tal, Alon. (2013). Stakeholder participation in health impact assessment: A multicultural approach. Environmental Impact Assessment Review. 43. 112-120. 10.1016/j.eiar.2013.06.002.

⁸⁴ National Research Council. 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. https://doi.org/1017226/13229.

⁸⁵ Brown, H., Spickett, J., & Katscherian, D. (2014). A health impact assessment framework for assessing vulnerability and adaptation planning for climate change. *International Journal of Environmental Research and Public Health*, 11(12), 12896–12914. doi:10.3390/ijerph111212896

⁸⁶ Heller, Jonathan, S. Malekafzali, L.C. Todman, M. Wier. Promoting Equity through the Practice of Health Impact Assessment. Policylink. Last accessed June 30, 2019. https://hiasociety.org/resources/Documents/HIA-Promoting-Equity.pdf

⁸⁷ Equity Assessment Tool Pilot Completion. Memo from Brion Oaks, Austin Chief Equity Officer, June 12, 2018. Last accessed July 9, 2019. http://www.austintexas.gov/edims/pio/document.cfm?id=300307

⁸⁸ Energy Equity Indicators, California Energy Commission. Available at:

https://ww2.energy.ca.gov/sb350/barriers_report/equity-indicators.html

⁸⁹ Racial Equity Impact Assessment. Race Forward. Last accessed July 8, 2019.

https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment_v5.pdf

⁹⁰ Morello-Frosch, Rachel, M. Pastor, J. Sadd, S. Shonkoff. Closing the Climate Gap. 2009. USC Dornsife College of Letters, Arts and Sciences Program for Environmental and Regional Equity, University of Southern California.

⁹¹ Braveman P, Arkin E, Orleans T, Proctor D, and Plough A. What Is Health Equity? And What Difference Does a Definition Make? Princeton, NJ: Robert Wood Johnson Foundation, 2017.

⁹² United States Global Change Research Program (USGCRP), USGCRP, 2016: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtani, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 312 pp.

Sarofim, J. Irtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC http://dx.doi.org/10.7930/JoR49NQX

For some stakeholders engaged in efforts of frontline and Environmental Justice communities, an overarching concern pertains specifically to the design of market-based state and multistate climate policies. In particular, these advocates oppose market-based approaches because they believe that, in the case of any carbon-trading program, markets will drive cheaper power plants to increase emissions under a regional cap and that those cheaper power plants exist in communities that are historically disproportionately burdened by environmental hazards overall. For these stakeholders, there is a specific call for state and multistate climate programs to impose mandatory emissions reductions in communities disproportionately affected by environmental burdens.^{93,94}

Some stakeholders draw attention to the concept that targeting state climate and clean energy programs to low-income communities does not necessarily mean targeting communities that are disproportionately affected by climate change and other environmental burdens. For these stakeholders, they believe that existing state and federal environmental laws are not inherently designed to comprehensively address overall, local environmental burden in a community. Section IX of the Clean Power Plan echoed these concerns:

Climate change is an environmental justice issue. Low-income communities and communities of color already overburdened with pollution are likely to be disproportionately affected by, and less resilient to, the impacts of climate change. This rulemaking will provide broad benefit to communities across the nation, as its purpose is to reduce GHGs, the most significant driver of climate change. While addressing climate change will provide broad benefits, it is particularly beneficial to low-income populations and some communities of color (in particular, populations defined jointly by ethnic/racial characteristics and geographic location) where people are most vulnerable to the impacts of climate change.⁹⁵

Some stakeholders questioned whether states are sufficiently deploying the state and federal authorities that they already have with regard to addressing the needs of disadvantaged communities and consumers. An example given is the extent to which the role of consumer or ratepayer advocates in states can be expanded to elevate issues associated with disadvantaged communities and consumers beyond a focus on electricity rates. A second example given is better understanding the extent to which states can use existing air pollution control authority to address localized air pollution impacts, or "hotspots," of pollutants that coincide with CO_2 at power plants.

⁹³ Pham, Mary. A Climate Game Changer for Environmental Justice? WEACT. 2016. Available at: https://www.weact.org/2016/09/a-climate-game-changer/

⁹⁴ An Equitable and Just National Climate Agenda. Equitable and Just National Climate Platform. 2019. Available at: https://ajustclimate.org/

⁹⁵ EJ Screening Report for the Clean Power Plan. United States Environmental Protection Agency. 2015. Last accessed July 10, 2019. https://archive.epa.gov/epa/cleanpowerplan/ej-screening-report-clean-power-plan.html

Examples of Principles in the Equitable & Just National Climate Platform

- Prioritize climate solutions and other policies to reduce legacy pollution in communities; focus on communities most vulnerable to climate change, significantly improve public health and quality of life, to generate affordable housing and transportation for residents displaced by disaster and climate events;
- Garner new resources to reduce carbon pollution, curb locally harmful pollution, and build resilience to improve the health, safety, and livability of all communities;
- Ensure that all community members have access to safe, clean, and affordable drinking water;
- Reduce disproportionate amounts of pollution found in Environmental Justice communities and associated with cumulative impacts;
- Support research and development on the intersection of climate change and Environmental Justice and on the consideration of equity considerations in new technology development;
- Shift toward a pollution-free, inclusive, and just economy with high-quality jobs, family-sustaining wages and safe and healthy working conditions;
- Protect the environment to promote community wealth building to benefit local community residents;
- Ensure access to sustainable energy, including investments in cooperative and nonprofit energy organizations; community and stakeholder engagement and participation in energy planning; public-private partnerships; and renewable energy and energy efficiency demonstration projects in vulnerable communities;
- Ensure affordable transportation that provides for community members' mobility and access to jobs, education, health care, affordable housing, and social networks, including investing in public transit; zero-emissions buses, trucks, and school buses; and accessible and affordable adoption of electric cars along with planning that makes communities safe for pedestrian and bicycle travel;
- Reduce pollution by advancing a zero-emissions goods-movement transportation system to protect the health of workers as well as frontline communities;
- Implement equitable and responsive resilience and relocation planning to protect communities from climate change effects and displacement.

These concepts are inherent in the recently announced Equitable and Just National Climate Platform, which states, "Systemic racism and injustice have left economically disadvantaged communities, tribal communities, and communities of color exposed to the highest levels of toxic pollution, as well as the most vulnerable people subject to more powerful storms and floods, intense heat waves, deadly wildfires, devastating droughts, and other threats from the climate crisis."⁹⁶ The Platform was developed by the Climate Forum, a convening of Environmental Justice social justice, environmental and climate advocates, and other organizations. The Platform is designed to create opportunities, during the 2020 elections and beyond, for Environmental Justice and national environmental advocates to "develop and infuse new and equitable climate and energy ideas into the national policy conversation. The goals of the Climate Forum are to:

- 1. "Support progress toward building trust and collaboration between environmental justice and national group leaders
- 2. Develop national climate policy ideas that environmental justice and national groups can jointly support in the lead up to 2020 and beyond

⁹⁶ Equitable and Just National Climate Platform. 2019. Available at: https://ajustclimate.org/

3. Identify pathways for more inclusive national climate policy development that will support environmental justice and national group advocates working together to advance shared policy goals and ideas." ⁹⁷

The Role and Function of Government

Stakeholders agree that addressing the underlying challenges associated with directing climate program benefits more equitably to disadvantaged communities necessitates a coordinated response from government. In the Northeast and Mid-Atlantic, interagency efforts have been formed between energy and environmental agencies as part of RGGI and energy, environmental, and transportation agencies as part of the Transportation and Climate Initiative. ⁹⁸ Stakeholders noted that addressing inherent inequities requires further coordination with agencies that oversee policies and programs dealing with public health, housing and community development, and finance and economic development, etc.

Stakeholders also stress the important role that state government plays in adding legitimacy to innovative programs designed to advance equity in implementation of state climate and clean energy policy, especially with regard to disadvantaged communities and consumers that can be the target of predatory lending and fraudulent private sector marketing. One stakeholder told of an incident in which an alternative energy supplier worked through a faith-based organization to convince residents in a very low-income community to register for its programs. The supplier soon went out of business, leaving the residents without power and discrediting the reputation of the faith-based organization.

Several stakeholders pointed to partnerships between state agencies, community-based organizations, utilities, and/or renewable energy providers that are achieving greater market penetration in disadvantaged communities due in large part to the "legitimacy" that the state agency partner brings. One stakeholder said that, in the example of the Connecticut Green Bank's collaborative effort with a national nonprofit organization mission-focused on providing energy efficiency and solar energy to low-income communities, one community leader remarked, "I don't know what a green bank is, but I know it's a state agency, so I know this program is legitimate."

Some stakeholders indicated that integration of equity into state climate mitigation should be complemented by comprehensive state plans to address the current and future impacts of changing climate conditions on populations that are most vulnerable. They point out that the populations most negatively affected by sources of climate-change-causing emissions are the same populations most impacted by changing climate conditions.⁹⁹ They call for states to develop holistic policies and strategies that intersect climate emissions reduction policies with adaptation/resilience policies to establish shared priorities for benefitting disadvantaged communities and consumers.

In general, stakeholders believe that the private marketplace, on its own, will not drive climate change and clean energy solutions to support the needs of disadvantaged communities and consumers. They see a strong role for government in leading these efforts in partnership with communities and the private

https://www.transportationandclimate.org/

⁹⁷ About the Equitable and Just National Climate Platform. 2019. Available at: https://ajustclimate.org/about.html ⁹⁸ Transportation and Climate Initiative of the Northeast and Mid-Atlantic States. Available at:

⁹⁹ See footnote 2: Crimmins, et.al. 2016, and footnote 3: USGCRP 2018.

sector, both with regard to state and multistate climate and clean energy programs. Stakeholders pointed to the role of state governments as including efforts to:

- Articulate and establish commitments that send signals that will drive innovation in the private sector, foster innovation within government, hold state agencies accountable for those commitments, and serve as the "backstop" when traditional private sector mechanisms cannot address the needs of disadvantaged communities and consumers (e.g., loan guarantees);
- Create systems to ensure that perspectives of disadvantaged communities and consumers are systematically integrated into up-front design of state climate and clean energy policies and programs. Work with community leaders and residents to identify local needs and design implementation of programs through participatory processes with residents;
- Identify complementary programs to address challenges and stressors in disadvantaged communities that climate and clean energy programs are unable to address. Doing so may involve use of other state multisector authorities and resources;
- Create systems to evaluate both existing and emerging policies and programs to assess negative and positive impacts on disadvantaged communities and consumers;
- Work collaboratively with the private sector (private and nonprofit financing institutions, developers, utilities, housing, transportation and community development agencies, etc.) to develop new tools designed to address the underlying barriers to adoption of climate and clean energy solutions;
- Offer the state's imprimatur on community-based climate and clean energy projects to increase trust of programs among disadvantaged communities and consumers; complement deployment of new tools and strategies with outreach and education especially through local community organizations and leaders; and
- Create new metrics for transparent measurement of program outcomes that go beyond measuring CO₂ emissions reductions; for example, document the societal economic benefits of directing state climate and clean energy programs to disadvantaged communities and consumers.

VII. Observations & Opportunities

States and cities in the United States are currently leading climate change efforts across the country. Given the most recent climate science and, given the current status of federal climate policy, the urgency of state and local action is clear and recognized. The disproportionate impact that climate change is having on disadvantaged communities and consumers is clear and well-documented as is the disproportionate economic burden borne by such communities and consumers for energy. States and stakeholders alike recognize that state climate targets cannot be met without aggressive action to deliver state climate program and policy benefits to disadvantaged communities and consumers.

How to systematically integrate equity components in the up-front design of state and multistate climate policy, while recognizing the need for timely state climate action, was an issue identified by stakeholders and states alike. Some advocates define innovative state and multistate climate action as being inherently designed with equity components, meaning that equity considerations are reflected in the up-front design of climate and clean energy policies. Many stakeholders stress, citing examples in their own states, that aggressive state and multistate climate initiatives will be far more likely to succeed when supported by multisector coalitions, including representatives from frontline communities, labor unions, and social justice advocates.

States, cities, and stakeholders interviewed for this project agree that there is a significant leadership role for government to play in advancing equity objectives as part of state and multistate climate and clean energy programs. Interviewees agree that states and stakeholders recognize that private markets will not, on their own, support significant penetration of renewable and clean energy systems in disadvantaged communities. States are directing utilities to more significantly deliver program benefits to markets for which traditional programs have not had a significant impact, that have been historically challenging such as low-income, multifamily, and rental residences. States are collaborating with nontraditional partners, such as affordable housing and low-income mission-focused renewable energy developers. States are creating innovative financing packages, such as solar installation loan guarantees, and establishing new agencies, such as green banks, that are specifically designed to offer non-traditional funding offerings. States are hosting listening sessions with residents that may not have traditionally be engaged in government-led processes.

There appears to be several important roles for government to play, specifically with regard to enhancing the distribution of state climate programs to benefit disadvantaged communities and consumers:

- Signaling the credibility of certain programs and providers to consumers who may not traditionally adopt energy efficiency and clean energy technologies;
- Sending signals as well as directing actions of the private sector, including utilities, towards equity outcomes;
- Educating consumers to create greater demand; and
- Developing government-backed innovative funding and financing programs to address gaps in what private markets will deliver.

Other more specific observations include:

Observations

1. Recognition of disproportionate impact of climate change

In general, RGGI states and other jurisdictions greatly recognize the disproportionate impact that climate change has and will continue to have on certain communities and populations in the United States and that changing climate conditions exacerbate existing stressors faced by disadvantaged consumers and communities. States and other jurisdictions are also highly aware that meeting state climate and clean energy goals necessitates a major commitment to delivering climate and clean energy program benefits to disadvantaged communities and consumers. States within the RGGI region are increasingly considering strategies to direct program benefits to disadvantaged communities and delivery.

2. Period of innovation

There is a variety of policies, programs, and strategies within states in the RGGI region, as well as jurisdictions outside the region, that are designed to direct climate and clean energy program benefits to disadvantaged communities and consumers. Now appears to be an active "period of innovation" during which states and cities are conducting new demonstration and pilot projects, and assessing what is working or not working to inform more effective scaling of programs for broader application in target communities and households. Some states are implementing new initiatives as charged by policy directives and/or mandates regarding integration of equity considerations into climate and clean energy policies. These innovations, by design, are striving to include more engagement by members of disadvantaged communities. All states in the RGGI region expressed an interest in better understanding efforts in other states. Current efforts appear to focus on:

- Articulating commitments to intersect state climate change policy with equity commitments as evidenced by language in new state laws, executive orders, and statewide plans;
- Building capacity to better understand effective ways to intersect state climate change policy with equity commitments, including through:
 - Initiating multisector interagency partnerships that foster collaborative approaches to develop strategies that are designed to address health, housing and community development, transportation, etc.;
 - Creating opportunities for broad listening sessions on the part of agencies to hear from communities and consumers, and their representatives, who may not have traditionally been extensively engaged in stakeholder processes;
 - Establishing processes, such as advisory committees, that are designed to create a standing point of entry for the state decision-making process to be informed by disadvantaged communities and consumers;
 - Forming partnerships with external partners, including community-based organizations, affordable housing developers, civic leaders, energy providers mission-focused on disadvantaged consumers and communities, etc.; and
 - Establishing funding opportunities for community-engaged processes.
- Expanding use of traditional legal authorities and program implementation to address challenges and stressors faced by disadvantaged consumers and communities, not otherwise addressed through state and multistate climate policy;

- Developing institutions to administer program benefit funding that are mission-focused on innovative delivery of public funds, such as green banks, and quasi-governmental agencies;
- Establishing funding mechanisms to ensure benefits are directed to disadvantaged communities and consumers, often defined as low- or low-to-moderate-income; and
- Undertaking demonstration and pilot programs to inform scale up of broader programs to intersect climate policy with equity commitments, including measuring early program findings.

This "period of innovation" is nested in the recent accelerated pace of new and enhanced comprehensive state climate change policies, as evidenced by new or expanded climate change laws adopted by several of the RGGI states in the first half of 2019 alone. These laws include Maine's Act to Promote Clean Energy Jobs, Maryland's Clean Energy Jobs Act, New Jersey's Act Related to Reduction of Greenhouse Gases, New York's Climate Leadership and Community Protection Act, and Vermont's Act Relating to the Regulation of Hydrofluorocarbons.

3. Similar issues outside the RGGI region

The authors found that many of the issues prevalent in the RGGI region are also relevant in the two states and two cities outside the RGGI region studied for this project. Common among these jurisdictions are efforts to:

- Increase deployment of energy efficiency and clean energy to disadvantaged communities and consumers by overcoming hurdles of traditional private sector financing models through government-led partnerships with energy providers, community-based organizations, developers, and innovative financing mechanisms;
- Address needs of disadvantaged communities and consumers by connecting resources, technical assistance, and authorities across multiple sectors: environment, energy, housing, community development, transportation, health, etc. These efforts are directed not only at creating coordinated program offerings to these communities and households, but they also seek to leverage existing public benefits, such as tying multifamily affordable housing solar incentives to requirements to participate in energy efficiency;
- Create dedicated processes to enhance full participation of disadvantaged communities and consumers in decision-making, including: establishing formal mechanisms such as advisory boards to inform government decision-making; developing participatory processes that engage representatives of disadvantaged communities and consumers in the design of climate and clean energy policy; and involving local residents and local leaders in community-based implementation of such policies;
- Acknowledge and publicly articulate commitments to address underlying structural, societal inequities that make some communities and populations disadvantaged, such as limited access to financial resources, educational attainment, and racism;
- Establish "carve out" commitments for portions of climate and clean energy program benefits to be directed to disadvantaged communities and consumers;
- Create mechanisms to evaluate impact of current and future state climate and clean energy policies and programs on disadvantaged communities and consumers; and

• Recognize that issues affecting disadvantaged communities and consumers affect populations in both urban and rural areas.

4. Current focus on funding and financing challenges

A considerable focus of current efforts in the RGGI region has been on developing policies, programs, and organizational capacity to address funding and financing challenges associated with enhancing energy efficiency and clean energy opportunities for low-to-moderate-income residents, including renters and people living in multifamily dwellings. These efforts include creating dedicated organizations to manage funding and financing programs such as green banks or other nonprofit quasi-governmental organizations. They also focus on providing government backing to overcome traditional private sector obstacles to delivering energy efficiency and clean energy to low- and low-to-moderate-income households, such as community renewables, loan guarantees, low-interest financing, zero-credit requirements, etc. Another area of current attention is on funding for "pre-weatherization" programs that address structural deficiencies in eligible-income households that must occur before a dwelling is eligible for federal weatherization assistance program support. Another focus area for states is on requiring utilities to revamp programs to deliver expanded offerings and services to disadvantaged communities and consumers through regulatory reform, orders, and mandates.

5. Contributing factors to states' efforts

Experiences within the RGGI region, and jurisdictions outside it, point to the value of certain factors that can contribute significantly to state efforts to direct program benefits to disadvantaged communities and consumers:

- Mandates and leadership Directives from executive and legislative branches drive innovation within state agencies. How directives are articulated sends important signals to influence how state agencies design and implement programs and policies. Many state climate programs have been advanced through the work of staff-level and mid-management innovators in government, responding to high-level policy directives. Those innovators use the full extent of existing statutory authority, seek out crosssector collaboration, and build demonstration and pilot programs to test new ideas.
- Participatory processes, stakeholder engagement and community-based planning In general, stakeholders call for state, multistate, and local climate efforts to be informed by up-front participatory processes. A common characteristic among these three models is to develop and implement climate programs in ways that effectively benefit disadvantaged communities and consumers, and a commitment to building processes that engender trust between decision-makers and community leaders and residents. Stakeholders point to the need to ensure that frontline community organizations are given the resources needed to ensure that they have capacity to fully engage in participatory processes and that, without resourcing these organizations, there is a greater likelihood of slowing down policy development. A variety of approaches were presented in this report:
 - Efforts, such as the Connecticut Low-Income Energy Advisory Board, which established a structured entry point into government decision-making for representatives of disadvantaged communities and consumers;

- Upfront, accessible and participatory processes that are designed to maximize public participation, including enhanced participation of disadvantaged communities and consumers, in development, design, and implementation of policies and programs at the state and local levels, such as through listening sessions; and
- Community-based efforts that involve leaders and residents in design and implementation of local climate and clean energy programs. New York's REVitalize program includes a pilot effort to provide resources to communitybased organizations in low-income and Environmental Justice communities to support community-based climate and clean energy planning. The recently enacted New York Climate Leadership and Community Protection Act has provisions directing the state to develop a program demonstrating community air monitoring in disadvantaged communities. The law also requires the development of a strategy to reduce emissions of air pollution in disadvantaged communities affected by high exposure burden and provides the authority for the state to adopt regulations establishing programs to achieve emissions reductions in targeted communities. New Jersey's draft Energy Master Plan points to development of a potential community-based energy planning initiative. California's Transformative Climate Communities Program uses monies from the state's cap-and-trade system to fund development and infrastructure projects by empowering the communities most impacted by pollution to choose their own goals, strategies, and projects to reduce greenhouse gas emissions and local air pollution. In its first year, the program awarded grants to community-based organizations in three locations ranging from \$33 million to more than \$66 million each ¹⁰⁰
- Interagency collaboration State representative pointed to important benefits that result from interagency collaboration and structures, such as standing interagency climate committees, on enhancing delivery of program benefits to disadvantaged communities and consumers.
- Accountability and transparency State representatives and stakeholders alike mentioned the limitations of exclusive CO₂ emissions-centric reporting as taking away from promoting a broader focus within the states on measuring and tracking cobenefits of state and multi-state environmental programs, such as other air quality initiatives, and climate programs and policies.

6. The role of complementary programs

For this report, the term *complementary programs* refers to the use of other environmental and state authorities, participatory processes, sources of funding and other means to address root causes of challenges faced by disadvantaged communities and consumers. Many states and some stakeholders view the inherent design of multi-state, market-based climate change policies, such as RGGI, as being one "tool of the toolkit" of states' efforts to advance climate action. They offer that such policies are needed to meet climate emissions targets and forestall

¹⁰⁰ Transformative Climate Communities. California Strategic Growth Council. Last accessed July 12, 2019. http://sgc.ca.gov/programs/tcc/docs/20190204-Facts_Sheet_TCC.pdf

major, disproportionate impacts on disadvantaged consumers and communities. They offer that such programs are not necessarily designed to fundamentally solve the underlying causes of social inequities, but can be developed in ways to benefit disadvantaged consumers and communities through, for example, major investments in such communities. Some stakeholders, including those representing frontline and Environmental Justice communities, are skeptical that multistate, market-based climate programs will result in improvements in local conditions of disadvantaged communities and consumers; they express concern that market-based programs may worsen pollution in communities already burdened by environmental factors. Some states and stakeholders are exploring use of complementary programs that supplement market-based programs in ways that are intended to address environmental and other challenges faced in these communities, including those disproportionately affected by environmental factors.

7. Analysis of equity impacts

Stakeholders, particularly frontline community representatives and Environmental Justice advocates, are calling for state and multistate climate programs to analyze positive and negative impacts of climate policies on disadvantaged communities and consumers. With regard to multistate, market-based approaches such as RGGI, some frontline and Environmental Justice communities want to see the use of data to assess that localized impacts, such as increased air emissions from power plants, are not created in communities already affected by disproportionate environmental burden. Some states and stakeholders also discussed the value of conducting analysis to identify major sources of all pollution in disadvantaged communities to inform state policies and community based planning efforts. Comments offered on the use of data to assess equity impacts include both a focus on assessing impacts of current, as well as anticipating impacts of new climate policies. For example, Austin, Texas has developed an equity assessment tool and California has developed energy equity indicators. Language included in the USEPA's 2015 adoption of the Clean Power Plan included suggested approaches to conducting such analyses. This report points to several examples of currently available approaches and methods that could be framed to enhance states' efforts to demonstrate benefits and impacts of state and multistate climate and clean energy programs.

8. Diversity of RGGI states

States within the RGGI region and the other jurisdictions reviewed for this report, are highly diverse, each with in their unique history, culture, demographics, geography, public support for climate action, carbon footprint, and underlying authorities and role of government. These dynamics affect the development and design of state climate policy as well as a state's participation in multistate programs. For example, in several states, such as Massachusetts, Connecticut, Rhode Island, Connecticut, Maryland, and New York, basic public service, energy, and environmental laws are integrated with respect to climate policy goals, thus facilitating regulatory and executive adoption of innovative climate programs and policies. Other states have more limited statutes, either in scope or in regulatory process requirements, which can mean that legislative action is needed for any new or modified program. Some states have significantly larger economies than smaller states, with extensive government agency structures and significantly more program dollars to invest. For these reasons, the authors took care not to present the analysis in this report as a comparison among states, which would be misleading.

Another consideration is that each RGGI state has a distinct mix of needs and challenges faced by its different types of disadvantaged consumers and communities. The needs of low-income

rural residents may be different from those in urban communities. Some jurisdictions may consider workers displaced by a transition to a clean energy economy as especially vulnerable while others may focus on residents that have limited English proficiency or those living in flood prone areas. In some jurisdictions, environmental inequalities leading to disproportionate environmental burden may be a prominent concern. In general, it appears that a surrogate indicator of disadvantage used by all RGGI states is the federal definition of "low-income," with some states using additional or broader definitions. Some have guestioned whether a strict focus on low-income households is too restrictive given criticisms of the federal methodology to define low-income. States are developing additional, more inclusive definitions to add to "low income," such as the definition of "disadvantaged community" included in the 2019 New York Climate Leadership and Community Protection Act: "communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high concentrations of low- and moderate- income households." Other examples included definitions of Environmental Justice in states, including Massachusetts, New Jersey, Virginia, and Maryland, and California's definition of priority populations, which, by law, receive at least 35 percent of all the state's cap-and-trade auction proceeds.

9. Holistic climate resilience and mitigation programs focused on disadvantaged communities and consumers

Those interviewed for this report acknowledge that climate change will affect all residents but that there are some populations that are more vulnerable than others, particularly with regard to health impacts. Some states and stakeholders urge a greater intersection of priorities of climate resilience and adaptation programs with climate emissions reduction programs, in order to ensure that communities and people most affected by climate change are a priority for both state and multi-state emissions and adaptation programs. In some states, this may include residents that are defined as *socially vulnerable* to climate change and natural disasters by the Centers for Disease Control SVI index and for whom climate change exacerbates existing stressors. It may also include identifying populations and communities with a higher presence of other stressors such as environmental pollution, health disparities, poor housing conditions, limited transportation mobility, among other factors. For other states, this may include residents who may be displaced by a transition to a clean energy economy, people living in rural poverty, and people experiencing health disparities.

10. Maturing of state climate programs

The original design of RGGI incorporated a systematic, routine review of the program to ensure that the states could continue to shape program design over time based on program outcomes, the latest science and emerging issues. This practice of regular program review aimed at continuous self-improvement is a key feature of RGGI and provides an opportunity for the states to refine and improve their climate and clean energy programs as they mature. States are actively engaged in pilot and demonstration program benefits to disadvantaged communities and consumers. Measuring outcomes of state and multi-state climate policy has traditionally focused on indicators of CO₂ emissions reductions. Several states and stakeholders indicated that states would benefit from efforts to evaluate, curate and share innovations, including using additional indicators to document benefits and co-benefits of programs beyond reductions in CO₂ such as
improvements in health, community and housing quality, reductions of overall environmental burdens, and increased resilience. Use of data analysis to assess climate program impacts on disadvantaged communities and consumers, together with ongoing experiences during the current "period of innovation," may provide important insights to inform regular program reviews.

Opportunities

A strong foundation exists within the RGGI region to continue to direct state and multistate climate and clean energy program benefits to disadvantaged communities and consumers in equitable ways. This foundation offers tremendous opportunities for states and stakeholders to collaboratively build upon. Several options that could be further explored within the RGGI region, including but not limited to:

- Articulating commitments Increasingly, state executive and legislative branches are making commitments to direct state climate and clean energy program benefits to disadvantaged communities and consumers. Opportunities exist to build upon existing commitments as part of state and multi-state climate and clean energy programs. To support enhanced policy commitments, states and other jurisdictions could consider:
 - Stating commitments to equity objectives as part of state and multi-state climate policies -Many of the states in the RGGI region articulate commitments to disadvantaged communities and consumers as part of state climate and clean energy policies. Building upon these commitments both at the state and multi-state level can send important signals regarding the importance of equity in state climate policy;
 - Expanding efforts that deploy use of upfront, inclusive participatory processes Guidance and pilot efforts are available to inform expanded efforts to engage traditionally under resourced communities in policy and program development and implementation;
 - Developing and using analytical tools to assess and evaluate equity benefits and impacts of current and future state climate and clean energy programs Using data and analysis to conduct "equity assessments" can include consideration of factors such as other environmental stressors, social determinants of health, community development and displacement, and workforce development. To address stakeholder concerns about potential emissions "hot spots" under market-based, multi-state programs, analyses could consider examination of emission sources and impacts regionally, as well as, locally (where feasible).
- Measuring benefits to and impacts on disadvantaged communities and consumers There is considerable activity underway in U.S. cities and states to direct climate and clean energy program benefits to disadvantaged communities and consumers. Using fact-based evidence to inform identification of effective best practices for state and multi-state policy adoption appears timely. Such efforts could also benefit from including, but going beyond, CO₂ emissions reductions to consider indicators unique and important to disadvantaged communities and consumers, such as indicators regarding environmental exposures, workforce development opportunities and impacts to health disparities.
- Expanding states' shared equity efforts States within the Mid-Atlantic and Northeast have been and continue to be leaders in advancing informed climate policies. Collaborative, multistate efforts may provide a strong foundation for enhanced incorporation of equity considerations into state climate and clean energy policies. Some options that could highlight

shared equity commitments among states, while respecting the role of individual states in implementing multi-state climate policies could include:

- Articulating a shared public commitment to integrating equity principles in multi-state program design and individual state implementation of multi-state goals;
- Developing shared assessment methods to forecast benefits to and impacts of current and new state and multi-state climate programs on disadvantaged communities and consumers;
- Identifying evidence-based guidelines and options for state and multi-state program design. Examples may include guidelines that support state efforts to use inclusive participatory processes in upfront program design and implementation, agreements that direct a greater portion of financial benefits to disadvantaged communities and consumers, and/or options for measuring program impacts on disadvantaged communities and consumers; and/or
- Creating greater information sharing or developing a community of practice among the states with regard to effective approaches for delivering benefits to disadvantaged communities and consumers. Given the pace with which state and multi-state climate programs are advancing, states are eager to learn from one another. Collaboration among states, in participation with stakeholders, could create forums, clearinghouses, evaluative approaches and analysis that would benefit all state efforts. Such an effort could evaluate, document and curate approaches to participatory processes, specific policy designs that deliver benefits to disadvantaged communities and consumers, and program co-benefits.
- **Developing complementary policies to advance equity objectives** Even with adoption of specific equity components in state climate and clean energy policies, challenges to address underlying disproportionate environmental burdens may exist in some jurisdictions. States may benefit from an analysis of other legal authorities, in addition to their existing state climate and clean energy laws and policies, to better understand the extent to which other programs and authorities can be applied to address or supplement gaps specific to the needs and challenges faced by disadvantaged communities and consumers.
- Addressing equity in state climate emissions and adaptation programs Many of the RGGI states have policies and programs associated with climate change adaptation and resilience, but not all states have comprehensive plans to address impacts of climate change on vulnerable populations. As states within the RGGI region continue to expand their efforts to integrate equity goals into state climate emissions policies, there may be opportunities to intersect those efforts with state adaptation and resilience efforts. One approach could be the development of strategies to assess and address sources of greenhouse gas emissions along with resilience and adaptation planning that addresses socioeconomic, health and community conditions in disadvantaged communities that are exacerbated by changing climate conditions. States may benefit from learning from each others' efforts to implement climate adaptation policies specifically designed to benefit disadvantaged communities and consumers.

States and cities across the United States have been leading the way to develop climate and energy programs. At the city, state and multi-state levels, programs have evolved over time to reflect the most current analytical results, best practices, new mandates, and emerging issues and challenges. For example, states intentionally designed RGGI to allow for periodic program review and modification, a

design element that creates opportunities for states to learn from one others' experiences and to implement improvements.

Efforts to evaluate state and multi-state climate program benefits to and impacts on disadvantaged communities and consumers may contribute important insights to inform future program design. Expanded participatory processes, identification and articulation of multi-state shared equity goals, exploration of complementary policies, and articulation of shared objectives to intersect climate policies with equity goals may offer positive outcomes for state programs. States can learn from each other, assess equity impacts of programs, engage directly with stakeholders from disadvantaged communities, and explore broad use of authorities to address equity challenges. Such a portfolio of action may offer important contributions to the ability of states to achieve statewide climate goals.

VIII. Interviewees

The individuals listed below were consulted as part of this project; no specific content is attributed to any individual.

States and Cities:

Austin, Texas

- Austin Energy
 - o Amy Atchley, Senior Project Lead, Electric Vehicle and Emerging Technologies
 - o Tim Harvey, Environmental Conservation Manager, Solar Programs
 - Terry Moore, Energy Efficiency Services Manager, Customer Solutions Group
- City of Austin, Texas
 - o Zach Baumer, Climate Program Manager, Office of Sustainability

California

- California Department of Community Services and Development
 - Glen Baird, Disadvantaged Communities Liaison and Outreach Coordinator, Low-Income Weatherization Program
- California Energy Commission
 - Kristy Chew, Advisor and Staff to the Disadvantaged Communities Advisory Group
 - o Jennifer Martin-Gallardo, Senior Attorney and Acting Public Advisor
 - o Dorothy Murimi, Public Advisors Office, Outreach Specialist
- California Public Utilities Commission
 - Alice Glasner, Senior Analyst
 - o Nora Hawkins, Regulatory Analyst
- California Air Resources Board
 - Bailey Smith, Staff Air Pollution Specialist

Columbus, Ohio

- City of Columbus, Ohio
 - Mandy Bishop, Smart Columbus Program Manager and Deputy Director of Public Service
 - o David R. Celebrezze, GreenSpot Coordinator
 - o Alana Shockey, Assistant Director, Sustainability

Connecticut

- Connecticut Department of Energy and Environmental Protection
 - o Keri-Enright Kato, Director; Office of Climate Change, Technology & Research

Delaware

- Department of Natural Resources & Environmental Control
 - o Jennifer de Mooy, Principal Planner
 - Susan Love, Climate and Sustainability Manager

- Energize Delaware
 - o Suzanne Sebastian, Program Manager

Illinois

- Illinois Environmental Protection Agency
 - Brad Frost, Manager, Office of Community Relations
 - o Chris Pressnall, Environmental Justice Officer
 - Chad Kruse, Illinois Office of Energy
- Illinois Energy Efficiency Stakeholder Advisory Group
 - o Celia Johnson, Facilitator, Celia Johnson Consulting
- Illinois Power Agency
 - Anthony Star, Director

Maine

- Maine Department of Environmental Protection
 - o Erle Townsend, Environmental Specialist IV, Energy Regulation

Maryland

- Maryland Energy Administration
 - o Dean Fisher, Senior Program Manager
- Maryland Department of the Environment
 - o Chris Hoagland, Economist

Massachusetts

- Massachusetts Department of Environmental Protection
 - o William Lamkin, Environmental Engineer
 - o Deneen Simpson, Director of Environmental Justice
- Massachusetts Department of Energy Resources
 - o Joanne Morin, Deputy Commissioner
 - o Alissa Whiteman, Energy Efficiency Program Manager, Department of Energy Resources
 - o Maggie McCarey Energy Efficiency Director, Department of Energy Resources
 - o Elizabeth Kennedy Cleveland, Director of Strategic Initiative, Clean Energy Center

New Hampshire

- New Hampshire Department of Energy Services
 - o Joseph T. Fontaine, Technical Programs Manager; Air Resources Division,
- New Hampshire Public Utilities Commission
 - Karen Cramton, Director, Sustainable Energy Division

New Jersey

- New Jersey Board of Public Utilities
 - o Michael Winka, Senior Policy Advisor

- Jessica Brand, Program Administrator, Energy Efficiency at New Jersey Board of Public Utilities
- New Jersey Department of Environmental Protection
 - o Christine Schell, Office of the Assistant Commissioner

New York

- New York State Energy Research and Development Authority
 - o Kara Allen, Senior Advisor
 - Christopher Coll, Project Manager

Rhode Island

- Rhode Island Office of Energy Resources
 - o Barbara Cesaro, Interdepartmental Project Manager
- Rhode Island Department of Environmental Management
 - o Dena Gonsalves, Senior Air Quality Specialist
- Rhode Island Department of Health
 - o Laura Bozzi, Climate Change Program Manager

Virginia

- Department of Environmental Quality
 - o Michael Dowd, Director of the Air Division
 - o Shep Moon, Coastal Planner
- Department of Mines, Minerals and Energy
 - o Al Christopher, Director, Energy Division

Vermont

- Vermont Department of Environmental Conservation
 - Heidi Hales, Director of the Air Quality and Climate Division

Non-governmental stakeholders:

Conor Bambrick Air and Energy Program Director Environmental Advocates of New York

Ana Baptista, Assistant Professor of Professional Practice The New School

Diana Chace, Project Director Nate Hausman, Project Director Clean Energy States Alliance

Cecil Corbin-Mark, Director of Policy Initiatives

WEACT

Greg Cunningham, Vice President & Director, Clean Energy Climate Change Conservation Law Foundation

Reverend Fletcher Harper, Executive Director Reverend Ronald Tuff, Black Church Engagement Director

Paul Kaufman, Advocacy Director Greenfaith

Jennifer Godzeno, Senior Director, Partnerships & Strategy Participatory Budgeting Project

Adrienne Hollis, Lead Climate Justice Analyst Union of Concerned Scientists

Cynthia Mellon, Climate Justice Policy Coordinator Climate Justice Alliance

Madeleine Mineau, Executive Director Clean Energy New Hampshire

Jackson Morris, Director, Eastern Region NRDC Climate & Clean Energy Program

Alejandra Nunez, Staff Attorney Sierra Club

Sofia Owen, Massachusetts and Rhode Island Community Organizer Toxics Action Network

Jacqueline Patterson, Director, Climate and Environmental Justice Program NAACP

Michelle Romero, National Director Eleanor Fort, Senior Campaign Manager Green for All

Jeffrey Schub, Executive Director Coalition for Green Capital

Elizabeth Stanton, Director and Senior Economist Applied Economics Clinic Jordan Stutt, Carbon Programs Director Acadia Center

Dana Wiggins, Director; Center for Community Outreach Carmen Bingham, Affordable Clean Energy Project Coordinator Virginia Poverty Law Center

Reverend Leo Woodberry, Pastor Kingdom Living Temple

Appendices

- A. RGGI State Definitions
- B. RGGI State Summaries
- C. Summaries of Other Jurisdictions Outside the RGGI Region
- D. Summaries of Recently Enacted Laws in Four RGGI States

Appendix A – RGGI State Definitions

Appendix A provides a summary table of definitions used by RGGI states, New Jersey and Virginia that can be interpreted to describe disadvantaged communities and consumers. Appendix A is used to illustrate the diversity of terminology that may be considered as part of states' efforts to consider equity provisions in climate policies and programs. The broader term *disadvantaged communities and consumers* is used in this report to be inclusive of all definitions used by the jurisdictions reviewed for this report.

	Weatherization Assistance Program	EnergyAssistance Program	Other climate change and clean energy programs	Environmental Justice	Disadvantaged	Sociallyvulnerable
CONNECTICUT	Households whose income falls at or below 60% of the state median income.	Households whose income falls at or below 60% of the state median income. ¹⁰¹	Energize Connecticut and Green Bank financing programs apply the definition of low income to be 60% of the state median income. For the purposes of the statewide Shared Clean Energy Facilities Program, Section 7 of Public Act 18-50, An Act Concerning Connecticut's Energy Future a <i>low-income</i> <i>customer</i> is defined as an in- state retail end user of an electric distribution company (i) whose income does not exceed 80% of the area median income as defined by the United States Department of Housing and Urban Development, adjusted for family size, or (ii) that is an affordable housing facility as defined in Section Z-39a of the Connecticut General Statutes. ¹⁰²	DEEP's Environmental Justice Program website identifies municipalities on the Connecticut Department of Economic and Community Development's list of distressed municipalities. ¹⁰³ The program website identifies other municipalities that are not defined as distressed but that have census block groups with 30% of their population living below 200% of the federal poverty level. ¹⁰⁴		Executive Order 50 (2015) established a permanent working group called the State Agency Fostering Resilience Council (SAFR Council) charged with strengthening the state's resilience to climate change impacts. The SAFR Council agencies along with other partners, including the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) at the University of Connecticut and external organizations, identified "resilience zones" where transportation and economic investments would provide long-term resilience benefits as well as "a myriad of co-benefits that strengthen communities and economic opportunities in the short term and between storms." ¹⁰⁵ For this initiative, the <i>social vulnerability</i> index

¹⁰¹ Weatherization Assistance Program. Department of Energy & Environmental Protection. Available at: https://www.ct.gov/deep/cwp/view.asp?a=4405&Q=569064&deepNav_GID=2121

¹⁰² An Act Concerning The Establishment Of The Department Of Energy And Environmental Protection And Planning For Connecticut's Energy Future, Conn. Sta. §§ 11.80 (2011).

¹⁰³ Distressed Municipalities. Connecticut Department of Economic and Community Development. Available at: https://portal.ct.gov/DECD/Content/About_DECD/Research-and-Publications/o2_Review_Publications/Distressed-Municipalities

¹⁰⁴ Environmental Justice Communities. Connecticut Department of Energy and Environmental Protection. Available at: https://www.ct.gov/deep/cwp/view.asp?a=2688&Q=432364&deepNav_GID=1511 ¹⁰⁵ SAFR Connecticut Communities. State Agencies Fostering Resilience. June 22, 2015. Available at: https://circa.uconn.edu/wp-content/uploads/sites/1618/2018/12/FinalSAFRConnecticutConnectionsJune22.pdf

				developed by the University of South Carolina Hazards and Vulnerability Research Institute ¹⁰⁶ was used to reflect populations that are especially vulnerable to natural hazards given their inherent conditions and stressors.
DELAWARE	Delaware's energy assistance program and weatherization program define low income as 200% of the federal poverty level. ¹⁰⁷ Household-size, income limit tables are available through the state's LIHEAP program.	Delaware's energy assistance program and weatherization program define low income as 200% of the federal poverty level. Household-size, income limit tables are available through the state's LIHEAP program.	The Delaware Sustainable Energy Utility (Energize Delaware) offers its multifamily rental housing program to properties that are defined as "affordable," meaning: receiving assistance from a government housing program or charging rents such that households at 80% of the area median income spend no more than 30% on housing costs. ¹⁰⁸	A call for proposals from the Department of Natural Resources & Environmental Control pursuant to its Strategic Opportunity Fund for Adaptation (SOFA) program provides examples of "vulnerable populations:" - Minority, low income, and immigrant communities have increased socioeconomic, educational and medical challenges. These groups have limited adaptive capacity. - Children, pregnant women, seniors, and individuals with disabilities or health conditions (e.g. asthma). These groups have higher sensitivities to impacts such as high heat and flooding.

¹⁰⁶ Social Vulnerability Index for the United States. University of South Carolina Hazards and Vulnerability Institute. Available at: http://artsandsciences.sc.edu/geog/hvri/sovi%C2%AE-o
¹⁰⁷ Low income Home Energy Assistance Program. Delaware Department of State Service Centers. Available at: https://www.dhss.delaware.gov/dssc/liheap.html
¹⁰⁸ Energize Delaware Affordable Multifamily Housing Program. Available at https://www.energizedelaware.org/.

- Outdoor workers, maintenance staff who work in unconditioned work spaces, and emergency responders. These groups are often exposed to high heat and vector-borne diseases.¹⁰⁹

Income eligibility **Income eligibility** These eligibility criteria are also MAINE quidelines or 60% of the quidelines or 60% of the applied to the Efficiency Maine state area median income, state area median income, Trust low-income programs whichever is less. Eligibility apply the same definition to whichever is less. Eligibility for households with for households with the term low income as the incomes between 150% state's energy assistance and incomes between 150% and 170% of the federal and 170% of the federal weatherization programs: poverty guidelines is poverty quidelines is Income eligibility guidelines or limited to those limited to those 60% of the state area median households with a member households with a member income, whichever is less. who is susceptible to Eligibility for households with who is susceptible to incomes between 150% and hypothermia, such as hypothermia, such as elderly, a child two years of elderly, a child two years of 170% of the federal poverty age or under, or with a quidelines is limited to those age or under, or with a doctor's diagnosis.¹¹⁰ doctor's diagnosis. households with a member who is susceptible to hypothermia, such as elderly, a child two years of age or under, or with a doctor's diagnosis. ¹¹¹ Maine's 2019 Act to Promote Solar Energy Projects and **Distributed Energy Resources** includes provisions for

¹⁰⁹ Delaware Department of Natural Resources and Environmental Control, Division of Climate, Coastal and Energy: Strategic Opport unity Fund for Adaptation (SOFA) 2018 Request for Proposals.

¹¹⁰ Income Eligibility Guidelines. Home Energy Assistance Program. Available at: http://www.mainehousing.org/charts/HEAP-Income-Elibility

¹¹¹ Low Income Options. Efficiency Maine. Available at: https://www.efficiencymaine.com/at-home/low-income-options/

			community renewable projects with incentives for low and- moderate income households defined as: "a household that provides proof of participation in a utility, municipal, state or federal income-based assistance program or a household that provides proof of household income up to 80% of the median income for the county or metropolitan area where the household is located." ¹¹²		
MARYLAND	200% of federal poverty level. ¹¹³	Income eligibility limits for Maryland's Energy Assistance Program in the Department of Human Services is based on 175% of the federal poverty level. ¹¹⁴	Clean Energy Communities Low-to-Moderate-Income program: Maryland Energy Administration defines low- and moderate-income households as households with total incomes less than 60% and 85%, respectively, of the median income for each Maryland county. ¹¹⁵ Maryland EmPOWER utility- managed energy efficiency program: Eligibility is 200% of federal poverty level.	Low-income and minority communities are most vulnerable to EJ issues. Often these communities do not have an organized community group that can serve as a point of contact. Additionally, these communities may house a disproportionate amount of polluting facilities putting residents at a much higher risk of health problems from environmental exposures. ¹¹⁷	The Maryland Department of Natural Resources, in partnership with The Nature Conservancy, developed a "social vulnerability" index for use in its 2016 Coastal Resilience Assessment in order to "target risk reduction practices in communities that may be less equipped to prepare for, respond to, and/or recover from coastal hazard events." Metrics used to create the

¹¹² An Act to Promote Solar Energy Projects and Distributed Energy Resources in Maine. Available at: http://legislature.maine.gov/bills/getPDF.asp?paper=SPo565&item=4&snum=129

¹¹³ Weatherization Assistance Program. Maryland Department of Housing and Community Development. Available at: https://dhcd.maryland.gov/Residents/Pages/wap/Default.aspx

¹¹⁴ Applying for Energy Assistance. Office of Home Energy Programs. http://dhs.maryland.gov/office-of-home-energy-programs/how-do-you-apply/

¹¹⁵ FY19 Clean Energy Communities Low to Moderate-Income Grant Program. Maryland Energy Administration. Available at: https://energy.maryland.gov/govt/Pages/CleanEnergyLMI.aspx ¹¹⁷ Not a formal definition, but rather a reference at: https://mde.maryland.gov/programs/Crossmedia/EnvironmentalJustice/Pages/WhatisEJ.aspx

Community Solar: The Maryland Energy Administration's definition of low and moderate income for the community solar program is: low income - gross annual household income at or below 175% of the federal poverty level for the year of subscription; and households that are eligible for any federal, state, or local assistance program that limits participation to households whose income is at or below 175% of the federal poverty limit; moderate income - gross annual household income at or below 80% of the median income for Maryland for the year of subscription.¹¹⁶

The Maryland Clean Energy Jobs Act of 2019 defines low income as an annual household income at or below 175% of the federal poverty level. index include age, poverty. and language proficiency.¹¹⁸

¹¹⁶ Notice of Grant Availability for the FY20 Community Solar LMI PPA Grant Program. Maryland Energy Administration. Available at:

https://energy.maryland.gov/residential/Documents/01%20Notice%200f%20Grant%20Availability%20-%20LMI-PPA%20Grant%20FY-20%20Rev%203.pdf

¹¹⁸ Maryland Coastal Resilience Assessment. 2016. Available at: https://dnr.maryland.gov/ccs/Documents/MARCH-2016_MDCoastalResiliencyAssessment.pdf

MASSACHUSE	Eligibility is based on a maximum gross annual income not to exceed 60% of the estimated state median income. Eligibility includes residents with other social service benefits (e.g., households with a member receiving Transitional Aid to Families with Dependent Children and/or social security benefits.) ¹¹⁹	Residents eligible for Department of Housing and Community Development (DHCD) low- income energy assistance must adhere to a household income that does not exceed 60% of estimated state median Income. ¹²⁰	Eligibility for the Mass Save® Income Eligible program is household income that does not exceed 60% of estimated state median Income and 60% of the area median income for 5+ unit buildings. ¹²¹ The Mass Solar Loan program defines moderate income as 120% of state median income. ¹²² A low-income community shared tariff generation unit is defined as a generation unit that provides at least 50% of its generation to low- income customers with low- income customer being defined as a customer that receives a low- income discounted rate from a distribution company. ¹²³	The Massachusetts Department of Environmental Protection identifies Environmental Justice communities as those that meet one of the following criteria: ¹²⁴ Block group whose annual median household income is equal to or less than 65% of the statewide median (\$62,072 in 2010); or 25% or more of the residents identify as a race other than white; or 25% or more of households have no one over the age of 14 who speaks English only or very well (English Isolation). The state's Environmental Justice viewer is a web-based mapping platform that applies those criteria using	Resilient MA identifies indicators of population vulnerability, including: low income, low English proficiency, non-white, and elderly populations. ¹²⁵
				mapping platform that applies those criteria using 2010 Census block groups at: http://maps.massgis.state.m a.us/map_ol/ej.php as well as	

¹¹⁹ Weatherization Assistance Program. Department of Housing and Community Development. Available at: https://www.mass.gov/service-details/weatherization-assistance-program-wap

¹²⁰ Applying for Home Energy and Heating Assistance. Massachusetts Department of Housing and Community Development. Available at: https://www.mass.gov/how-to/apply-for-home-heating-and-energy-assistance ¹²¹ Income Eligible Programs. MassSaves. Available at: https://www.masssave.com/en/saving/income-based-offers/income-eligible-programs/

¹²² Affordable Access to Clean and Efficient Energy: Final Working Group Report. Massachusetts Department of Energy Resources, Department of Housing and Community Development and Massachusetts Clean Energy Center. April 20, 2017. Available at: https://www.mass.gov/files/documents/2017/09/12/aacee-report.pdf

¹²³ Solar Massachusetts Renewable Target Program. 225 CMR 20.00. Department of Energy Resources. Available at: https://www.mass.gov/files/documents/2017/10/16/225cmr20.pdf

¹²⁴ Environmental Justice Communities in Massachusetts. Massachusetts Department of Environmental Protection. Available at: https://www.mass.gov/info-details/environmental-justice-communities-in-massachusetts

¹²⁵ Massachusetts Statewide Vulnerable Populations Map. Resilient MA. Available at: http://resilientma.org/resources/resourc

				on the state's Resilient MA mapping platform: http://resilientma.org/map/	
NEW HAMPSHIRE	200% of federal poverty guidelines for weatherization services. ¹²⁶	60% of the state median income for its fuel assistance program.	New Hampshire uses the following definition for "low- moderate income community solar project" as part of its implementation of the New Hampshire Clean Energy Jobs and Opportunity Act of 2017: "ground-mounted or rooftop solar arrays that directly benefit a group of at least 5 residential end-user customers, where at least a majority of the residential end-user customers are at or below 300% of the federal poverty guidelines." ¹²⁷		The New Hampshire Department of Health and Human Services created a Social Vulnerability Index drawn from the index created by the U.S. Centers for Disease Control. ¹²⁸
NEW JERSEY	The Comfort Partners Program is available to low income households defined as having an income at or below 250% of the federal poverty guidelines. ¹²⁹ Households eligible for the state's weatherization assistance program are	Low-income households that are eligible for the Home Energy Assistance Program administered by the Department of Community Affairs must be responsible for home heating or cooling costs, either directly or included in the rent, and have gross	The state's community solar pilot program defines low income as a household with adjusted gross income at or below 200% of the federal poverty level. Moderate income is defined as a household with a total gross annual household income in excess of 50% but less than	The April 2018 Executive Order 23 directs the New Jersey Department of Environmental Protection to develop Environmental Justice guidance for the consideration of all executive branch agencies. ¹³³ The agency's draft guidance was issued in December 2018. It	

¹²⁶ The Weatherization Assistance Program Helps Many Households Every Winter. New Hampshire Office of Strategic Initiatives. Available at: https://www.nh.gov/osi/energy/programs/weatherization/highlights.htm ¹²⁷Development of Renewable Energy Fund Programs for Low and Moderate Income Residential Customers. Order 26.113. March 19, 2018. New Hampshire Public Utilities Commission. Available at: https://www.puc.nh.gov/regulatory/Docketbk/2017/17-172/ORDERS/17-172_2018-03-19_ORDER_26113.PDF

¹²⁸ Social Vulnerability Overview. New Hampshire Department of Health and Human Services. Available at: http://nhdphs.maps.arcgis.com/apps/MapSeries/index.html?appid=540237055720448097b7daddad74c3of ¹²⁹ Comfort Partners. New Jersey Clean Energy Program. New Jersey Board of Public Utilities. Last accessed July 11, 2019. http://www.njcleanenergy.com/residential/programs/comfort-partners/comfort-partners ¹³³ Executive Order 23: Addresses Environmental Justice Issues in New Jersey's Urban Communities. April 20, 2018. Available at: https://nj.gov/infobank/eo/056murphy/pdf/EO-23.pdf

those in which gross annual household income is equal to or less than 200% of federal poverty guidelines. ¹³⁰	income at or below 200% of the federal poverty level. ¹³¹	80% of the state median income. ¹³²	points to a definition of Environmental Justice issued by the U.S. Environmental Protection Agency: "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" with Fair Treatment meaning "that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies." The guidance also recommends establishment of a workgroup to "evaluate and make recommendations on the use of screening tools to identify environmental justice communities." ¹³⁴

¹³⁰ https://www.state.nj.us/dca/divisions/dhcr/offices/docs/wap/Wap_Chapter_1.pdf

¹³¹Low Income Home Energy Assistance Program Universal Service Fund. Fiscal Year 19 Fact Sheet. New Jersey Department of Community Affairs. Available at: https://www.nj.gov/dca/divisions/dhcr/offices/docs/usfhea_fact_sheet.pdf

¹³² Community Solar Energy Pilot Program – N.J.A.C. 14:8-9. Last accessed July 12, 2019. https://www.state.nj.us/bpu/pdf/rules/14%208%209%20Community%20Solar%20Pilot%20Rule%20Adoption%20-%20Advance%20Draft%2021119.pdf

¹³⁴ Environmental Justice Executive Order No. 23 (Draft) Guidance. December 17, 2018. Available at: https://www.nj.gov/dep/ej/e023/docs/e023-draft-guidance.pdf

NEW YORK	New York's weatherization assistance program is eligible for households with incomes at or below 60% of state median income. Households that receive home energy assistance benefits or other forms of social service benefits are also eligible. ¹³⁵	The state home energy assistance program is eligible to households with the higher of 60% of state median income or 150% of the federal poverty level. ¹³⁶	For its Home Performance With Energy Star program, the New York State Energy Research and Development Authority defines the low- income market segment as households with annual incomes at or below 60% of the state median income, and the moderate-income market segment as households with an annual income between 60% and 80% of the state median income, whichever is greater. ¹³⁷	 The New York Department of Environmental Conservation defines potential Environmental Justice areas as those U.S. Census block groups of 250 to 500 households that meet or exceeded at least one of the following thresholds: At least 51.1% of the population in an urban area reported themselves to be members of minority groups; or At least 33.8% of the population in a rural area reported themselves to be members of minority groups; or At least 23.59% of the population in an urban or rural area had household incomes below the federal poverty level.¹³⁸ The agency provides maps by counties to identify Census 	The2019 Climate Leadership and Community Protection Act defines disadvantaged communities as: "communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high- concentrations of low- and moderate- income households."
				blocks that meet those thresholds.	

¹³⁵ Weatherization Assistance Program. Department of Homes and Community Renewal. Available at: https://hcr.ny.gov/weatherization-assistance-program-o

¹³⁶ Detailed Model Plan. Low-Income Home Energy Assistance Program. October 1, 2018 to September 30, 2019. New York Office of Temporary and Disability Assistance. Available at:

http://otda.ny.gov/programs/heap/stateplan/2018-2019-State-Plan.pdf

¹³⁷ Assisted Home Performance with Energy Star, Frequently Asked Questions. NYSERDA. Available at: https://www.nyserda.ny.gov/All-Programs/Programs/Assisted-Home-Performance-with-ENERGY-STAR/FAQs ¹³⁸ Maps and Geospatial Tools for Environmental Justice. New York Department of Environmental Conservation. Available at: https://www.dec.ny.gov/public/g11.html

RHODEISLAND		Households must meet 60% of Rhode Island's area median income levels, which are set each program year. LIHEAP is administered by DHS, but applications are filed at local Community Action Program (CAP) agencies.	Rhode Island's community renewables pilot program is available for low-to-moderate- income households that meet the designated income eligibility codes of the state's largest utilities, National Grid (A-60 National Grid Rate Code) and Basic Residential (A-16 National Grid Rate Code). ¹³⁹	In 2009, the Rhode Island Department of Environmental Management adopted a policy that is limited to consideration of Environmental Justice issues as part of its site remediation program. Identified Environmental Justice areas are based on Census block groups on a statewide basis using data pertaining to minority status and poverty level. ¹⁴⁰	Rhode Island applies the U.S. Centers for Disease Control social vulnerability index as part of its health equity zones initiative. ^{141,142}
VERMONT	The Vermont WAP is available to low income households at or below 80% of median income with priority given to households with incomes below 60% of median income. Other eligible households include those in which a resident receives supplemental security income and/or seasonal fuel assistance. ¹⁴³	Low-income households that qualify for the Green Mountain's electricity energy assistance program are defined as those having a total gross monthly household income at or below 150% of the federal poverty level. Low-income households that qualify for the Vermont Gas Energy Assistance program have a gross monthly household income at or below 185%			The state Department of Health created a social vulnerability index drawn from the index created by the U.S. Centers for Disease Control. Vermont's index is "a planning tool to evaluate the relative vulnerability of populations in different parts of the state. It can be consulted in the event of an emergency, either natural or man-made, to identify

¹³⁹ https://www.nationalgridus.com/RI-Home/Rates/Service-Rates

¹⁴⁰ Policy for Considering Environmental Justice in the Review of Investigation and Remediation of Contaminated Properties. Rhode Island Department of Environmental Management. SOP Number BEP-AWC-1 . Last revision July 2008. Available at: http://www.dem.ri.gov/envequity/pdf/ejfinal.pdf

 ¹⁴¹ http://health.ri.gov/data/healthequity/socialvulnerability/
 ¹⁴² http://www.health.ri.gov/publications/brochures/HealthEquityZones.pdf
 ¹⁴³ The Weatherization Program. Vermont Department for Children and Families. Available at: https://dcf.vermont.gov/benefits/weatherization

		of the federal poverty level.		populations that may need more assistance."144
VIRGINIA	The Virginia Weatherization Assistance Program, administered by the Department of Housing and Community Development, and the Energy Assistance Program, administered by the Department of Social Services, define low income to be households below 200% of the federal poverty level or 60% of state median income, whichever is greater. ¹⁴⁵	The Virginia Weatherization Assistance Program, administered by the Department of Housing and Community Development, and the Energy Assistance Program, administered by the Department of Social Services, define low income to be households below 200% of the federal poverty level or 60% of state median income whichever is greater. ¹⁴⁶	The Virginia Advisory Council on Environmental Justice includes the following definitions: "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, faith, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment (nondiscriminatory actions) is the fair and equitable treatment of all whereby no group of people bear a disproportionate share of negative environmental consequences resulting from environmental decisions. Meaningful involvement is the guarantee that: (a) Impacted and vulnerable community residents have a realistic opportunity to participate in the full cycle of the decision-making process	A partnership of organizations in Virginia have developed a data visualization and mapping platform with regard to coastal resilience. They include the following definition of social vulnerability: "Social vulnerability refers to the characteristics of an individual or group that impacts their ability to anticipate, cope with, resist and recover from a physical hazard. The level of social vulnerability is dependent on physical, social, economic, and environmental factors. As social vulnerability in a population increases, their resiliency to natural hazards decreases. Knowing where vulnerability of individuals lies in a population can help governments and policymakers better aid their communities in the event of

¹⁴⁴ Tracking Vulnerability Indicators in Vermont. Vermont Department of Health. Available at: http://www.healthvermont.gov/tracking/vulnerability-indicators
¹⁴⁵ Virginia Weatherization Assistance Program. Income Eligibility Limits, 2018. Last accessed July 1, 2019. https://www.dhcd.virginia.gov/sites/default/files/Docx/weatherization/income-limits.pdf
¹⁴⁶ Virginia Weatherization Assistance Program. Income Eligibility Limits, 2018. Last accessed July 1, 2019. https://www.dhcd.virginia.gov/sites/default/files/Docx/weatherization/income-limits.pdf
¹⁴⁶ Virginia Weatherization Assistance Program. Income Eligibility Limits, 2018. Last accessed July 1, 2019. https://www.dhcd.virginia.gov/sites/default/files/Docx/weatherization/income-limits.pdf

about a proposed activity that will affect their environment and/or health; and (b) Decision-makers will seek out and consider participation, allowing it to shape and influence the decision."¹⁴⁷ a natural disaster like sea level rise."¹⁴⁸



¹⁴⁷ Structure of the Virginia Advisory Council on Environmental Justice. Secretary of Natural Resources. Last accessed July 1, 2019. https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/Virginia-ACEJ-Structure-FINAL.pdf

¹⁴⁸ Adapt Virginia: Evidence-based planning for Climate Change. Last accessed July 1, 2019. http://adaptva.com/info/planning_sv.html

Appendix B – Summary of RGGI States, New Jersey, and Virginia

Appendix B-1: Connecticut

Background on Relevant Connecticut Climate Change Programs

Connecticut has an extensive history of developing and implementing climate change and clean energy programs, including RGGI, long-term planning, stakeholder engagement, statewide mandatory emissions targets, sector-specific (e.g., transportation) initiatives, outreach and education, and financing and regulatory programs.¹⁴⁹ The 2008 Global Warming Solutions Act established a statutory requirement to reduce greenhouse gas emissions 10% below 1990 levels by 2020, and 80% below 2001 levels by 2050 with a commitment to mitigate greenhouse gas emissions.¹⁵⁰ In 2011 the State Legislature enacted Public Act 11-80, An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future Act (2011 Energy Future Act), which, among other provisions, restructured state agencies to create the Department of Energy and Environmental Protection (DEEP); established the Clean Energy and Finance and Investment Authority (CEFIA), which subsequently evolved into the Connecticut Green Bank (Green Bank); and created the Connecticut Energy Efficiency Board (CEEB), which was originally created in 1998. The Act also requires that the agency ensure clean energy funds be equitably distributed.¹⁵¹ The 2015 Executive Order 46 established a Governor's Council on Climate Change (GC₃) charged with making recommendations for meeting the statewide emissions reduction targets.¹⁵² The most recent overarching statewide strategy was issued by the GC3 in December 2018. Building a Low Carbon Future for Connecticut: Achieving a 45% Reduction by 2030 focuses on three goals: zero-carbon electricity generation, clean transportation, and efficient and resilient buildings.¹⁵³ Energy Affordability is a major consideration driving state programs, as articulated in a recent report from a nonprofit organization that assists residents in applying for energy assistance programs: "As has been true for several years, home energy costs continue to pose a crushing burden to low-income residents of the state. Particularly for households with incomes in "Deep Poverty," home energy costs threaten not only the ability of Connecticut households to retain access to energy services, but also threaten access to housing, food, medical care and other necessities of life."¹⁵⁴ The 2018 Public Act 18-82, An Act Concerning Climate Change Planning and Resiliency, contains a number of provisions to reduce greenhouse gas emissions and prepare the state for the ongoing effects of climate change and sea level rise, including:

¹⁵²Conn. Exec. Order No. 2015-46 (Apr. 22, 2015),

https://www.ct.gov/deep/lib/deep/climatechange/eo_46_climate_change.pdf

 ¹⁴⁹ Connecticut Department of Energy & Environmental Protection. 2019. Climate Action Timeline for Connecticut. Available at https://www.ct.gov/deep/cwp/view.asp?a=4423&q=533786&deepNav_GID=2121
 ¹⁵⁰ Connecticut Department of Energy & Environmental Protection. 2018. Connecticut Legislation and Executive Orders on Climate. Available at https://www.ct.gov/deep/cwp/view.asp?a=4423&q=530290&deepNav_GID=2121.
 ¹⁵¹ An Act Concerning The Establishment Of The Department Of Energy And Environmental Protection And Planning For Connecticut's Energy Future, Conn. Sta. §§11.80 (2011).

¹⁵³https://www.ct.gov/deep/lib/deep/climatechange/publications/building_a_low_carbon_future_for_ct_gc3_reco mmendations.pdf

¹⁵⁴ Colton, R. Home Energy Affordability in Connecticut: The Affordability Gap (2017). Prepared for: Operation Fuel: Retrieved from http://www.operationfuel.org/wp-content/uploads/2017/12/2017-ConnecticutHEAG-11-27-17-RDCedits.pdf.

- Implementing an interim target to reduce greenhouse gas emissions 45% from a 2001 baseline by 2030 as recommended by the Governor's Council on Climate Change;
- Updating current statutory references to sea level rise to reflect the Connecticut Institute for Resilience and Climate Adaptation's (CIRCA) planning recommendation of nearly two feet by 2050; and
- Requiring all future state projects located in the Coastal Boundary that are either undertaken by a state agency or funded by a state/federal grant or loan to include provisions to address CIRCA's planning projections.¹⁵⁵

Connecticut Participation in RGGI

Statutory authorization for Connecticut's participation in the RGGI budget trading program is contained in Section 93 of the 2007 Public Act 07-242¹⁵⁶ and codified by Connecticut Regulations of State Agencies (RCSA) Sections 22a-200c: Implementation of Regional Greenhouse Gas Initiative. ¹⁵⁷ In general, 69.5% of Connecticut's RGGI auction proceeds are transferred to accounts held by the investor-owned electric utilities, overseen by the Connecticut Energy Efficiency Board (EEB), and distributed to the municipal electric utilities to invest in energy efficiency programs. These efforts generally include home energy assessments and weatherization programs. Twenty-three percent of auction proceeds are directed to the Green Bank to advance the deployment of Class I renewable resources. The Green Bank invests RGGI proceeds in low-interest, no-money-down financing for clean and renewable energy projects under its Commercial Property Assessed Clean Energy program. The remaining 7.5% is held by DEEP to cover program administrative costs and to fund assessment and planning of measures to reduce emissions and mitigate climate change impacts.

Lead Agencies

The state Conservation and Load Management Plan is the mechanism by which funds are distributed. The EEB reviews and approves the plan, with DEEP having the final determination and approval of the plan. The Connecticut Energy Efficiency Board (EEB) reviews and approves the plan, and the Department of Energy and Environmental Protection has final determination and approval of the plan. The EEB also reviews distribution of the Connecticut Energy Efficiency Fund (CEEF), which includes revenue collected via a surcharge on customer electric and gas bills, RGGI auction proceeds, the ISO-NEW England Forward Capacity Market auctions, and other sources. The EEB conducts independent comprehensive evaluations of CEEF-funded residential, commercial, and industrial energy efficiency programs, and offers recommendations to DEEP and PURA as well as the state legislature. The EEB is comprised of 15 members. Ten are appointed voting members from private and public entities representing residential, business, agricultural, community, and municipal consumers. Five are non-voting representatives from Connecticut's electric and gas utility companies.¹⁵⁸

¹⁵⁶ An Act Concerning Electricity And Energy Efficiency, Conn. Sta. §§ 07-242 (2007).m

¹⁵⁷ The Regional Greenhouse Gas Initiative. 2019. State Statutes & Regulations. Available at https://www.rggi.org/program-overview-and-design/state-regulations.

¹⁵⁸ Energize Connecticut. 2019. About the Energy Efficiency Board. Available at

https://www.energizect.com/connecticut-energy-efficiency-board/about-energy-efficiency-board.

¹⁵⁵ An Act Concerning Climate Change Planning And Resiliency, Conn. Sta. §§ 18-82 (2018).

The Connecticut Green Bank was statutorily established by the state as part of the 2011 Energy Future Act (Public Act11-80) as a quasi-public instrumentality of the state. It is the first state green bank in the country. The Green Bank's mission is to support "the Governor's and Legislature's energy strategy to achieve cleaner, less expensive, and more reliable sources of energy while creating jobs and supporting local economic development." For every \$1 the Green Bank invests, it brings in another \$6 in private investments.¹⁵⁹ As a finance organization, the Green Bank preserves its public capital by stipulating that financing be repaid. The Green Bank has created an estimated 13,000 jobs and driven a total of \$1 billion of clean energy investment. This translates to more than 215 megawatts of clean power, over 20,000 projects, and reduction of CO_2 emissions by 2.6 million tons.¹⁶⁰

The Department of Energy and Environmental Protection (DEEP) was established in 2011 when the Departments of Environmental Protection and Public Utility Control were consolidated, along with an energy policy group that had been based at the Office of Policy and Management. DEEP's Energy Branch includes the state's Public Utilities Regulatory Authority (PURA), formerly the Department of Public Utility Control, which regulates the rates and services of investor-owned electricity, natural gas, and water utilities and is the franchising authority over cable television companies in the state. It also encompasses the Bureau of Energy and Technology Policy (BETP), which develops programs and policies associated with energy efficiency, infrastructure, and alternative power programs. BETP's Office of Climate Change develops, implements, and oversees policies and programs to further the state's climate change goals and promote innovative renewable energy and energy efficiency technologies. The Office of Climate Change provides general oversight for Connecticut's participation in the RGGI CO₂ budget trading program, while the Bureau of Air Management seeks to ensure that CO₂ emission sources in Connecticut hold sufficient allowances in their compliance accounts at certain milestones during a given control period, relative to the RGGI program.¹⁶¹ BETP's Office of Energy Demand provides overall program management for Connecticut's Conservation and Load Management Plan (C&LM Plan) and the state's Weatherization Assistance Program, as funded by the federal Department of Energy in partnership with the Connecticut Community Action Agency Network. Local Community Action agencies confirm income eligibility and coordinate services. DEEP also maintains an Environmental Justice program that is charged with assessing the effectiveness of DEEP efforts in urban areas and environmental problems in low-income and supporting communities, increasing public participation in agency decision-making and administrative procedures, and identifying community health concerns.¹⁶²

The Connecticut Department of Social Services administers the state's Energy Assistance Program (CEAP), which is funded by the U.S. Department of Health and Human Services' Low Income Home

- http://coalitionforgreencapital.com/wp-content/uploads/2017/04/CT-Green-Bank-Org-Fact-Sheet.pdf.
- ¹⁶¹Connecticut Department of Energy & Environmental Protection. 2018. Available at
- https://www.ct.gov/deep/site/default.asp.

¹⁵⁹ Green Bank Impact Report. Connecticut Green Bank. 2019. https://www.ctgreenbank.com/wp-content/uploads/2019/02/FY12-CY18-CGB-Impact-3-20-19.pdf/.

¹⁶⁰ Connecticut Green Bank–Organization Fact Sheet. Coalition for Green Capital. 2017.

¹⁶² Connecticut Department of Energy & Environmental Protection. 2019. Overview- Environmental Justice Program. Available at https://www.ct.gov/deep/cwp/view.asp?a=2688&q=322380&deepNav_GID=1511

Energy Assistance Program (LIHEAP) Block Grant. The CEAP is administered in collaboration with its partners via the Connecticut Community Action Agency Network.

Connecticut's Low-Income Energy Advisory Board (LIEAB) assists DEEP, the Office of Policy and Management, and the Department of Social Services in the planning, development, implementation, and coordination of energy-assistance-related programs and policies and low-income weatherization assistance programs and policies. LIEAB advises DEEP on the impact of utility rates and policies on low-income residents. The Board has membership that includes state agencies as well as social service agencies and nonprofit organizations that work closely with low-income households.¹⁶³ LIEAB has been active in pointing to a need for establishment of pre-weatherization programs.¹⁶⁴

Benefits Directed to Disadvantaged Communities and Consumers

High-energy burden (the percentage of utility costs relative to gross household income) in Connecticut is a particularly pervasive problem:

- Connecticut residents spend \$5.2 billion per year to heat, cool, light, and provide hot water more than the state's budget for health care or education.
- An estimated 430,000 households in Connecticut are considered low-income, defined as earning 60% or less than the area median income.
- More than half of Connecticut's low-income residents suffer a high energy cost burden (defined as greater than 10% of gross household income).
- The "energy affordability gap," the dollar amount by which a household's energy bills exceed affordability (defined as more than 6% of income), ranges from \$1,250 to \$2,500 a year.¹⁶⁵

The energy affordability gap is generally recognized throughout the state as a pressing priority. With the intent of advancing Connecticut towards a zero-carbon economy, the state's February 2018 Comprehensive Energy Strategy (CES) outlines eight strategies to guide administrative and legislative action, including the following two strategies:¹⁶⁶

• Reduce the energy burden of low-income households. The CES points to an energy affordability gap in the state's more than 320,000 low-income homes of \$1,404. The CES points to a legislative diversion of funding for implementation of the joint utility filed C&LM Plan as a challenge to continuation of the state's weatherization program, freeing up LIHEAP funds for consumer financial assistance programs. The CES also points to recommendations for greater coordination

 ¹⁶³ Connecticut Department of Energy & Environmental Protection. 2018. Low-Income Energy Advisory Board Members. Available at https://www.ct.gov/deep/cwp/view.asp?a=4405&Q=508092&deepNav_GID=21212.
 ¹⁶⁴ Connecticut Department of Energy & Environmental Protection. 2019. Weatherization Assistance Program.

 $[\]label{eq:action} Available \ at \ https://www.ct.gov/deep/cwp/view.asp?a=4405 \& Q=569064 \& deep \ Nav_GID=2121.$

¹⁶⁵ Colton, R. Home Energy Affordability in Connecticut: The Affordability Gap (2016). Prepared for: Operation Fuel: Retrieved from http://www.operationfuel.org/wp-content/uploads/2016/12/2016-ConnecticutHEAG-Final.pdf.

¹⁶⁶ Comprehensive Energy Strategy. Connecticut Department of Energy and Environmental Protection. 2018. http://www.ct.gov/deep/lib/deep/energy/ces/2018_comprehensive_energy_strategy.pdf.

and data sharing between utility energy assistance and efficiency programs and to be more proactive in working with low-income households.¹⁶⁷ The CES also indicates DEEP's and Green Bank's intention to "continue to advance opportunities, where appropriate, to facilitate affordable deployment of on-site residential solar energy generation." The CES points to legislative diversion of funding for implementation of the C&LMPlan: "Given the legislative diversion of funding for implementation of the C&LMPlan, reallocating C&LMPlan funds is critical to continue weatherizing qualified homes, which reduces energy waste and in turn leverages the LIHEAP funding for financial assistance. DEEP additionally recommends continuing to allocate a portion of available LIHEAP funding to support emergency furnace replacements, energy efficiency, and related health and safety support to help these households ensure their homes can be weatherized."

Address health and safety barriers to further unlock efficiency and create healthier homes. In the CES, DEEP recommends that the state collaborate with property and health insurers, health care providers, and others to expand programs to assist low-income homeowners with undertaking health and safety reports that would also ready homes for weatherization. The CES points to the recommendation from the Department of Social Services and LIEAB for creation of a long-term sustainable funding mechanism to address health and safety concerns prior to weatherization: "Specifically, DEEP, the Department of Social Services and the Low-Income Energy Advisory Board have recommended and are implementing allocations of LIHEAP funds for eligible households for use in addressing health and safety concerns prior to weatherization."

Similar commitments came from the GC₃, which, in March 2018, issued a set of principles to guide ongoing and future efforts to implement actions needed to meet the 45% by 2030 goal endorsed by the GC₃ pursuant to Executive Order 46. The principles recognize that the mid-term statewide goal is ambitious and requires "significant changes to all sectors of the state's economy." Among the seven principles is a commitment to: "Prioritize and implement measures that:

- Achieve the largest GHG emission reductions in a cost-effective, timely, and efficient manner, with a focus on implementing proven, scalable strategies.
- Balance and factor in measurable in-state co-benefits (such as improved health, economic development, energy security and independence, and quality of life) as well as life-cycle costs and the cost of inaction;
- Address racial, class, gender, geographic, and generational equity in both costs and benefits.¹⁶⁸"

The December 2018 GC3 report, *Building a Low Carbon Future for Connecticut: Achieving a 45% Reduction by 2030*, includes a recommendation to expand the current 6-megawatt residential clean energy pilot

¹⁶⁷ Meeting the Needs of Low-Income Households in Connecticut Final Report. Applied Public Policy Research Institute for Study and Evaluation. 2016. Prepared for: Operation Fuel: Retrieved from

http://www.operationfuel.org/wp-content/uploads/2017/03/CT-Operation-Fuel-Study-FINAL-Report-12-31-16.pdf.

¹⁶⁸ Mid-Term Target Recommendations and Statement of Principles. Governor's Council on Climate Change. 2018. https://www.ct.gov/deep/lib/deep/climatechange/gc3/gc3_statement_of_principles_3_2018.pdf.

program established in 2017 to deploy up to 25 megawatts per year, with a focus on low - and moderateincome customers, including renters, affordable housing facilities, and low-income service organizations.

Additionally, in 2018 the LIEAB issued a set of recommendations regarding energy affordability. It stated that the state should set a goal that no more than 6% of low-income ratepayers' incomes should be spent on energy. It stated that current policies were not effective at meeting the needs of low-income energy users and offered several policy recommendations to achieve that goal:

- Automatic energy assistance enrolling
- Creation of rate designs that address past and current energy use
- Provision of incentives for low-income consumers who are conserving energy
- Establishment of tenants' rights to repair or replace inefficient appliances and make improvements to their dwellings without landlord approval¹⁶⁹

From 2016 to 2018, a partnership of Connecticut agencies participated in a federal Department of Energy Accelerator program, Clean Energy for Low-Income Communities, ¹⁷⁰ which provided the state with important insights on strategies to deploy solar and weatherization to low-income households. The state partnership agencies have organized their efforts on low-income energy efficiency and renewable energy into a strategic action plan, which has three primary objectives. The agencies have structured individual programs, including the Green Bank investments, in response to these three objectives:

- Reduce the energy affordability gap for low-income households This program includes:
 - The Home Energy Solutions–Income Eligible program provides energy efficiency services to income-eligible residents at no cost. The energy efficiency services are the same as those provided at market rate by Home Energy Solutions.
 - Connecticut WAP weatherizes 300-500 homes annually. The program is jointly administered by DEEP and the Community Action Agency Network with \$1 million available for health and safety barriers.
 - The Energize Connecticut Heating Equipment Replacement loan program provides lowinterest loans of up to \$15,000 for 10 years repaid via electric bills.
 - Solar for All is a community-based solar program that bundles solar availability with no income or credit limits for low- and moderate-income households. It is designed for low- and moderate-income¹⁷¹ owner-occupied dwellings.¹⁷² The Solar for All program has

¹⁷⁰Better Buildings Initiative. 2019. Clean Energy for Low Income Communities. Available at

https://betterbuildingsinitiative.energy.gov/accelerators/clean -energy-low-income -communities.

¹⁶⁹ CT's Low-Income Energy Advisory Board Releases Policy Recommendations. State of Connecticut Office of Consumer Counsel. 2018. https://www.ct.gov/occ/lib/occ/2018-1031_lieab_to.pdf.

¹⁷¹ O'Neil, Kerry of Clean Energy Finance and Investment Authority. Memo on Market Analysis of Residential Solar Deployment and Housing Characteristics of CT's Low Income Sector. Prepared for: Connecticut Green Bank Board of Directors. 2014. Retrieved from: https://www.ctgreenbank.com/wp-content/uploads/2015/12/CGB-BOD-Memo_Low-Income-Solar-and-Housing-Market-Analysis_v20141212.pdf

¹⁷² O'Neil K., Stevenson K., and Healey B. of Clean Energy Finance and Investment Authority. Memo on Role of a Green Bank – Low Income Solar Deployment. Prepared for: Connecticut Green Bank Board of Directors. 2014.

demonstrated a 5:1 leverage ratio of Green Bank to private investor funds and has focused on communities historically underserved by clean energy programs. A recent Green Bank report indicates that solar adoption in low-to-moderate-income census tracts is now higher than solar penetration in upper-income census tracts relative to the distribution of owneroccupied homes.

- Expanded financing for energy efficiency and solar for low- and moderate-income customers -The Connecticut Department of Housing, Connecticut Housing Finance Authority, utilities, and the Green Bank coordinated to require low-income multifamily property owners to apply for energy efficiency incentives before seeking financing and public subsidies (i.e., tax credits). According to the Green Bank, few projects requesting tax credits addressed energy at all prior to implementing this requirement. This alignment has been transformative for the multifamily market in Connecticut with projects now receiving public funding achieving energy savings of 18-39%.¹⁷³ This program alignment would be relatively easy to replicate in other states, as it did not require a legislative change. Several Green Bank financing programs are dedicated to multifamily programs and are available for dwellings with five or more units:¹⁷⁴ Multifamily energy efficiency, renewables, and other improvement projects have received 75 loans and leases worth over \$125 million. Of these, 29 projects installed solar, 25 were Low-Income Multifamily Energy (LIME) loans, and 18 were solar power purchase agreements (PPAs). Examples of programs include:
 - Catalyst Fund financing funds the gap in remediation health and safety projects to make homes eligible for weatherization. In order to qualify for Catalyst financing, at least 60% of units must serve tenants at 80% of area median income or below.
 - C-PACE finances implementation of energy efficiency improvements, construction of high performance new builds and major renovations, and solar and other renewable systems with effectively lower operating costs.
 - Multifamily energy efficiency financial programs ensure that property owners have leveraged all available energy efficiency project incentives before the state makes determinations on low income-tax credits and other housing development financing from the Department of Housing (DOH) and Connecticut Housing Finance Authority (CTHFA) programs.
 - The multifamily predevelopment loan program provides funding to property owners interested in significant energy improvements who do not have up-front capital available for project scoping.
 - The low-income multifamily energy loan program (LIME) provides low-cost, de-risked capital to low-income multifamily energy projects, including unsecured loans for up to 20-year terms. LIME finances the implementation of energy efficiency improvements, solar

Retrieved from: https://www.ctgreenbank.com/wp-content/uploads/2015/12/CGB-Low-Income-Solar-Strategy-BOD-Memo-v20141212.pdf.

¹⁷³ 2014 Annual Report. Connecticut Housing Finance Authority. 2014.

https://www.chfa.org/assets/1/6/CHFA_Report_2014_6-30-15.pdf?7068.

¹⁷⁴ Multifamily Clean Energy Financing. Energize Connecticut. 2018.

https://www.energizect.com/sites/default/files/Multifamily-Financing-Matrix-2018-11.pdf

and other renewable systems, and health and safety measures. In order to qualify for LIME financing, at least 60% of units must serve tenants at 80% of area median income or below.

- Address health and safety barriers to energy improvements The state's utility-ratepayer-funded Home Energy Solutions - Income Eligible (HES-IE) program estimates that 15-35% of housing units cannot pursue a blower door test due to a health or safety issue. Given these trends, health and safety is an emerging area for which additional data and pilot initiatives will help inform strategy and leverage additional funding. Use of state monies to support health and safety improvements in residential dwellings is an ongoing area of policy focus in Connecticut. The State's 2018 WAP Plan notes that a portion of WAP funds will be used for health and safety remediation in low-income households, and it identifies households with an energy burden of 10% or more as high priority.¹⁷⁵ In 2016, as part of legislative hearings on the annual allocation plan for the state's energy assistance program, DEEP offered a recommendation to use a portion of the federal Department of Health and Human Services LIHEAP allocation to Connecticut for the removal of health and safety barriers to weatherization, used at Weatherization Assistance Program homes. Currently the agency received \$550,000 per year to address these issues, which does not resolve the current need. Examples of programs include:
 - o The Smart-E loan program offers unsecured loans to one- to four-unit owner-occupied households with debt-to-income ratios not typically qualified in the marketplace. ¹⁷⁶ It has provided over \$51 million in financing to 3,167 projects, using \$2.4 million in credit enhancement through a loan loss reserve, with a 20:1 advantage ratio. Due to the strong portfolio performance, the Green Bank broadened the criteria for Smart-E Loans to offer a "credit-challenged" product and extended the loan terms to 15 to 20 years. Overall 35% of projects occur in low-income census tracts, and since January 20171,374 credit-challenged projects have been approved. Up to 25% of a Smart-E loan can be used for health and safety improvements. To date, 24 credit-challenged loans have addressed a health or safety issue, including the removal of asbestos. There is a \$1.5 million revolving health and safety loan fund for multifamily projects in the state.¹⁷⁷
 - The Connecticut Green and Healthy Homes Project is a pilot program designed to inform a future statewide model in which home-based interventions address cyclical health problems stemming from subpar housing conditions. The goal is to improve health outcomes, reduce energy burdens, and save on statewide costs.¹⁷⁸
 - The Healthy Homes Deferral Pilot Program quantifies the costs of health and safety problems that cause deferrals of the WAP or HES-IE programs. With support from the Green Bank, the state's Early Childhood Program, the State Department of Public Health,

¹⁷⁶ Connecticut Green Bank. 2017. Smart-E Loans. Available at https://ctgreenbank.com/programs/smart-e-loans/.
 ¹⁷⁷ Connecticut Green Bank. 2017. EnergizeCT Health & Safety Revolving Loan Fund. Available at

¹⁷⁵ Connecticut Department of Energy & Environmental Protection. 2018. Weatherization Assistance Program State Plan. https://www.ct.gov/deep/cwp/view.asp?a=4405&Q=569064&deepNav_GID=2121

https://www.ctgreenbank.com/programs/multifamily/energizect-health-safety-loan/.

¹⁷⁸Connecticut Green Bank. 2019. Connecticut Green and Healthy Homes Project. Available at https://ctgreenbank.com/ct-ghhi/.

and local philanthropies, the project is intended to inform development of statewide policy in years to come.

To assess data on housing types, fuel sources, and housing vintage for low-income households, partners in Connecticut used the Low-Income Energy Affordability Data (LEAD) tool available via the Department of Energy CELICA program¹⁷⁹. This tool contains data on energy burden and housing for low-income households and can be used for energy policy and program planning. Single-family owner-occupied homes and large multifamily buildings represent nearly two-thirds of low-income housing in Connecticut. Thus, the Green Bank decided to collaborate with others on programs like Solar for All for the low-income single-family market and with state housing agencies and others on financing for the affordable multifamily market. The LEAD tool also includes data on the vintage of the housing stock in Connecticut: Seventy-eight percent of homes with low-income occupants were built in 1979 or earlier compared to 67% for higher income households. Low-income households living in older units experience a combination of higher fuel costs, general home inefficiencies (low level of insulation, drafts, etc.), and an increased level of potential health and safety issues (mold, materials that contain asbestos, etc.) that must be addressed before energy efficiency improvements can be made.

Public Act 15-112, An Act Establishing a Shared Clean Energy Facility Pilot Program (amended by Public Act 16-116, An Act Concerning the Shared Clean Energy Facility Pilot Program) establishes a two-year pilot program to advance the development of shared clean energy facilities (SCEFs) with an objective of expanding access to clean energy by low- and moderate-income consumers, renters, and others. By definition, a SCEF is a Class I renewable system that is available to a minimum of 10 subscribers in the service territory of either of the participating two utilities. Three projects are participating in the pilot program, which is intended to inform broader development of the program. Early evidence indicated a possible need to exempt the leasing/ownership requirements through tariff structures to specifically incentivize participation of low-income residents.¹⁸⁰ Building off the initial pilot program, the state legislature in 2018 passed Public Act 18-50, which includes provisions instituting a statewide SCEF program.¹⁸¹ DEEP is currently developing program requirements and tariff proposals for submittal to PURA by July 1, 2019, for its review and approval. The law require no less than 10% of the total capacity of each facility must be subscribed to low-income customers specifically and that no less than an additional 10% of total capacity of each facility must be subscribed to low-income customers, moderateincome customers, or low-income service organizations. Additionally, the law includes provisions that allow DEEP to establish program preferences for projects that serve low-income customers and SCEFs

¹⁷⁹ OpenEI. U.S. Department of Energy. 2019. Low-Income Energy Affordability Data Tool. Available at https://openei.org/doe-opendata/dataset/celica-data.

¹⁸⁰ Connecticut Department of Energy & Environmental Protection. Memo on Shared Clean Energy Facilities Pilot Program Report to the Connecticut General Assembly. Prepared for Energy & Technology Committee Members. 2018. Retrieved from: https://www.ct.gov/deep/lib/deep/energy/scef/scef_report_et_committee.pdf.

¹⁸¹ An Act Concerning Connecticut's Energy Future. Conn. Sta. §§ 18.50 (2018).

³⁶ Connecticut Department of Energy & Environmental Protection. 2019. Conservation & Load Management. Available at https://www.ct.gov/deep/cwp/view.asp?a=4405&Q=490116&deepNav_GID=2121.

that benefit customers who reside in Environmental Justice communities. The law further allows DEEP to create incentives or other financing mechanisms to encourage participation of low-income customers.

The 2011 Energy Future Act requires DEEP to do the following: Before approving any plan for energy conservation and load management submitted by the Energy Efficiency Board (EEB) or any plan for renewable energy projects submitted by the board of directors of the Clean Energy Finance and Investment Authority (CEFIA, now the Connecticut Green Bank), DEEP must determine that an *equitable amount of the funds* administered by each such board are to be deployed among communities that fit the following definition: "small and large customers with a maximum average monthly peak demand of one hundred kilowatts in census tracts in which the median income is not more than sixty per cent of the state median income." Furthermore, the Act directs DEEP to determine equitable shares of funds and issue an annual report. The Act may also direct DEEP to develop a mentoring component for communities. In its implementation of the law, DEEP refers to the equitable distribution provision as having a focus on "distressed census tracts." Since the passage of the law, DEEP has issued three annual report, DEEP recognized that to "promote equitable distribution of program spending, energy service providers must encourage participation in underserved areas by marketing, outreach, and mentoring efforts."¹⁸³

In its 2013 report, DEEP began use of a methodology to monitor "equitable distribution" on the basis of proportions of contributions from customers to the Conservation and Loan Management fund through surcharges on their energy bills (called the "3 Mill Charge") compared to incentives received. In 2013, DEEP concluded that, overall, the two electric distribution companies did distribute an equitable share of incentives to customers in distressed census tracts compared with contributions from the 3 Mill surcharge in those tracts, but it also concluded that, with a more narrow assessment, one of the two electric distribution companies did not achieve equitable distribution. DEEP recommends that the company address the identified inequity in the future. Furthermore, DEEP determined that the Green Bank had not achieved equitable distribution in that calendar year and found that "ratepayers of more limited financial means may be less likely to seek out renewable energy measures." DEEP indicated that it planned to work collaboratively with the Green Bank "to enhance project efficiency and to increase energy efficiency and renewable energy program participation by residents and businesses within distressed census tracts."184 In its most recent annual report, for years 2014–15, and using the same methodology, DEEP concludes that, overall, the state's two electric distribution companies "achieved equitable distribution by disbursing a greater proportion of total incentives to customers with small loads, in distressed census tracts than the proportion of total collections received from those same customers in years 2014 and 2015." It further concludes that the Green Bank "does not technically meet

¹⁸² Report to The Joint Legislative Committee on Energy and Technology: Regarding the Equitable Distribution of Conservation and Renewable Energy Funds in Connecticut, pursuant to Public Act 11-80, Section 101. Connecticut Department of Energy & Environmental Protection. 2012.

https://www.ct.gov/deep/lib/deep/energy/conserloadmgmt/2012equitabledistributionreport.pdf

¹⁸³ Report to the Joint Legislative Committee on Energy and Technology: Regarding the Equitable Distribution of Conservation and Renewable Energy Funds in Connecticut during Calendar Year 2013. Connecticut Department of Energy & Environmental Protection. 2015.

https://www.ct.gov/deep/lib/deep/energy/conserloadmgmt/2013 EquitableDistributionReport.pdf.

¹⁸⁴ Connecticut Environmental Policy Act. Conn. Sta. §§ 22a.1-22a.1h (1971).

the threshold of equitable distribution as defined in this report but DEEP acknowledges that it is by a 1% or less margin."

Internal Operations

Connecticut state agencies are involved in an extensive amount of collaborative initiatives focused on reducing energy burden on low-income households. Participation in programs includes DEEP, the Green Bank, and the Departments of Housing, Public Health, and Social Services. Several Advisory bodies, CEEB, LIEAB, and the GC₃ have shared similar priorities with regard to lowering energy impacts on low-income residents.

Agency staff point to several statutory requirements that foster interagency collaboration including provisions in the Connecticut Environmental Policy Act. The Act is designed to identify and evaluate the impacts of proposed state actions, which may significantly affect the environment. The Act states that, "it is the policy of the state to improve and coordinate state plans, functions, programs, and resources." ¹⁸⁵ Connecticut General Statutes §16-245 established a joint committee of the Energy Conservation Management Board and the Board of Directors of the Connecticut Green Bank and stipulates that the Green Bank Board of Directors includes the state Treasurer, Commissioner of Energy and Environmental Protection, and the Commissioner of Economic and Community Development. The 2015 Executive Order 46 established the Governor's Council on Climate Change (GC₃), which consists of 15 members from state agencies, quasi-state agencies, businesses, and nonprofits.¹⁸⁶

Additionally, legislative action has provided clear direction to executive branch agencies with regard to ensuring equitable distribution of clean energy and climate change program benefits both via the "equitable distribution" requirement of the 2011 Energy Future Act. State agencies collaborated on the development of the 2018 CES that outlines specific program strategies administered by multiple agencies.

In 2014, the Green Bank received a mandate from its board of directors to develop a low-income solar strategy. After early successes with residential solar financing products for market-rate customers, the Green Bank shifted its focus to understanding the needs of low-income customers, including energy efficiency and health and safety challenges, and ultimately to developing programs that reduce energy burden. The data on relatively high rates of low-income homeownership compelled them to serve that submarket. Given the complexity of the problems faced by low-income households, there was a need to develop partnerships across the utility, housing, healthcare, and other sectors.

Connecticut has two major utilities over which PURA has regulatory oversight, allowing for relatively clear communication and collaboration. According to interviews with state officials, the utilities have been very forward thinking on programs for low-income customers and have been rewarded for their achievements, which in turn encourages more investment and progress.

¹⁸⁵ Connecticut Department of Energy & Environmental Protection. 2019. Governor's Council on Climate Change. Available at https://www.ct.gov/deep/cwp/view.asp?a=4423&Q=568878&deepNav_GID=2121.

¹⁸⁶ Connecticut Energy Efficiency Fund. 2019. Connecticut Statewide Energy Efficiency Dashboard. Available at https://ctenergydashboard.com/Public/PublicRESLoanFinancing.aspx.

Measurement and Monitoring

Connecticut's Energy Efficiency Dashboard provides online access to energy usage and savings statewide with the ability to track trends at the municipal level and for the state's two energy distribution companies. Connecticut's Energy Efficiency Dashboard provides online access to energy usage and savings statewide with the ability to track trends at the municipal level and for the state's two energy distribution companies.¹⁸⁷ Each year, DEEP is required to issue a report to the Legislature regarding the statutory "equitable distribution" provision with regard to both the two electricity distribution companies and Green Bank funding programs.

External Stakeholder Engagement

The LIEAB has been a strong, independent voice for advancing policies designed to address the needs of low-income residents. The GC₃ not only convenes state agencies but also serves as a stakeholder forum on climate change policy. The CEEB includes representation of the Office of Consumer Counsel. These structures have presented clear and consistent direction to executive branch agencies with regard to increasing energy affordability for low-income residents.

Contact: Julia Dumaine, Research Analyst Office of Energy Demand, Bureau of Energy and Technology Policy Connecticut Department of Energy and Environmental Protection Julia.Dumaine@ct.gov

¹⁸⁷Connecticut Energy Efficiency Fund. 2019. Connecticut Statewide Energy Efficiency Dashboard. Available at https://ctenergydashboard.com/Public/PublicRESLoanFinancing.aspx.

Appendix B-2: Delaware

Background on Delaware Climate Change Programs

- The overarching authority for Delaware's climate change programs is pursuant to its 2013 Executive Order 41, Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions. Executive Order 41 directs state agencies to address both the causes and consequences of climate change by developing actionable recommendations to reduce greenhouse gas emissions that contribute to climate change, increase resilience to climate impacts, and avoid and minimize flood risks due to sea level rise.¹⁸⁸
- In 2006, the State passed Title 7, Chapter 60 of the Delaware Code, subchapter IIA, §6043 that authorizes participation in the Regional Greenhouse Gas Initiative.¹⁸⁹
- In 2007, the state enacted Subchapter II of Chapter 80, Title 29 creating the Delaware Sustainable Energy Utility, a nonprofit entity that, among other responsibilities, distributes 65% of the state's RGGI proceeds.¹⁹⁰

Delaware Participation in RGGI

The law authorizing Delaware's participation in RGGI stipulates that 100% of Delaware's RGGI allowances shall be auctioned beginning in 2014 and identifies the following distribution of the state's auction proceeds:

- 65% are directed to the Sustainable Energy Utility Fund and shall be directed to future SEU goals, including promotion of energy conservation, energy efficiency, renewable energy, and energy financing;
- 15% of auction proceeds are directed to low-income weatherization and energy assistance programs;
- 10% of auction proceeds are directed to administrative costs;
- 10% of auction proceeds are directed to support the Delaware Greenhouse Gas Reduction Projects Grant Program. This program supports "climate change activities designed to reduce greenhouse gas emissions from all sectors of Delaware's economy and must result in quantifiable and verifiable reductions in greenhouse gas emissions in Delaware not otherwise required by federal or state law and not receiving funding from any other state sources."¹⁹¹, ¹⁹²

Lead Agencies

 Delaware Department of Natural Resources and Environmental Control (DNREC) - The DNREC Division of Air Quality is responsible for implementing the state's participation in the RGGI CO₂ Budget Trading Program pursuant to the state's regulations.¹⁹³ The DNREC Division of Climate,

¹⁸⁸ Delaware Division of Energy and Climate. 2019. The Climate Framework for Delaware. Available at http://www.dnrec.delaware.gov/energy/Pages/Climate-Framework.aspx.

¹⁸⁹ 7-60. Del. Code. Sub-chapter II-A. § 6043 (2006).

¹⁹⁰ 29-80. Del. Code. Sub-chapter II (2007).

¹⁹¹ 7-60. Del. Code. Sub-chapter II-A. § 6043 (2006).

¹⁹² Delaware Division of Energy and Climate. 2019. Reducing Greenhouse Gases. Available at

http://www.dnrec.delaware.gov/energy/Pages/Reducing-Greenhouse-Gases.aspx.

¹⁹³ 7-1147 Del. Admin. Code (2018).
Coastal and Energy manages the portions of Delaware's RGGI auction proceeds that are directed to low-income weatherization and energy assistance programs, administrative costs and support for the Delaware Greenhouse Gas reduction projects grant program, along with other program responsibilities including resilience planning, conducting climate change vulnerability assessments, and development of guidance and support for state and local agencies.

Delaware Sustainable Energy Utility - Sixty-five percent of Delaware's RGGI auction proceeds are 0 directed to the state's Sustainable Energy Utility (DESEU). DESEU, more commonly referred to as Energize Delaware, is a nonprofit 501(c)3 organization established by law in 2007 via Subchapter II of Chapter 80, Title 29. Statutory establishment of Energize Delaware was prompted by the 2006 creation of a Sustainable Energy Utility (SEU) Task Force by the Delaware Legislature's Concurrent Resolution No. 45. In 2007, the Task Force recommended the establishment of Energize Delaware and highlighted the goal of having a "one stop" resource for the state's sustainable energy initiatives and for delivering "affordable energy for low and moderate income households," recognizing that energy costs for low-income households account for a much larger proportion of household income than for others.¹⁹⁴ Statutory changes to the law establishing Energize Delaware were enacted in 2014. The changes included the creation of an Executive Director position and directed Energize Delaware to develop a long-term plan. Energize Delaware adopted its first strategic plan in 2015. The primary source of revenue for Energize Delaware is RGGI auction proceeds, with less significant revenue coming from its bonding authority. The articles of incorporation and by-laws establish the Energize Delaware Oversight Board comprised of ex-officio cabinet members, including the Delaware Public Advocate, seven gubernatorial appointees, and appointments from the State Senate President and Speaker of the House of Representatives. ¹⁹⁵

The 2015 strategic plan outlines Energize Delaware's mission and vision statements, the final versions of which can be found on the Energize Delaware website, along with the following organizational values:

- Community Oriented
- Effective
- Socially Equitable
- Environmentally Sustainable
- Economically Feasible
- Customer Friendly
- A Pleasure to Use¹⁹⁶

¹⁹⁴ The Sustainable Energy Utility: A Delaware First, A Report to the Delaware State Legislature by the Sustainable Energy Utility Task Force. 2007. http://www1.udel.edu/SEU-

DE/docs/2007_DE%20Senate_SEU_Task_Force_final_report.pdf.

¹⁹⁵ Energize Delaware. Bylaws and Official Documents. Available at:

https://www.energizedelaware.org/home/deseu/bylaws-and-official-docs/

¹⁹⁶ Energize Delaware. Vision. Available at: https://www.energizedelaware.org/home/deseu/vision/

Benefits Directed to Disadvantaged Communities and Consumers

In 2014, the DESEU Oversight Committee expressed a specific interest in expanding programs for households with low and moderate incomes. Following that, an ad hoc committee was formed to study the energy needs of low- and moderate-income populations. Two workshops were held, one in Wilmington and one in Milford. The DESEU and the Energize Delaware Strategic Plan point to a goal of directing program benefits to disadvantaged communities and consumers: ¹⁹⁷ The 2015 Strategic Plan identified the need to "create energy efficiency and renewable energy programs to benefit low and moderate-income people of Delaware." Other than the partnership with the Delaware Community Investment Corporation, the 2015 plan states that Energize Delaware does not have "specific programs in the Energize Delaware portfolio that specifically addresses the needs of persons or businesses facing the most significant barriers to participation." The plan identified building partnerships with state and local housing authorities and faith-based organizations to develop programs that provide financial support for income eligible renters, manufactured home owners and parks, homeowners on fixed incomes, and low-income owners and residents of multiple family units. Programs include:

- Multifamily rental housing program Energize Delaware entered into a memorandum of understanding (MOU) with the Delaware State Housing Authority. Under the MOU, the State Housing Authority added additional energy efficiency requirements to applications for the state's low-income tax credit program. In turn, Energize Delaware offers low-interest construction loans as well as financial benefits to multifamily rental housing developers to offset the incremental cost of adding energy efficiency features. The program is available to renewable energy and new construction, but the state's focus, to date, has been on energy efficiency and rehabilitation. As part of the program, Energize Delaware has collaborated with two nonprofit technical assistance providers to deliver services to participating developers: New Ecology, Inc., and Elevate energy. ^{198,199} Eligible units are those that meet standards for affordable multifamily residential properties with five or more units. As mentioned earlier, Energize Delaware has established an eligibility standard for the program based on affordability. "Affordable" is defined as any property receiving assistance from a government housing program or charging rents such that households at 80% of the area median income spend no more than 30% on housing costs. For rehabilitation projects, the program covers 90% of the cost of a comprehensive energy and water assessment and incentives to help offset the cost of eligible energy efficiency measures. Incentives are customized for each property and are not prescriptive in nature.
- Home Energy Check-up and Counseling program Establish Community Energy Centers. For two years, the DESEU supported four community-based centers to provide energy education and counseling in low-income communities. After a pilot period, it was decided to close the centers

https://evogov.s3.amazonaws.com/media/50/media/17646.pdf.

¹⁹⁸ New Ecology Inc. 2016. Energize Delaware Affordable Multifamily Housing Program. Available at https://www.newecology.org/delawarehousing/.

¹⁹⁷ Strategic Plan. Delaware Sustainable Energy Utility. 2015.

¹⁹⁹ Elevate Energy. 2019. Available at https://www.elevateenergy.org/.

but keep workshops and counseling features of the program and combine them with home energy check-ups offered through the state's Home Energy Check-Up and Counseling Program (HEC²).

- Assisted Home Performance Program The Assisted Home Performance with ENERGY STAR® Program is a variation of Energize Delaware's popular Home Performance with ENERGY STAR® Program. It consists of rebates on a comprehensive home energy assessment and energy efficiency upgrade that makes it affordable for qualified low- and moderate-income Delawareans. The program takes a whole-house approach to improving a home's comfort, energy efficiency, durability, and safety and is targeted to people who are not income qualified for the Weatherization Program.
- "Lights On Initiative" In 2017, Energize Delaware began an initiative to work with community groups, police departments, and city officials in three cities (Dover, Seaford, and Milford) to install what has become a very popular program in which LED lightbulbs are provided and installed on the front porch or exterior of homes and other structures in high-crime neighborhoods. Some homes also receive a solar-powered motion-activated light for the rear of the property. In the Dover example, the program has led to a "Lights on, Dover Strong" initiative directed at improving overall neighborhood safety.²⁰⁰ The program is expected to transition into a statewide program during the next fiscal year.
- Zero energy modular home program (ZeMOD) Energize Delaware has initiated a new pilot program in partnership with the Milford Housing Development Corporation (MHDC), an in-state modular home developer, and the Vermont Energy Investment Corporation to provide down-payment assistance and incentives for solar and energy efficiency measures for low- and moderate-income homeowners purchasing zero energy modular homes. Financing is coordinated through MHDC, and often homebuyers receive loans through USDA. The pilot program's first mortgage was finalized in 2018; factory construction started in January 2019 with occupancy expected in May 2019. Incentives are provided to offset the differential costs associated with energy efficiency upgrades, solar panels, and ENERGY STAR® appliances.²⁰¹
- Pre-weatherization program Fifteen percent of RGGI auction proceeds are directed to weatherization and energy assistance for low-income communities. Ten percent of these monies are directed to the state's Weatherization Assistance Program (WAP) administered by the Department of Natural Resources and Environmental Control Division of Climate, Coastal and Energy. Five percent is directed to the state LIHEAP program managed by the Division of State Service Centers. Both programs apply an income eligibility standard of 200% of the federal poverty level. The state contracts with Catholic Charities to conduct income verification. 202 Energize Delaware and DNREC have collaborated to create a Pre-weatherization program in which income eligible homes that are denied for weatherization assistance due to the need for

 ²⁰⁰ "Campaign launched to light up Dover's high-crime areas." July 13, 2017. Delaware Online. https://www.delawareonline.com/story/news/2017/07/13/campaign-light-up-dover-crime/459779001/.
²⁰¹ Energize Delaware. 2019. ZeMod. Available at https://www.energizedelaware.org/residential/zemod/.
²⁰² Delaware.gov. 2019. Low Income Home Energy Assistance Program (LIHEAP). Available at https://dhss.delaware.gov/dhss/dssc/liheap.html.

structural repairs (e.g., plumbing, windows, roof repairs) are referred to Energize Delaware's Pre-Weatherization Program, which uses RGGI auction proceeds to conduct the necessary upgrades to prepare the home for weatherization. Participation in pre-weatherization is only available for homes deferred by the Weatherization Program. Repairs range from \$3,000 to \$4,000 per home and may reach \$7,500. Once the home has been pre-weatherized, it is automatically referred back to the Weatherization Program for energy efficiency upgrades. The pre-weatherization service is provided at no cost to the resident or homeowner. The Pre-WAP program has been in place for three years and, during that time, almost 250 homes have received pre-weatherization repairs.

- Support for state agencies The Department of Natural Resources and Environmental Control directed funds from the 10% of RGGI auction proceeds that are statutorily earmarked for administrative costs. The department uses a portion of the funds to establish a competitive grant program, Strategic Opportunity Fund for Adaptation (SOFA). According to the department's 2018 guidance, the fund's purpose is to "support state agencies' progress toward implementing actions that will strengthen the state's preparedness and ability to adapt to current and future effects of climate change." In Fiscal Year 2018, up to \$750,000 was made available, with individual grants ranging from \$25,000 to \$100,000. Eligible agencies are any executive branch agency that participates in the state's Cabinet Committee on Climate and Resilience. The department identified three funding priorities:
 - Improving resilience of state assets and infrastructure;
 - Protecting and restoring natural resources;
 - Safeguarding public health and safety, including "projects that support strategies to help protect vulnerable populations or communities from health and safety risks related to climate change." As previously mentioned, the Safeguarding Public Health and Safety provisions in the department's 2018 call for proposals specifically directs applicants to identify connections between benefits of the proposed project and populations that are vulnerable to climate change.

Examples of SOFA-funded public health and safety projects include:

• Delaware's 2016 Climate Action Progress report points to efforts in the State Housing Authority to provide incentives for energy efficiency in qualified rental housing units. It points to the health, safety, and economic benefits of energy efficiency for "vulnerable residents, including children, elderly citizens, and people with health conditions."²⁰³ The work conducted by the State Housing Authority was funded through two SOFA grants. The first grant was used to update the agency's application guidelines for low-income tax credits to require that applicants meet a higher standard of energy efficiency. The agency used the SOFA funds to update their energy efficiency guidelines, develop outreach materials, and provide technical assistance to applicants using the new guidelines. The

²⁰³Climate in Action in Delaware: 2016 Progress Report. Delaware Department of Natural Resources and Environmental Control Division of Energy and Climate. 2016.

http://www.dnrec.delaware.gov/energy/Documents/2016%20Climate%20Action%20Progress%20Report/Climate %20Action%20Delaware%202016%20Progress%20Report.pdf

effort included targeting several affordable housing developments that were in the review process for low-income tax credits. The State Housing Authority's second SOFA grant focuses on a spatial analysis of 200-300 low-income housing units (both public and private) to assess the units' exposure to flood hazards.

- Using auction funds earmarked for administrative costs, Delaware's Division of Public Health was awarded \$100,000 for the Delaware Environmental Public Health Tracking Network: Climate Change and Vulnerable Populations project. The project will expand and enhance the Environmental Public Health Tracking Network in the state, developed with funding from a 2016 grant, to include additional climate change-related datasets. These datasets will include temperature variations and their impact on health, vulnerable populations, and precipitation and zoonotic disease threats.²⁰⁴
- RGGI Auction Proceeds DNREC uses a portion of RGGI auction proceeds earmarked for administrative costs to establish the Delaware Greenhouse Gas Reduction Grant Program to fund pilot innovative programs. Examples include:
 - Expansion of the state's Urban and Community Forestry grant program. The program's 2019 request for proposals includes evaluation criteria prioritizing first-time applicants and projects that establish or maintain urban tree canopy.²⁰⁵
 - Establishment of the Delaware Sustainable Communities Planning Grant Program.²⁰⁶ The program, which began in 2017, provides grants of up to \$80,000 for sustainable community planning. Eligible entities include counties and municipalities, nonprofit organizations, colleges, and universities. Funding can be used to assess and make recommendations for natural areas, climate change vulnerability, greenhouse gas reductions, and sustainability practices. Fifteen points in the 100-point selection criteria are given for demonstration of equity factors, including demonstration that the project involves and engages vulnerable populations (including minority, low-income, non-native English speakers, etc.), and/or considers the needs of vulnerable populations.²⁰⁷

Contact:

Susan E. Love, AICP, Climate & Sustainability Section Lead DNREC Division of Energy & Climate Susan.Love@delaware.gov

²⁰⁴ Delaware Department of Natural Resources and Environmental Control, Division of Climate, Coastal and Energy: Delaware's Strategic Opportunity Fund for Adaptation, 2018 Grant Awards. Provide by Jennifer DeMooy, March 18, 2019.

²⁰⁵ Delaware Forest Service Urban and Community Forestry Program, 2019 Tree Planting & Tree Management Grant Requirements. https://delawaretrees.com/programs-and-services/urban-grant-program/

²⁰⁶ Delaware.gov. 2019. Sustainable Planning. Available at https://dnrec.alpha.delaware.gov/climate-coastalenergy/sustainable-communities/sustainable-planning/.

²⁰⁷ Delaware Sustainable Communities Planning Grant 2017 Grant Opportunity Announcement. Delaware Department of Natural Resources and Environmental Control.

Appendix B-3: Maine

Background on Relevant Maine Climate Change Programs

In June 2019, Maine enacted three new climate change laws:

- An Act to Promote Clean Energy Jobs and to Establish the Maine Climate Council establishes a new council comprised of several cabinet members, state leaders, science and technical experts, business and nonprofit leaders, and municipal leaders, among others. The council is charged with directing the state's effort to reduce greenhouse gas emissions 45% by 2030 and at least 80% by 2050, and with achieving 80% renewable energy in Maine's electricity sector specifically energy consumed in Maine by 2030 and 100% by 2050. An overview of the provisions of the Act are included in Appendix D.
- An Act to Reform Maine's Renewable Portfolio Standard increases the state's Renewable Portfolio Standard to achieve 80% renewable energy by 2030, up from the current 40%, and 100% by 2050. The law requires the Public Utilities Commission to procure long-term contracts for new clean energy generation, which may be paired with advanced energy storage, among other provisions.
- An Act to Promote Solar Energy Projects and Distributed Generation Resources in Maine provides financial incentives for commercial-, industrial-, and community-shared renewable energy projects and includes provisions requiring that community-shared renewable projects serve low- and moderate-income customers.²⁰⁸

The 2013 Efficiency Maine Trust Act authorizes the state's clean and renewable energy programs (including the now-repealed solar and wind rebate program), energy efficiency programs, state WAP, and the establishment of the Energy Efficiency and Renewable Resource Fund and the RGGI Trust Fund. The Act establishes The Efficiency Maine Trust (The Trust) that oversees state investments in renewable energy and clean energy programs.²⁰⁹ Adopted in 2018, the Maine Act To Update the Allowance Budget for the Regional Greenhouse Gas Initiative renewed previous statutory authority for the state's participation in RGGI, authorized the state's adoption of the updated RGGI model rule, and continues the state's RGGI participation until 2030.^{210,211}

Maine's Governor presented legislation to create a 27-member climate change council that, if enacted, would be charged with developing strategies to reduce greenhouse gas emissions and transition Maine

²⁰⁸ "Governor Mills Signs Major Renewable Energy and Climate Change Bills into Law." June 26, 2019. State of Maine, Office of Governor Janet T. Mills. https://www.maine.gov/governor/mills/news/governor-mills-signs-major-renewable-energy-and-climate-change-bills-law-2019-06-26

²⁰⁹ Efficiency Maine Trust Act, Me. Stat. §§ 10104 (2013).

²¹⁰ Act To Update the Allowance Budget for the Regional Greenhouse Gas Initiative, Me. Stat. §§ 580B.3-580B.3A (2018).

²¹¹ The Regional Greenhouse Gas Initiative. 2019. State Statutes & Regulations. Available at https://www.rggi.org/program -overview-and-design/state-regulations.

to a "low-carbon economy." The legislation sets statewide emissions reduction and renewable energy targets, establishes the council, and directs the council to develop a state climate change plan that outlines mitigation strategies consistent with statewide targets, and presents climate change adaptation and resilience strategies that, among other provisions, "encourage diversity, inclusion and equity." If enacted, the law would also require that the state plan pursue "cost-effective, technologically feasible and equitable greenhouse gas emissions reduction pathways and adaptation and preparedness strategies, informed by scientific and technical expertise."²¹²

Maine Participation in RGGI

Maine was one of the original states to sign the 2005 RGGI MOU and has participated in the program since the initial auction in 2008. The law authorizing Maine's participation in RGGI does not prescribe investment of auction proceeds. The Efficiency Maine Trust manages spending of the auction proceeds, along with the state's other renewable energy and energy efficiency funds that are received from electric and natural gas system benefit charges and Forward Capacity Market proceeds. The Trust is directed to:

- Reduce the cost of energy to residents of the state;
- Maximize the use of cost-effective weatherization and energy efficiency measures;
- Reduce economic insecurity from overdependence on price-volatile fossil fuels;
- Enable heating improvements for households of all income levels through cost-effective energy efficiency programs;
- Enhance consumer access to technical assistance and financial incentives; and
- Apply cost-effective investments in energy efficiency to reduce greenhouse gas emissions.²¹³

In general, more than 90% of Maine RGGI auction proceeds are directed towards a combination of energy efficiency programs and direct bill assistance, with a small percentage (approximately 7%) going towards program administration. The Efficiency Maine 2018 Annual Report identifies RGGI funds as supporting five programs:

- Commercial and Industrial Custom Program
- Commercial and Industrial Prescriptive Program
- Small Business Initiative
- Consumer Products Program
- Home Energy Savings Program
- Low-income Initiatives that are generally managed through the state's LiHEAP and Weatherization Assistance Program in partnership with Community Action Program agencies²¹⁴
- Renewable Energy Demonstration Grants Program²¹⁵

²¹² Act To Establish the Maine Climate Change Council To Assist Maine To Mitigate, Prepare for and Adapt to Climate Change, Me. Stat. Title 5 § 12004-1.24-G; Title 35-A § § 3210.1A-3210.1B; Title 38 § § 574-578 (2019). ²¹³ Efficiency Maine. 2019. Available at https://www.efficiencymaine.com/.

²¹⁴ Benefits.gov. 2019. Maine Weatherization Assistance Program. Available at https://www.benefits.gov/benefit/1858.

²¹⁵ FY2018 Annual Report. Efficiency Maine. 2018. https://www.efficiencymaine.com/docs/EMT-FY18-Annual-Report.pdf.

Lead Agencies

The Maine Public Utilities Commission regulates electric supply, transmission, and distribution utilities; natural gas utilities; telecommunications and water utilities; and water taxis and ferries in Casco Bay. It also promotes safe digging through the Dig Safe underground utility damage prevention program.²¹⁶

The Governor's Energy Office develops biennial updates of the Comprehensive State Energy Plan, which includes the interaction between energy planning and greenhouse gas emissions reduction goals.

The Efficiency Maine Trust (The Trust) invests clean energy and climate change funds. The Trust is governed by a Board of Trustees comprised of Cabinet members and governor-appointed public members, and is required to issue annual reports, program evaluations, and a triennial strategic plan.²¹⁷

The Maine State Housing Authority administers state energy assistance and weatherization programs.²¹⁸

The state Department of Environmental Protection administers the CO_2 budget trading program. Additionally, the department manages the Maine Interagency Climate Adaptation (MICA) Work Group, which is comprised of representatives from eight state agencies who collaborate on cross-agency efforts.²¹⁹

Benefits Directed to Disadvantaged Communities and Consumers

Efficiency Main Trust low-income programs include:

- Income-blind incentives to purchase efficient heat-pump water heaters, including a \$750 mail-in rebate for purchases at retail stores or a \$750 instant rebate through distributors. Low-income households are eligible for an additional rebate of up to \$400 to help with the cost of installation.
- The Low-Income Direct Mail Initiative provides free do-it-yourself kits, including LED bulbs and energy- and water-saving aerators and showerheads that are shipped directly to households.²²⁰

The state's energy assistance and weatherization programs provide assistance with home energy bills and weatherization services for income eligible homes.^{221,222}

²¹⁸ Maine State Housing Authority. 2019. Energy Assistance Program Details. Available at

²¹⁶ Maine.gov. Maine Public Utilities Commission. 2019. Available at https://www.maine.gov/mpuc/index.shtml.

²¹⁷ Efficiency Maine. 2019. Reports. Available at https://www.efficiencymaine.com/about/library/reports/ .

 $https://www.mainehousing.org/prog\,ram\,s-services/energ\,y/energ\,yd\,etails/weatherization.$

²¹⁹ Maine Department of Environmental Protection. 2019. The Maine Interagency Climate Adaptation (MICA) Work Group. Available at https://www.maine.gov/dep/sustainability/climate/mica.html.

²²⁰ Efficiency Maine. 2019. Low Income Options. Available at https://www.efficiencymaine.com/at-home/low-income-options/.

²²¹ Efficiency Maine Low-Income Multifamily Weatherization Evaluation Report. NMR Group Inc. and Energy Futures Group. 2016. https://www.efficiencymaine.com/docs/Low-Income-Multifamily-Final-Evaluation-Report-2016.pdf.

²²² Efficiency Maine Low-Income Multifamily Weatherization Evaluation Report. NMR Group Inc. and Energy Futures Group. 2016. https://www.efficiencymaine.com/docs/Low-Income-Multifamily-Final-Evaluation-Report-2016.pdf.

Contact: Erle Townsend, Environmental Specialist Maine Department of Environmental Protection Erle.Townsend@maine.gov

Appendix B-4: Maryland

Background on Relevant Maryland Climate Change Programs

Maryland enacted the Clean Energy Jobs Act in spring 2019 that increases the Renewable Portfolio Standard that was originally established by statute in 2004. A summary overview of the Act is included in Appendix D of this report. Provisions of the new law include:

- Increasing standards of the Renewable Portfolio Standard to 100% renewable energy by 2040, with increased funding for clean energy workforce development. The law also sets an interim Renewable Portfolio Standard of 50% by 2030, which includes:
 - A solar carve-out that increases the current standard of 2.5% to 14.5% of in-state solar.
 - An increase from approximately 350 megawatts (MW) of offshore wind in 2022 to nearly 1600 MW of offshore wind in 2030.
- Meeting the balance of the new Renewable Portfolio Standard mandate through "Tier 1" renewable energy resources.
- Directing funds from the Strategic Energy Investment Fund to create a clean energy workforce account that will be used to develop energy efficiency and renewable energy training and workforce development programs with a focus on increasing opportunities for unemployed and underemployed individuals.²²³

In 2009, the Maryland Legislature passed the Greenhouse Gas Reduction Act, which directed the state to develop a Greenhouse Gas Reduction Plan to reduce greenhouse gases 25% from 2006 levels by 2020. In 2016, the state renewed the Act and established a 40% reduction of emissions by 2030. Originally established by Executive Order in 2007, the Maryland legislature codified the Maryland Commission on Climate Change into law in 2015 and charged it with advising the governor on climate change mitigation and adaption²²⁴.

Maryland's multiprogram approach to achieve statewide limits is outlined in a 2015 update to its Greenhouse Gas Emissions Reduction Plan.²²⁵ In 2008, Maryland passed the EmPOWER Maryland Energy Efficiency Act that set electricity consumption reduction targets and that authorizes several state and utility energy efficiency programs managed by the Public Utility Commission. EmPOWER is funded by the state's systems benefit charge. In 2006, Maryland enacted the Healthy Air Act.²²⁶ The Act provides statutory authority for the state to require reductions in nitrogen oxide (NOx), sulfur dioxide (SO2), and mercury emissions from large coal-burning power plants, and it directs Maryland's participation in RGGI. In 2007, the state signed the RGGI MOU.

- https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MCCC_2018_final.pdf.
- ²²⁵ Greenhouse Gas Emissions Reduction Act Plan Update. Maryland Department of the Environment. 2015.
- $https://mde.maryland.gov/programs/Air/ClimateChang\,e/MCCC/Publications/ClimateUpdate2015.pdf.$

²²³ Clean Energy Jobs Act. Md. Stat. Article 2 §§ 757.17c (2019).

²²⁴2018 Annual Report. Maryland Commission on Climate Change. 2018.

²²⁶ The Maryland Healthy Air Act. Md. Stat. §§ 2.10.02.1001-2.1005 (2006).

Maryland Participation in RGGI

In 2008, the Maryland Department of the Environment adopted regulations authorizing the state's participation in the RGGI CO₂ budget trading and auction program.²²⁷ In 2008, the state statutorily established the Strategic Energy Investment Fund (SEIF),²²⁸ which is contributed to by a variety of funding sources with RGGI being the main source. Other funds that contribute to the SEIF are alternative compliance payments pursuant to the Renewable Portfolio Standard, penalty settlements, and other smaller sources. Since RGGI's first auction to 2016, Maryland has dedicated more than 26% of auction proceeds to energy efficiency programs, more than 9% to clean and renewable energy programs, more than 7% to greenhouse gas abatement programs, and more than 51% to direct bill assistance.²²⁹ Spending RGGI auction proceeds in the SEIF are to be allocated as follows:

- At least 50% for low-income energy assistance;
- At least 20% for energy efficiency, of which at least half must be targeted for low and moderateincome households and communities;
- At least 20% for clean energy and climate change programs; and
- Up to 10%, but no more than \$5M, for administration.

Lead Agencies

The Maryland Department of the Environment (MDE) manages the state's participation in the RGGI CO₂ budget trading program.

The state Department of Human Services administers the Energy Assistance Program.

The state Department of Housing and Community Development managers the WAP and administers the EmPOWER Maryland Low Income Energy Efficiency Program.

The Maryland Energy Administration (MEA) advises the governor on energy policy and administers the Strategic Energy Investment Fund.

The State Public Service Commission regulates rates, terms, and conditions associated with all public utilities in the state, including water, sewage disposal, telecommunications, electricity, gas, and transportation services (passenger motor vehicles, railroads). Among other functions, it authorizes programs pursuant to the state's Renewable Portfolio Standard, the community solar program, and the EmPOWER Maryland program.

Benefits Directed to Disadvantaged Communities and Consumers

In its 2018 annual report, the Maryland Commission on Climate change refers to the U.S. Global Change Research Program language regarding "populations of concern." These include those with low income, some communities of color, immigrant groups and populations with limited English proficiency,

²²⁷ The Regional Greenhouse Gas Initiative. 2019. State Statutes & Regulations. Available at https://www.rggi.org/program-overview-and-design/state-regulations.

²²⁸ MD State Govt Code § 9-20B-05 (2013).

²²⁹ The Investment of RGGI Proceeds in 2016. The Regional Greenhouse Gas Initiative. 2018. https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2016.pdf.

Indigenous peoples, children and pregnant women, older adults, vulnerable occupational groups, persons with disabilities, and persons with preexisting or chronic medical conditions. The report indicates that it gives "full consideration to climate change impacts as they relate to community concerns, and engages this issue through multiple avenues, including the Commission of Environmental Justice and Sustainable communities, the Greenhouse Gas Reduction Act and the deliberations of the Commission." Among the recommendations in the report is an emphasis on advancing overarching social and environmental justice, including identification of specific strategies that the state will undertake and assessment of the impact of those strategies. The report also emphasizes the equitable distribution of costs and benefits related to public health, the environment, the economy, and jobs. Several Commission participants issued a minority report as part of the 2018 annual report stating that the reports "recommendations urge no specific steps to increase the climate resilience of vulnerable communities, or to insure that the benefits and burdens of climate action are equitably distributed across the state's population." Signatories to the minority report recommended 14 actions, including:

- That the state conduct an analysis of the health benefits of air pollution reduction associated with the state's greenhouse gas mitigation strategies, with an emphasis on communities that bear a disproportionate share of pollution impacts; and
- That the legislature and governor revise the distribution of SEIF so that all solar investments be directed to low-income households and communities. ²³⁰

Originally established by Executive Order in 2001, the Maryland Commission on Environmental Justice and Sustainable Communities was codified into law in 2003. The Commission includes legislators, cabinet agencies, and public governor appointees. The Commission is charged with providing recommendations on "environmental justice and sustainable communities issues that may be associated with creating healthy, safe, economically vibrant, environmentally sound communities for all Marylanders in a manner that allows for democratic processes and community involvement."²³¹ In 2016, the Commission on Environmental Justice and Sustainable Communities offered recommendations to the state Commission on Climate Change with regard to two geographic areas of the state for which the Commission recommended a focused outreach by the Climate Change Commission given the overburden of pollution in those two areas.²³²

The Fiscal Year 2018 Spending Plan report for the SEIF identifies the following distribution of SEIF funds:

• More than 35% to the Department of Human Services for direct bill assistance;

²³⁰ 2018 Annual Report. Maryland Commission on Climate Change. 2018.

https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MCCC_2018_final.pdf.

²³¹ Maryland Department of the Environment. 2019. Environmental Justice in Maryland. Available at https://mde.maryland.gov/programs/Crossmedia/EnvironmentalJustice/Pages/details.aspx.

²³² Maryland State Commission on Environmental Justice and Sustainable Communities Annual Report.

Commission on Environmental Justice and Sustainable Communities. 2016.

https://mde.maryland.gov/programs/Crossmedia/EnvironmentalJustice/Documents/2016CEJSCAnnualReport.pdf

- Specific allocations to the Maryland Energy Administration with 6.5% dedicated to low-tomoderate-income energy efficiency, 23% for renewable energy, and more than 8% for other energy efficiency programs;
- 2.5% to the Department of Housing and Community Development for weatherization and lowincome energy efficiency programs;
- 3.6% to the Maryland Department of the Environment for carbon-abatement programs; and
- 1.3% to the Maryland Department of Labor to support the Employment Advancement Right Now (EARN) Green Jobs Program.²³³

Examples of programs administered directly by the Maryland Energy Administration using SEIF funds include:

- The MEA's Clean Energy Communities Low-to-Moderate Income Grant Program received almost 0 \$5 million from the SEIF in Fiscal Year 2019 for energy efficiency projects in low - and moderateincome communities. ²³⁴ The program operates through a competitive process that awards grants to nonprofit organizations and local governments, which, in turn, administer energy efficiency projects to low- and moderate-income properties. Examples of nonprofit organizations that have received funds to administer programs are local housing authorities and Habitat for Humanity. Funding priorities are those projects that "maximize savings per dollar of MEA investment and the number of LMI residents served." Funds are allocated to five regions throughout the state based on the number of LMI households within each region. Eligible projects are all types of residences (single-family homes, mobile homes, multifamily homes) as well as commercial buildings that primarily serve low- and moderate-income residents, such as a homeless shelter. The program was identified in a 2019 American Council for an Energy Efficient-Economy report specifically for its social equity components, including job creation and expansion of the network of nonprofits and local governments assisting low- and moderateincome residents.²³⁵
- MEA's Game Changers Program has previously used SEIF funds to provide grants to businesses, nonprofits, and state, local, and municipal agencies that innovatively use commercially available technologies to lower renewable energy costs or improve energy efficiency. Two awarded grants are establishing "Community Resiliency Hubs" in low-to-moderate-income neighborhoods in Baltimore that will provide emergency services to the local community in the event of a power grid failure.²³⁶
- MEA's Combined Heat and Power Grant Program allocated more than \$4 million in FY18 from SEIF funds to encourage adoption of combined heat and power systems. Funds are directed to

²³³ Maryland Department of Labor. 2019. Earn Maryland Industry-Led Partnerships. Available at https://www.dllr.state.md.us/earn/.

²³⁴ Maryland Energy Administration. 2018. FY19 Clean Energy Communities Low-to-Moderate Income Grant Program. Available at https://energy.maryland.gov/govt/pages/cleanenergylmi.aspx.

 ²³⁵ The New Leaders of the Pack: ACEEE's Fourth National Review of Exemplary Energy Efficiency Programs. Seth Nowak, M. Kushler, and P.Witte. American Council for an Energy Efficient Economy. January 2019. Report U1901
²³⁶ Maryland Strategic Energy Investment Fund: Report on Fund Activities Fiscal Year 2018. Maryland Energy Administration. 2019. https://energy.maryland.gov/Reports/FY18 SEIF Annual Report.pdf.

commercial and industrial facilities, critical infrastructure, and multifamily buildings. In FY18, awards were made to two projects that involved multifamily-style housing.

- Recognizing that low- and moderate-income residents may not be able to participate under an ownership model, the MEA developed three additional programs to advance solar in low-tomoderate-income households:
 - Community Solar Low- and Moderate-Income Power Purchase Agreement Incentive Grant Program (LMI-PPA Program): This program provides an up-front grant to a subscriber organization developing a community solar array focused on the low- and moderateincome community. In exchange for the grant, the subscriber organization provides an added savings to LMI subscribers by lowering the price of electricity, reducing the contract length (or providing an inexpensive way to cancel the PPA agreement), over the first 20 years of the array lifetime. In addition, nominal funds are added to the agreement to assist the subscriber organization to validate the eligibility of low- and moderate-income subscribers to participate in this program. Only arrays developed under the LMI category of the Pilot Program (providing at least 30% of their energy to the LMI community), or the Small, Brownfields, Other (SBO) category of the Pilot Program (providing at least 51% of their energy to the LMI community) are eligible to participate in this program.
 - Community Solar Guaranty Program: This program provides funding to a third party who is willing to guarantee the payment of community solar energy bills by LMI subscribers. This guarantee is designed to reduce the financial risk to solar financiers, allowing solar array developers to get lower cost financing. In addition, the guarantee allows subscriber organizations to lower or remove credit scores as a criterion to allow an LMI subscriber to sign up.
 - Community Solar Education Grant Program: Recognizing that the state's low- and moderate-income residents may have limited experience and understanding with a power purchase agreement (PPA), the Maryland Energy Administration (working through the Maryland Environmental Service) funded third-party organizations to conduct educational outreach to the LMI community to address the ramifications and responsibilities of the PPA type of agreement.
- Examples of other programs that include SEIF as well as other sources of funds and that are directed to disadvantaged communities and consumers include:
 - The Office of Home Energy Programs (OHEP) within the Maryland Department of Human Services has used SEIF funds to provide electric utility payment assistance to eligible lowincome households. Program eligibility requires the applicant household to be residents of Maryland, have income equal or less than 175% of the federal poverty level, and agree to use utility budget billing. The applicants must also have an electric bill in their names. These programs include financial assistance with electric bills; arrearage retirement assistance retires past due bills up to a maximum of \$2,000. The arrearage benefit is generally available once every seven years per applicant. Benefits are paid directly to

electric utilities on behalf of the program applicant.²³⁷The Maryland Department of Housing and Community Development manages the state's WAP, which is available to eligible homeowners and renters provided that the landlord agrees to participate.²³⁸ Tenants receiving services provided by WAP are protected for a minimum of one year against rent increases due to the weatherization work that was completed. The program will fund minor repairs necessary to effectively install weatherization measures. Examples of repairs include sealing minor roof leaks to preserve new attic insulation and repairing water damaged flooring as part of replacing a water heater.²³⁹

- The 2008 EmPOWER Maryland Energy Efficiency Act²⁴⁰ established a goal to reduce per capita electricity usage and peak demand 15% by 2015. Under the program, the Public Service Commission requires utilities to establish program offerings to advance energy efficiency, requiring electric utilities to achieve annual energy savings equal to 2% of their retail electric sales. The Department of Housing and Community Develop also administers the Empower Maryland Low-income Energy Efficiency Program that provides free energy audits and energy efficiency upgrades, including insulation, hot water system improvements, lighting retrofits, furnace cleaning and repairs, refrigerator retrofits, and health and safety items.^{241,242}
- Under the Renewable Portfolio Standard in place until the recent passage of the 2019 Clean Energy Jobs Act, Maryland's Renewable Portfolio Standard requires that 25% of energy sold in Maryland in 2020 come from qualified renewable energy resources, with 2.5% of the energy coming from qualified in-state solar resources. Maryland adopted its Community Solar legislation in 2015, directing the establishment of a three-year pilot program overseen by the Maryland Public Service Commission and managed by the utilities. In 2017, the Public Service Commission approved the community solar tariffs for the state's investor owned utilities, initiating the pilot program. The Maryland Residential Community Solar Program is structured to allow residents to purchase subscriptions for energy sourced from community solar arrays within their energy utility's service area. For purposes of the pilot program, the Maryland PSC has authorized certain subscriber organizations to participate in the pilot program. As originally approved, the pilot program includes approximately 194 MW of solar capacity over three years, including a requirement that 30% of that capacity be assigned to low- and moderate-income projects. Ten percent of the energy of each of these projects must go to low-income subscribers, with an

²³⁷ Maryland Strategic Energy Investment Fund: Report on Fund Activities Fiscal Year 2018. Maryland Energy Administration. 2019. https://energy.maryland.gov/Reports/FY18 SEIF Annual Report.pdf.

²³⁸ Maryland Department of Housing and Community Development. 2019. Weatherization Assistance Program. Available at https://dhcd.maryland.gov/Residents/Pages/wap/default.aspx.

²³⁹ Weatherization Assistance Program Approved Health and Safety Plan. Maryland Department of Housing and Community Development. 2018. https://dhcd.maryland.gov/Residents/Documents/wap/DRAFT-WAP-State-Plan.pdf.

²⁴⁰ Md. Code Ann., Public Utilities § 7-211 (2008). Md. Code Ann., Public Utilities § 7-211

 ²⁴¹ Maryland Department of Housing and Community Development. 2019. EmPOWER Maryland Low Income Energy Efficiency Program. Available at https://dhcd.maryland.gov/Residents/Pages/lieep/default.aspx.
²⁴² Maryland Benefits: Examining the Results of EmPOWER Maryland through 2015 Brendon Baatz and James Barrett January 2017 Report U1701. American Council for an Energy-Efficient Economy.

additional 20% of the energy required to go to either low- or moderate-income subscribers. In 2019, the pilot program was extended from 3 years to 7 years. In addition to the PSC pilot program, the Maryland Energy Administration provides incentives for Maryland residents to participate in the pilot programs. For residents subscribing under an ownership model (up-front payment, resident has the rights to the energy produced for the life of the array), a grant of \$80/kW is available. The grant is tripled to \$240/kW for low- and moderate-income residents. No incentive is provided for residents subscribing under a leasing or power purchase model. Different apartments in a multifamily dwelling are considered separate residences. A similar incentive of \$100/kW is available for commercial entities subscribing under an ownership model.²⁴³

Internal Operations

The Maryland Commission on Climate Change has served as an overarching convening body in the state since its initial creation by executive order in 2007. The Commission functions as both a facilitator of integrated multi-agency policy on climate change initiatives as well as a transparent public body informing strategic direction of the state's programs. The commission was codified in law in 2015 and is comprised of 26 members representing state agencies and legislature, local government, business, environmental nonprofit organizations, organized labor, philanthropic interests and the state university system. By serving to facilitate multi-agency, executive-level dialogue, the Commission establishes a framework for interagency collaboration on planning and program development.

External Stakeholder Engagement

In addition to serving a role in facilitating initiatives of multiple state agencies, the Maryland Commission on Climate Change also serves as a forum for public dialogue on critical issues associated with climate change policy, including directing program benefits to disadvantaged communities, as evidenced by the minority report contained in its 2018 Annual Report. Commission meetings and Executive Committee meetings are open to the public; members of the public, stakeholders, and advocates have an opportunity to engage Commission members.

Monitoring and Measurement

Multiple Maryland state agencies routinely report progress on directing program benefits to disadvantaged communities and consumers, including:

• Annual report of the MEA Administration of the SEIF;²⁴⁴

²⁴³ Maryland Energy Administration. 2019. Community Solar. Available at

https://energy.maryland.gov/residential/Pages/Community-Solar.aspx.

²⁴⁴ Maryland Strategic Energy Investment Fund: Report on Fund Activities Fiscal Year 2017. Maryland Energy Administration. 2018.

https://energy.maryland.gov/Documents/2017%20Maryland%20Strategic%20Energy%20Investment%20Energy%20Fund%20FINAL.pdf.

- Annual Reports on the low-to-moderate-income grant program²⁴⁵ and annual energy savings summaries;²⁴⁶
- Annual report of the Maryland Commission on Climate Change²⁴⁷ and annual plans of each Commission working group;²⁴⁸
- Annual report of the Maryland Public Service Commission on the Electric Universal Service Program;²⁴⁹
- Maryland DHCD annual report on the agency's financial investments.²⁵⁰

Contact: Chris Hoagland, Economist Climate Change Division, Maryland Department of the Environment chris.hoagland@maryland.gov

²⁴⁵ 2016 LMI Program - Energy Savings Summary. Maryland Energy Administration. 2016.

https://energy.maryland.gov/govt/Documents/FY16%20LMI%20Program%20Results.pdf.

²⁴⁶ 2016 LMI Program - Energy Savings Summary. Maryland Energy Administration. 2016.

 $https://energy.maryland.gov/govt/Documents/FY_16\%_2oLMI\%_2oProgram\%_2oResults.pdf.$

²⁴⁷ Maryland Department of the Environment. 2019. Maryland Commission on Climate Change Annual Reports.

 $[\]label{eq:action} Available \ at \ https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Pages/MCCCReports.aspx/.$

²⁴⁸ Maryland Department of the Environment. 2019. Working Group Annual Plans. Available at

 $https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Pages/WorkingGroupPlans.aspx\,.$

²⁴⁹ Electric Universal Service Program 2018 Annual Report. Public Service Commission of Maryland. 2018. https://www.psc.state.md.us/wp-content/uploads/2018-EUSP-Annual-Report.pdf.

²⁵⁰ Expanding Opportunities in Maryland: 2018 Annual Report. Maryland Department of Housing and Community Development. 2018. https://dhcd.maryland.gov/Documents/PressReleases/DHCD_annual-report_2018.pdf.

Appendix B-5: Massachusetts

Background on Relevant Massachusetts Climate Change Programs

In August 2008, Massachusetts enacted two statutes related to climate change:

- The Global Warming Solutions Fund Act that requires the Executive Office of Energy and Environmental Affairs (EOEEA) to set economy-wide greenhouse gas (GHG) emission reduction goals for Massachusetts that will achieve reductions of between 10% and 25% below statewide 1990 GHG emission levels by 2020 and 80% below statewide 1990 GHG emission levels by 2050. It also requires the Office to:
 - Establish a regulatory greenhouse gas reporting program and establish a baseline assessment of statewide GHG emissions in 1990.
 - Develop a projection of the likely statewide GHG emissions for 2020 under a "business as usual" scenario that assumes no targeted efforts to reduce emissions are implemented.
 - Establish target emission reductions that must be achieved by 2020 and a plan for achieving them.
 - Through an advisory committee, analyze strategies and make recommendations for adapting to climate change.
- The Green Communities Act that authorizes the state's participation in the RGGI auction and spending of auction proceeds, expands state and utility-administered energy efficiency programs, establishes the Designated Green Communities Program, creates a new green state building code, establishes the Energy Efficiency Advisory Board, and directs development of renewable energy resources.²⁵¹

The 2016 Executive Order 569, Establishing an Integrated Climate Change Strategy for the Commonwealth, directs the Massachusetts Department of Environmental Protection (MassDEP) to promulgate regulations to ensure that the Commonwealth meets the 2020 statewide emissions limit mandated by the Global Warming Solutions Fund Act.²⁵²

In August 2018, Massachusetts adopted An Act to Advance Clean Energy²⁵³ that increases the Renewable Portfolio Standard by 2% each year (up from 1%) between 2020 and 2029, sets an energy storage target of 1,000 MWh for 2025, and establishes a Clean Peak Standard which is a new policy tool in place in only several states that requires utilities to use clean energy resources, or reduce energy load, during seasonal peak demand periods. The law also expanded allowable investments under Massachusetts's mandated statewide electric and gas energy efficiency programs to include active demand management (including energy storage), strategic electrification, and fuel switching. "Electric" efficiency programs were

²⁵² Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth. September 16, 2016. Available at: https://www.mass.gov/executive-orders/no-569-establishing-an-integrated-climate-change-strategy-for-the-common wealth

²⁵¹ Global Warming Solutions Fund Background. Executive Office of Energy and Environmental Affairs. Available at: https://www.mass.gov/service-details/global-warming-solutions-act-background

²⁵³ An Act to Advance Clean Energy; Mass. Gen. Laws Ch. 227, § 1 (2018) Available at:

https://malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter227

expanded to "energy" efficiency, and cost-effectiveness requirements for energy efficiency were shifted from program- to sector-level.

Massachusetts Participation in RGGI

Massachusetts signed the RGGI states MOU in 2007 and participated in the first auction in 2008. The state's participation in the RGGI cap and trade program is governed by Section 21a and 22 of Massachusetts General Laws.²⁵⁴ Auction proceeds are authorized to:

- Reimburse a municipality in which property tax receipts or payments in lieu of taxes are reduced due to decommissioning of an electric generating station provided it results in a reduction of greenhouse gas emissions. This provision has been used twice (Salem and Somerset) but the payments will sunset at the end of 2019;
- Fund the green communities program established in section 10 of chapter 25A;
- Provide zero-interest loans to municipalities for energy efficiency projects;
- Promote energy efficiency, conservation, and demand response; and
- Support program administration. 255

Two regulations govern the state's RGGI program: the Department of Energy Resources rule²⁵⁶ which authorizes spending of RGGI auction proceeds, and the Department of Environmental Protection rule, which authorizes establishment of the CO₂ budget-trading program, including emissions monitoring, allowance tracking compliance, and establishment of the cap.

Massachusetts has directed more than 85% of auction proceeds to energy efficiency programs through the utility-administered Mass Save® brand, almost 10% to greenhouse gas abatement programs including the Green Communities Program, and 4% to administrative costs.^{257,258}

Lead Agencies

The Massachusetts Executive Office of Energy and Environmental Affairs encompasses several agencies that oversee programs related to climate change and clean energy:

• The Department of Environmental Protection (DEP) develops and implements the CO₂ budget-trading program.²⁵⁹ Additionally, the DEP Office of Environmental Justice

²⁵⁴ State Statutes and Regulations. RGGI, Inc. Available at: https://www.rggi.org/program-overview-and-design/state-regulations

²⁵⁵ An Act to Advance Clean Energy; Mass. Gen. Laws Ch. 21A, § 22. Available

at:https://malegislature.gov/Laws/GeneralLaws/PartI/Titlell/Chapter21A/Section22

²⁵⁶ DOER CO₂ Budget Trading Program. 225 CMR 13.00. Available at: https://www.mass.gov/regulations/225-CMR-1300-doer-co2-budget-trading-program-auction-regulation

²⁵⁷ The Investment of RGGI Proceeds in 2016. RGGI, Inc. September 2018. Available at:

https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2016.pdf

²⁵⁸ RGGI Auction Proceeds and Investments. Massachusetts Department of Energy Resources. Available at: https://www.mass.gov/service-details/rggi-auction-proceeds-investments

²⁵⁹ RGGI Program Review & Amendments. Massachusetts Department of Energy Resources. Available at: https://www.mass.gov/service-details/rggi-program-review-amendments

implements the Executive Office of Energy and Environmental Affairs' Environmental Justice policies and programs.²⁶⁰

- The Department of Energy Resources (DOER) develops and implements policies and programs focused on clean and resilient energy. Among other responsibilities, the DOER oversees expenditures of RGGI auction proceeds, the Green Communities Designation and Grant Program, the Renewable and Alternative Portfolio Standards, and a variety of pilot programs demonstrating the value of clean energy investments. DOER also chairs the Energy Efficiency Advisory Council, which advises and oversees progress of the Mass Save[®] statewide electric and gas energy efficiency programs.²⁶¹
- The Department of Public Utilities (DPU) regulates rate-setting of investor-owned electric power, natural gas, and water companies. It also regulates bus, moving and transportation network companies, and natural gas pipelines.²⁶²

The Massachusetts Environmental Policy Act Office complements the state's Environmental Policy Act and conducts reviews of environmental impacts of development projects and other activities that require one or more state agency action, including provisions related to consideration of climate change and the social cost of carbon.^{263,264}

The Department of Housing and Community Development (DHCD) administers three home energy assistance programs for low-income households: the Low Income Home Energy Assistance Program (LIHEAP), the Heating System Repair & Replacement Program (HEARTWAP), and the Weatherization Assistance Program (WAP).²⁶⁵

The Massachusetts Renewable Energy Trust Fund was statutorily established in 1998 as part of the deregulation of the electric utility market. In 2009, the Renewable Energy Trust Fund was transferred from the Massachusetts Technology Collaborative to the Massachusetts Clean Energy Center (MassCEC), which was established as part of the 2008 Green Communities Act. MassCEC's primary source of revenue is the Renewable Energy Trust Fund, which is supported by a systems benefit

²⁶⁰ Environmental Justice: All people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment. Massachusetts Executive Office of Energy and Environmental Affairs. Available at: https://www.mass.gov/environmental-justice

²⁶¹ Massachusetts Department of Energy Resources. Available at: https://www.mass.gov/orgs/massachusetts-department-of-energy-resources

²⁶² Massachusetts Department of Public Utilities. Available at: https://www.mass.gov/orgs/department-of-public-utilities

²⁶³ Massachusetts Environmental Policy Act Office. Available at: https://www.mass.gov/orgs/massachusettsenvironmental-policy-act-office

²⁶⁴Massachusetts Clean Energy and Climate Plan for 2020: 2015 Update. A Report to the Great and General Court. Secretary of Energy and Environmental Affairs. December 31, 2015. Available at:

https://www.mass.gov/files/documents/2017/12/06/Clean%20Energy%20and%20Climate%20Plan%20for%20202 o.pdf

²⁶⁵ Home Energy Assistance Program. Department of Housing and Community Development. Available at: https://www.mass.gov/home-energy-assistance-programs

charge paid by electric ratepayers of investor-owned utilities in Massachusetts and municipal electric departments that have opted to participate in the program.²⁶⁶

Benefits Directed to Disadvantaged Communities and Consumers

Mass Save[®] *Income Eligible Programs* – The 1997 law that restructured the energy industry in Massachusetts established a low-income conservation fund through a .025 cents per kWh charge on every electric customer.²⁶⁷ A charge on natural gas customer bills funds natural gas low-income energy efficiency programs. In 2010, the program received additional funding through the 2008 Green Communities Act, which required that 10% of electric utility program funds and 20% of gas program funds be spent on comprehensive low-income energy efficiency and education programs. The legislation further directed that these programs be implemented through the low-income weatherization and fuel assistance program network with the objective of standardizing implementation among all utilities.

Low income residents are served through the statewide ratepayer-funded energy efficiency program called Mass Save®. More specifically, the Income Eligible Coordinated Delivery initiative provides costeffective, energy efficiency products and services to income eligible residential customers in a fuel blind approach. Income eligible is defined as at or below 60% of the state median income level for buildings with one to four units and at or below 60% of the area median income level for buildings with five or more units. Customers that qualify for the utility discount rate are also considered income eligible. Customers qualify for the utility discount rate by meeting LIHEAP eligibility or by meeting the eligibility requirements for other means-tested programs, such as Chapter 115 Veterans' Service Benefits, Supplemental Security Income, and Supplemental Nutrition Assistance Program services. Programs available for households meeting the state's definition of low income include no-cost energy audits and services, including installation of energy efficiency products like appliances, heating ventilation and air conditioning equipment, hot water equipment, and weatherization upgrades, where cost effective. Lowincome households may be eligible for the following additional services: fuel bill assistance, utility discount rates, payment plans, and arrearage management programs. Similar energy efficiency services and products are also available to multifamily properties with five or more units where 50% or more of the tenants are designated as low income. ²⁶⁸

Services to low-income residents occurs through the Massachusetts Low-Income Energy Affordability Network (LEAN), which was established by the lead agencies of the low-income weatherization and fuel assistance program network. The ratepayer-funded, low-income programs (i.e., the Income Eligible Coordinated Delivery initiative within Mass Save) is administered in coordination with LEAN and implemented by local Community Action Program (CAP) agencies. Revenue streams are leveraged with the DHCD Weatherization Assistance Program (WAP) and the Heating Emergency Assistance Retrofit Task Weatherization Assistance Program (HEARTWAP). This approach provides a seamless, integrated experience leveraging all applicable revenue streams for income eligible participants with no co-

offers/income-eligible-programs/

²⁶⁶ Massachusetts Clean Energy Center. Available at: https://www.masscec.com/

²⁶⁷An Act Relative to Restructuring the Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protections Therein. Mass. Gen. Laws Ch. 164 § 1 (1997). Available at: https://malegislature.gov/Laws/SessionLaws/Acts/1997/Chapter164

²⁶⁸ Income Eligible Programs. MassSaves. Available at: https://www.masssave.com/en/saving/income-based-

payments required from customers. LEAN works to standardize eligibility requirements, procedures, and standards to enable delivery of various programs through CAP agencies throughout the state.

Affordable Access to Clean and Efficient Energy Initiative - The Massachusetts Affordable Access to Clean and Efficient Energy Initiative (AACEE)²⁶⁹ aims to help low- and moderate-income Massachusetts residents access cost-saving, clean, and efficient energy technologies. The Initiative launched in 2016 with the creation of an intersecretariat working group led by the DOER and DHCD in collaboration with the MassCEC. It also included a \$15 million funding commitment from DOER and MassCEC for programs designed to address barriers that prevent low- and moderate-income residents and property owners from installing energy efficiency or renewable energy technology measures. Such programs, along with other programs focused on low- and moderate-income households, include:

- Zero-Energy Modular Affordable Housing Initiative (ZE-MAHI) \$1 million This program provides funding to demonstrate significant potential improvements in the energy performance of manufactured housing in the Commonwealth through the replacement of existing manufactured homes with new modular zero-energy housing. The goal is installation of 10 zeroenergy modular homes over an approximately five-year time frame.
- Affordable Clean Residential Energy (ACRE) \$3.6 million This program is providing funds for two model delivery methods that provide renewable thermal technologies paired with solar PV to low-income, owner-occupied, single-family homes. The goal is 100 homes. Programs will likely be complete spring/summer 2020.
- Low Income Challenge Program \$3.1 million This program awarded four grants for innovative projects to demonstrate new models to increase uptake of energy efficiency and renewable energy savings in low-income housing. These projects included 15 solar PV installations at low-income households, 67 air source heat pump retrofits at electrically heated low-income homes, monitoring and optimization equipment on boilers at 103 affordable housing buildings, and 24 energy audits for affordable housing buildings (4,407 apartments) approaching refinance. Additional funds are currently being provided to automate data analysis to reduce the costs of boiler optimization and to continue funding for energy audits at affordable housing buildings approaching refinancing.
- Renewable Thermal for Homes with Fuel Assistance \$1.4 million This program provided funding for renewable heating and cooling systems for LIHEAP recipients to help reduce fuel costs and dependence on LIHEAP funds. Under AACEE, 159 air source heat pumps and 97 EPA certified, low-emission, wood-burning pellet stoves were installed.
- Renewable Thermal Technology in State-Sponsored Public Housing \$1.5 million -This program provides funds for clean heating and cooling technologies in state-owned low-income public housing facilities in three Massachusetts communities. The program will fund projects at three facilities, including ground source heat pumps at a 59-unit facility and two air source heat projects with 72 units.

²⁶⁹ Affordable Access to Clean and Efficient Energy Initiative. Massachusetts Department of Energy Resources. Available at: https://www.mass.gov/service-details/affordable-access-to-clean-and-efficient-energy-initiative

- Low and Moderate Income Strategic Electrification \$2.9 million -DOER and MassCEC are developing an additional grant program. Funding priorities include support for strategic electrification at homes owned or occupied by low- and moderate-income families.
- Affordable Access Regional Coordination (AARC) \$880,000 This program funds an entity to train staff at Regional Planning Authorities (RPAs) on clean energy programs applicable to low-income residents and affordable-housing owners and developers. It funds RPAs to provide clean energy training to municipal or community organizations that support low-income populations. Programs are expected to begin in summer 2019.
- Solar Incentives for Low Income Residents The 2016 Solar Energy Act directs the DOER to create a long-term sustainable solar incentive program to "promote cost-effective solar in the Commonwealth." It also directs DOER to "differentiate incentive levels to support diverse installation types and sizes that provide unique benefits, including, but not limited to, community-shared solar facilities, low-income solar fac the unit are rental units with residents at or below 50% of the area median income.²⁷⁰

Solar Incentives for Low Income Residents - The 2016 Solar Energy Act directs the DOER to create a longterm sustainable solar incentive program to "promote cost-effective solar in the Commonwealth." It also directs DOER to "differentiate incentive levels to support diverse installation types and sizes that provide unique benefits, including, but not limited to, community-shared solar facilities, low-income solar facilities and municipal or other governmental entity-owned solar facilities." ²⁷¹ As part of the Solar Massachusetts Renewable Target (SMART) Program,²⁷² DOER provides higher compensation to three project types to help ensure that low-income residents receive the same level of access to the solar program as other types of residents:

- Low Income Community Shared Solar Tariff Generation Unit in which at least 50% of energy output is allocated to low-income customers in the form of electricity or bill credit;
- Low Income Solar Tariff Generation Unit in which 100% of the generation of a unit less than 25 kW must be allocated to low-income customers;
- Low Income Property Solar Tariff Generation Unit in which a unit with more than 25 kW of capacity provides 100% of its generation to a public housing authority; at least 25% of the housing served by the unit are rental units with residents at or below 80% of the area median income; or at least 20% of the housing served by the unit are rental units with residents at or below 50% of the area median income.²⁷³

https://malegislature.gov/Laws/SessionLaws/Acts/2016/Chapter75

²⁷⁰ Guidelines Regarding Low Income Generation Units. Solar Massachusetts Renewable Target Program. Department of Energy Resources. April 26, 2018. Available at:

https://www.mass.gov/files/documents/2018/04/26/Low%20Income%20Guideline%20042518.pdf ²⁷¹ An Act Relative to Solar Energy. Mass.Gen. Laws Ch.75 § 1A (2016). Available at:

²⁷² Solar Massachusetts Renewable Target Program. Department of Energy Resources. Available at:

https://www.mass.gov/info-details/solar-massachusetts-renewable-target-smart-program

²⁷³ Guidelines Regarding Low Income Generation Units. Solar Massachusetts Renewable Target Program. Department of Energy Resources. April 26, 2018. Available at:

https://www.mass.gov/files/documents/2018/04/26/Low%20Income%20Guideline%20042518.pdf

Additionally, the MassCEC offers a solar loan program for designated low-income households with three incentives: a 1.5% interest rate buy-down, access to a loan loss reserve targeted at residents with insufficient credit records, and a reduction of up to 30% of a loan up to \$10,500.²⁷⁴

Clean Peak Standard – The purpose of the clean peak standard provision in the 2018 Act to Advance Clean Energy is to encourage utilities to use clean resources during periods of peak demand. Clean resources are defined as Class I and II pursuant to the Renewable Portfolio Standard. DOER's comment period for its Clean Peak Standard straw proposal closed in April 2019.²⁷⁵

Emissions Reductions - At the time of the initial RGGI auction, four coal-fired power plants were operating in Massachusetts, three of which were in designated Environmental Justice communities. Currently, there are no coal-fired power plants operating in the state. During the time of the second multistate RGGI program review, the MADEP held evening stakeholder meetings in designated Environmental Justice communities. Residents at those stakeholder meetings commented that a greater percentage of RGGI auction proceeds should be directed to Environmental Justice, low-income, and non-English speaking communities. Residents also requested that the state conduct an equity analysis of the state's RGGI program. In response, the MADEP conducted a mapping exercise in which it overlaid emission trends of several pollutants (CO_2 , NO_X , SO_2) with the state's data regarding Environmental Justice communities. The outcomes were shared with the public and at several of the public meetings in Environmental Justice communities. The data showed the following approximate reductions between 2005 and 2017: 50% reductions in CO_2 , more than 70% reduction in NO_X , more than 90% reductions for SO_2 .

Internal Operations

The organizational structure of energy, environmental, and natural resource programs fosters collaboration. Six environmental, natural resource, and energy regulatory agencies are housed within the Executive Office of Energy and Environmental Affairs, including the DOER and the DEP.²⁷⁶ The DOER and the MassDEP have collaborated on joint regulations and initiatives. The 2016 Executive Order 569 points to the Secretary of Energy and Environmental Affairs (EEA) as the entity to "coordinate and make consistent new and existing efforts to mitigate and reduce greenhouse gas emissions and to build resilience and adapt to the impacts of climate change." It also directs the Secretary to work "in consultation with the Secretary of Transportation, with New England and Northeastern state transportation, environment and energy agencies to develop regional policies to reduce greenhouse gas emissions from the transportation sector consistent with meeting the GWSA's 2050 and interim emissions limits."

²⁷⁴ Loan Program Incentives. Mass Solar Loans. Available at: https://www.masssolarloan.com/loan-support-incentives

²⁷⁵ Clean Peak Energy Standard. Massachusetts Department of Environmental Resources. Available at: https://www.mass.gov/service-details/clean-peak-energy-standard

²⁷⁶ Massachusetts Executive Office of Energy and Environmental Affairs. Available at:

https://www.mass.gov/orgs/executive-office-of-energy-and-environmental-affairs

External Stakeholder Engagement

The Massachusetts Secretary of Energy and Environmental Affairs established the Global Warming Solutions Fund Act Implementation Advisory Committee in 2012 to advise the state on implementation of the provisions of the 2008 law.²⁷⁷ The 2016 Executive Order 569 directs the Secretary to consult with the Advisory Committee in development of statewide climate mitigation programs.

The Affordable Access Initiative is led by DOER and the DHCD with participation from the MassCEC. When it was established in 2016, the initiative created an interagency working group charged with developing recommendations to guide the development of the program. In developing its final 2017 report, the interagency working group consulted with organizations that advance community development and affordable housing programs, utilities, and low-income housing advocates. The report outlines barriers to clean energy adoption by low- and moderate-income households and offers 16 recommendations in the following three categories:

- Maximize clean energy opportunities at key times in the affordable housing capital cycle by aligning housing and clean energy processes and data;
- Support and strengthen clean energy market growth and demand in the low- and moderateincome housing developer and homeowner community;
- Target and structure clean energy programs and incentives to better serve low- and moderateincome residents.²⁷⁸

The Massachusetts Energy Efficiency Advisory Council (EEAC) was created by the 2008 Green Communities Act. The EEAC guides development and implementation of the state's energy efficiency programs administered by the state's investor-owned gas and electric utilities and approved municipal aggregators. The council is also charged with developing a long-term vision for the state's energy future. In recommending and overseeing specific studies and research, the council works to achieve energy efficiency savings and to maximize the economic and environmental benefits of energy efficiency.²⁷⁹ Among the priorities set by the EEAC for 2019 is for the state to: "demonstrate equitable participation in energy efficiency programs through enhanced delivery models with a special focus on renters, moderate income, non-English speaking, and small business customers."²⁸⁰

The 2014 Executive Order on Environmental Justice directs the Secretary of Energy and Environmental Affairs to establish a position of Director of Environmental Justice. It also establishes an Environmental Justice Advisory Council and requires the establishment of a state policy on Environmental Justice. The order also directs all cabinet secretaries to appoint Environmental Justice coordinators to serve on an

²⁷⁷ Global Warming Solutions Act Implementation Advisory Committee. Executive Office of Energy and Environmental Affairs. Available at: https://www.mass.gov/service-details/implementation-advisory-committee ²⁷⁸ Affordable Access to Clean and Efficient Energy: Final Working Group Report. April 20, 2017. Available at: https://www.mass.gov/files/documents/2017/09/12/aacee-report.pdf

²⁷⁹ Massachusetts Energy Efficiency Advisory Council. Available at: http://ma-eeac.org/about/

²⁸⁰ Massachusetts Energy Efficiency Advisory Council 2019 Priorities. February 13, 2019. Available at: http://maeeac.org/wordpress/wp-content/uploads/MA-EEAC-Council-Priorities-2019.pdf

interagency council on Environmental Justice. ^{281, 282} The state identifies Environmental Justice communities using census data at a census block group level.²⁸³ The Environmental Justice program maintains local contacts in identified Environmental Justice communities and works with those local contacts to conduct community engagement and outreach. The local contacts provide recommendations on locations and times for state agencies to hold public hearings, meetings, and listening sessions, so events can be held at places that are familiar to the community (houses of worship, community/cultural/recreation centers) and accessible via public transportation. The program offers language translation services tailored to the needs of the communities. The local contacts also assist with conducting nontraditional outreach using alternative media outlets, libraries, community/cultural centers, and libraries in addition to traditional outreach methods such as posting information on the MADEP webpage. The Environmental Justice program also ensures that program contacts are always identified, so community residents can ask them questions or voice concerns.

Monitoring and Measurement

The Mass Save program, including the Income Eligible Coordinated Delivery initiative, operates in accordance with Statewide Electric and Gas three-year energy efficiency plans developed in collaboration with the EEAC (which is chaired by DOER) and approved by the MA Department of Utilities, and is overseen by the EEAC. The three-year plans include evaluation, monitoring, and verification (EM&V) plans and a reporting framework. Program results are reported to the EEAC on a quarterly basis and published on the EEAC website at http://ma-eeac.org/results-reporting/. Specific evaluation, monitoring, and verification studies and results are published on the EEAC website.²⁸⁴ In addition, the Mass Save program maintains a website that publishes information about program results, including low-income programs.²⁸⁵

Contact:

Joanne Morin, Deputy Commissioner Energy Policy, Planning and Analysis Massachusetts Department of Energy Resources joanne.morin@state.ma.us

²⁸¹ Executive Order 552: Executive Order on Environmental Justice. November 20, 2014. Available at:

https://www.mass.gov/files/documents/2017/11/29/Executive%20Order%20on%20Environmental%20Justice%20 links%20to%20PDF%20file.pdf

²⁸² Environmental Justice Policy. Massachusetts Department of Environmental Protection. Available at: https://www.mass.gov/service-details/environmental-justice-policy

²⁸³ Environmental Justice Communities in Massachusetts. Massachusetts Department of Environmental Protection. Available at: https://www.mass.gov/info-details/environmental-justice-communities-in-massachusetts

²⁸⁴ Evaluation, Measurement and Verification Studies. Massachusetts Energy Efficiency Advisory Committee. Available at: http://ma-eeac.org/studies/

²⁸⁵ Welcome to Mass Save Data. Available at: www.masssavedata.com

Appendix B-6: New Hampshire

Background on Relevant New Hampshire Climate Change Programs

In 2009, a governor's task force issued a statewide climate action plan for New Hampshire recommending that the state "strive to achieve a long-term reduction in greenhouse gas emissions of 80% below 1990 levels by 2050. The task force also chose a mid-term goal of reducing greenhouse gas emissions 20% below 1990 levels by 2025. ²⁸⁶

New Hampshire participates in collaborative climate efforts between a set of New England Governors and Eastern Canadian Premiers regarding. In 2017, the New England Governors and Eastern Canadian Premiers issued Resolution 41-2, including the following statement.

"Whereas, the Governors and Premiers adopted in 2015 a regional reduction marker range for 2030 to reduce regional GHG emissions from 35%-45% below 1990 levels..."²⁸⁷

New Hampshire Participation in RGGI

New Hampshire has a statute governing its participation in RGGI: Chapter 125-O, sections 5, 6, 8, and 20–29, provide the authority for New Hampshire's participation in the RGGI CO₂ budget trading program. ²⁸⁸ In 2009 and 2010, the Energy Efficiency Fund (Fund) supported competitive grant programs, two of which currently exist that offer revolving loan funds to promote business and municipal energy efficiency programs. Statutory parameters for the state's participation in RGGI are highly defined meaning that routine program changes, such as updates to the multistate model rule, require statutory amendments.²⁸⁹

During New Hampshire's earlier participation in RGGI (2009-2012), most of the state's auction proceeds were directed toward energy efficiency funding. In 2012, the legislature instituted statutory changes that:

• Placed a cap of \$1 for each RGGI CO₂ allowance sale and directed that any proceeds above the cap be rebated to electric ratepayers in the form of bill assistance;

²⁸⁶ The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. New Hampshire climate Change Policy Task Force. Prepared by the New Hampshire Department of Environmental Services. March 2009. Available at:

https://www.des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/documents/nhcap_final.pdf ²⁸⁷ Resolution Concerning the Regional Climate Change Action Plan. Conference of New England Governors and Eastern Canadian Premiers. Resolution 41-2. August 28, 2017. Available at: https://www.coneg.org/wpcontent/uploads/2019/01/41-2-Regional-Climate-Change-Action-Plan.pdf

²⁸⁸ State Statutes and Regulations. RGGI, Inc. Available at: https://www.rggi.org/program-overview-and-design/state-regulations

²⁸⁹ RSA 125-O: 21 Regional Greenhouse Gas Initiative Annual Report Required of the Department of Environmental Services (Department) and the Public Utilities Commission (Commission New Hampshire Department of Environmental Services. November 6, 2018 (revised). Available at:

http://www.puc.nh.gov/Sustainable%20Energy/GHGERF/RGGI%20Annual%20Reports/2018-SE-RGG-2018-Annual-Report-To-Legislature.pdf

• Allocated the remaining auction proceeds, minus state administrative costs, to an energy efficiency fund to support energy efficiency programs currently administered by the state's electric distribution utilities.

In 2013, the New Hampshire legislature enacted a law requiring the Public Utilities Commission to allocate 15% of the remaining auction proceeds below the \$1 per allowance for bill assistance to the state's low-income core energy efficiency program. Additionally, it directed electric utilities to annually set aside up to \$2 million of the monies in the Energy Efficiency Fund to municipal and local government energy efficiency projects, including projects by local governments that have their own municipal utilities.²⁹⁰

Currently, there are bills in the 2019 legislative session that would repeal the \$1 cap and direct greater amounts of auction proceeds to the Energy Efficiency Fund.

Lead Agencies

The New Hampshire Department of Environmental Services (DES) Division of Air Resources oversees the regulatory RGGI carbon budget-trading program (regulation Env-A 4600²⁹¹).²⁹²

The state Public Utility Commission (PUC) represents New Hampshire at RGGI, Inc., meetings along with DES. The PUC oversees the NHSaves energy efficiency programs, which are currently administered by the distribution utilities. The Sustainable Energy Division of the PUC was created in 2008 and implements programs associated with renewable energy and energy efficiency. The division currently administers the state's Renewable Portfolio Standard (RPS) and associated renewable energy incentive programs. The Energy Efficiency & Sustainable Energy Board was established by law in 2008, is administratively attached to the PUC, and serves to "promote and coordinate energy efficiency, demand response, and sustainable energy programs in the state." The Board serves as a forum to assist the state in developing comprehensive approaches to energy cost savings, clean energy jobs, and a more secure energy future.²⁹³ Voting members include representatives from businesses, nonprofit groups, state agencies, consumer representatives, utilities, and state legislators.²⁹⁴

The New Hampshire Office of Strategic Initiatives (OSI) is part of the Executive Department within the Office of the Governor. It is responsible for coordinating statewide efforts associated with strategic planning related to smart growth, statewide data systems, energy, and land use planning. Additionally,

²⁹⁰ A Law Relative to the Use of Proceeds from the Regional Greenhouse Gas Initiative Program (SB 123). 2013. Available at: https://legiscan.com/NH/text/SB123/id/862836.

²⁹¹New Hampshire code of Administrative Rules: 1 Env-A 4600, Chapter Env-A 4600, Carbon Dioxide CO₂ Budget Training Program. Available at: https://www.des.nh.gov/organization/commissioner/legal/rules/documents/env-a4600.pdf

²⁹² Regional Greenhouse Gas Initiative. New Hampshire Department of Environmental Services. Available at: https://www.des.nh.gov/organization/divisions/air/tsb/tps/climate/rggi/index.htm

²⁹³ Eleventh Annual Report. Energy Efficiency and Sustainable Energy Board RSA 125-O:5-a. December 21, 2018. Available at: http://www.puc.state.nh.us/EESE%20Board/Annual%20Reports/2018-EESE-Board-Annual-Report.pdf

²⁹⁴ Energy Efficiency and sustainable Energy Board. New Hampshire Public Utilities Commission. Available at: http://www.puc.state.nh.us/EESE.htm

the OSI Energy Division operates several statewide energy programs, including the LIHEAP and the WAP.²⁹⁵

Benefits Directed to Disadvantaged Communities and Consumers

The 2014 New Hampshire 10-year State Energy Strategy recognized that "New Hampshire's low income residents are the most vulnerable to high energy costs, as they spend a higher proportion of their income on energy yet have the least access to funding to make efficiency improvements to reduce those costs. Estimates show that more than 80,000 low-income homes are in need of weatherization, but current funding sources are sufficient to weatherize only approximately 1,000 homes annually. The State should consider mechanisms to increase funding to better meet this need, in cooperation with other programs that could have synergies in delivery."²⁹⁶ The 2018 updated New Hampshire 10-year State Energy Strategy does not have specific provisions directing programs to low-income residents; its priority is on "goals around cost-effective energy policies."²⁹⁷

New Hampshire's Systems Benefit Charge funds the state's energy efficiency programs, called the Core programs that are operated by the state's regulated utilities. The utilities current 2018–20 statewide plan, generally referred to as the energy efficiency resource standard (EERS), points to the EAP and WAP, which follow federal guidance for program eligibility of low-income households.^{298,299}

The state's Weatherization Assistance Program (WAP) funds are supplemented with RGGI auction proceeds. Currently at least 15% of RGGI auction proceeds not otherwise used for administrative costs or electric ratepayer rebates must be used for the low-income core energy efficiency program.

In 2017, the state passed the New Hampshire Clean Energy Jobs and Opportunity Act.³⁰⁰ The law requires that the Renewable Portfolio Standard be amended to "promote customer choice and energy independence by eliminating market barriers to solar energy that low-to-moderate income residential customers face." As a result, the state issued a request for proposals (RFP) in March 2018 to establish community solar projects with a focus on low- and moderate-income residential electric customers.³⁰¹ The program is funded solely through Renewable Portfolio Standard alternative compliance payments that are paid into the Renewable Energy Fund. Grants totaling more than \$400,000 were selected benefitting 61 households, including the following projects: resident-owned community solar, rooftop

²⁹⁵ Programs and Initiatives. New Hampshire Office of Strategic Initiatives. Available at: https://www.nh.gov/osi/energy/programs/index.htm

²⁹⁶ New Hampshire 10-year Energy Strategy. New Hampshire Office of Energy and Planning. September 2014. Available at: https://www.nh.gov/osi/energy/programs/documents/energy-strategy.pdf

 ²⁹⁷ New Hampshire 10-year State Energy Strategy. New Hampshire Office of Energy and Planning. April 2018.
Available at: https://www.nh.gov/osi/energy/programs/documents/2018-10-year-state-energy-strategy.pdf
²⁹⁸ NHSaves Programs. Available at: https://nhsaves.com/programs/

²⁹⁹ New Hampshire Statewide Energy Efficiency Plan: 2018-2020. September 1, 2017. Available at: http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-136/INITIAL%20FILING%20-%20PETITION/17-136_2017-09-01_NHUTILITIES_EE_PLAN.PDF

³⁰⁰ 2017 N.H. Laws Chapter 226 (SB 129)

³⁰¹ Development of Renewable Energy Fund Programs for Low and Moderate Income Residential Customers. State of New Hampshire Public Utilities Commission. Order No. 26.113. March 19, 2018. Available at: https://www.puc.nh.gov/regulatory/Docketbk/2017/17-172/ORDERS/17-172_2018-03-19_ORDER_26113.PDF

solar on multifamily income-restricted housing, and community solar gardens.³⁰² A second RFP was issued in February 2019 for Fiscal Year 2019 funding with a budget of \$650,000. Proposals were due to the state in March 2019, but grants have not yet been awarded.

Measurement and monitoring

The PUC's annual report to the legislature regarding results and effectiveness of the Systems Benefit Charge provides information on the NHSaves Programs.³⁰³

Contact: Karen Cramton, Director, Sustainable Energy Division New Hampshire Public Utilities Commission Karen.Cramton@puc.nh.gov

³⁰² New Hampshire Renewable Energy Fund. Annual Report. New Hampshire Public Utilities Commission. October 1, 2018. Available at:

http://www.puc.state.nh.us/Sustainable%20Energy/Renewable%20Energy%20Fund/20181001-ref-report-to-legislature-2018-annual-report.pdf

³⁰³ Results and Effectiveness of the Systems Benefit Charge. Annual Report. New Hampshire Public Utilities Commission. October 1, 2018. Available at: https://www.puc.nh.gov/Electric/SBC%20Reports/20181001-systembenefits-charge-report-2018.pdf

Appendix B-7: New Jersey

Background on Relevant New Jersey Climate Change Programs

In 1999, New Jersey enacted the Electric Discount and Energy Competition Act (EDECA). EDECA established the Renewable Portfolio Standard (RPS) requirements that, in turn, initiated the state's class I and II Renewable Energy Portfolio standard. This second RPS authorized a renewable energy certificate trading program with a specific trading program for solar. The current New Jersey value in renewable energy certificate trading is approximately \$600 million annually. The N.J. Board of Public Utilities (NJBPU) increased the Act's original 1999 Class I Renewable Portfolio Standard of 4% by 2012 to 20% by 2020, with a 2% set-aside for solar. NJBPU is on target to achieve the 20% Class I Renewable Portfolio Standard and is nearing 5% with regard to solar. EDECA also established the Societal Benefits Charge that funds New Jersey's Clean Energy Program for energy efficiency and renewable energy programs. The NJBPU directly manages these programs with a typical annual budget of \$350 million for both energy efficiency and renewable energy incentive and market transformation programs. The law requires that an energy efficiency program called Comfort Partners be established specifically for low-income families as a complement to the federal weatherization assistance program. The state's Societal Benefits Charge also funds a universal service fund that provides energy assistance to low -income families to complement the federal LIHEAP program, which was statutorily amended in 2010 to provide energy assistance to moderate-income families. This program supplements and complements the federal LIHEAP with an annual budget of approximately \$200 million.

In 2007, the state passed the Global Warming Response Act, setting statewide limits to reduce greenhouse gas emissions to 1990 levels by 2020 and to 80% of 2006 levels by 2050. The Act requires reporting of progress to the goals and establishment of a regulatory emissions reporting program.³⁰⁴ Also in 2007, the state enacted legislation commonly known as the Global Warming Solutions Fund Act that authorized participation in a carbon dioxide (CO₂) cap and trade program, such as RGGI, and specified how the RGGI auction proceeds would be distributed.³⁰⁵ The Act also directed the Board of Public Utilities to develop a greenhouse gas emission portfolio standard or other regulatory mechanism to address and mitigate any potential greenhouse gas emission dispatch shifting, commonly referred to as leakage that may occur because of New Jersey's participation in RGGI. The Act amended the 1999 Electric Discount and Energy Competition Act to allow electric and natural gas utilities to file energy efficiency and class I renewable energy programs with an average annual budget of approximately \$200 million. These same amendments increased the solar set-aside within the RPS.

In 2018, New Jersey enacted the state Clean Energy Act,³⁰⁶ which increased the Class I Renewable Portfolio Standard to 50% by 2030; established a Community Solar Pilot Program; increased the state's offshore wind requirement to 3,500 MW; required each electric utility to achieve 2% energy efficiency savings and each natural gas utility to achieve 0.75% energy efficiency savings; required a goal of 2,000

³⁰⁴ The New Jersey Global Warming Response Act of 2007, N.J.S.A. 26:2C-37

 ³⁰⁵ New Jersey Global Warming Solutions Fund Act of 2008, N.J.S.A. 26:2C-50 to 53
³⁰⁶ The Act Concerning Clean energy, P.L.2018, c.17.

MW of energy storage by 2030; and directed the establishment of a new or modified solar program beyond 5.1% in the Renewable Portfolio Standard.

In 2018, Executive Order 28 directed state agencies to develop an updated Energy Master Plan that commits to 100% clean energy by 2050. A draft of the 2019 Energy Master Plan was issued in June 2019 calling for 100% carbon-neutral electric generation and intensified electrification by 2050. A key component of the 2019 draft Energy Master Plan is to advance efforts to bring the clean energy economy to New Jersey's low-to-moderate-income communities including community solar and electric vehicles.

New Jersey Participation in RGGI

New Jersey was one of the original RGGI MOU signatories and, in 2007, enacted the Global Warming Solutions Fund Act, authorizing participation in a regional RGGI CO₂ auction. The state participated in the initial 2008 RGGI auction and continued to participate until it withdrew from RGGI in 2012. In January 2018, Governor Murphy's Executive Order 7 directed the Department of Environmental Protection and the Board of Public Utilities to take all necessary actions to ensure New Jersey's full participation in RGGI.³⁰⁷ In December, the state issued two RGGI proposals: the CO₂ Budget Trading Rule Proposal setting an initial state budget of 18 million tons in 2020; and a rule proposal establishing the framework for allocation of auction proceeds. The regulatory comment period for both rules ended in February 2019. Both rules were adopted on June 17, 2019.³⁰⁸

Auction proceeds are directed to a statutorily created fund, the Global Warming Solutions Fund, with proceeds administered through three state agencies: the Board of Public Utilities, the Economic Development Authority, and the Department of Environmental Protection. Statutorily, the auction proceeds are to be allocated as follows:

- 60% to the Economic Development Authority for commercial, institutional, and industrial entities;
- 20% to the Board of Public Utilities to reduce electricity demand or electricity costs to low- and moderate-income residential customers, with a focus on urban areas;
- 10% to the Department of Environmental Protection to support local government programs to reduce greenhouse gas emissions;
- 10% to the Department of Environmental Protection for enhancement of forests and tidal marshes as mechanisms of natural carbon sequestration; and
- Up to 8% for administrative costs (4% for DEP, and 2% apiece for BPU and EDA).

The adopted rule indicates that the three agencies will work collaboratively to develop a strategic funding plan for use of the auction proceeds. Finalization of the strategic plan is anticipated no later than 30 days after New Jersey receives its first auction proceeds (that is, April 2020) and is expected to be updated

³⁰⁷ New Jersey Executive Order 7 – Directs New Jersey to Reenter the Regional Greenhouse Gas Initiative. Available at: https://nj.gov/infobank/eo/o56murphy/pdf/EO-7.pdf

³⁰⁸ Regional Greenhouse Gas Initiative. Air Quality, Energy and Sustainability. New Jersey Department of Environmental Protection. Available at: https://www.state.nj.us/dep/aqes/rggi.html

with identification of funded initiatives every three years. The proposed regulations outline six objectives that will guide decisions of the strategic funding plan upon its completion:

- "Net reduction in greenhouse gas emissions or net sequestration of carbon;
- Significant reductions in greenhouse gas emissions or energy demand and significant contribution to the achievement of the state's 2050 Global Warming Response Act's limit (responsive to cost);
- Reduce energy use;
- Be directly responsive to the negative effects on human health and the environment in communities that are disproportionately impacted by the effects of environmental degradation and climate change;
- Be directly responsive to the recommendations submitted by the Department to the Legislature pursuant to the Global Warming Response Act; and
- Provide co-benefits to the state."³⁰⁹

The rule stipulates that the three agencies will each select a set of initiatives consistent with the six objectives and that selected initiatives for funding will have at least one objective ranked as critical and that at least one funded initiative will be critical for each objective.

Relevant Definitions

The April 2018 Executive Order 23 directs the N.J. Department of Environmental Protection to develop Environmental Justice guidance for the consideration of all executive branch agencies. The agency's draft guidance was issued in December 2018. The draft guidance points to definitions of Environmental Justice and fair treatment issued by the U.S. Environmental Protection Agency: "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies," and Fair treatment "means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies." The draft guidance also recommends the establishment of a workgroup to "evaluate and make further recommendations on the use of screening tools to identify environmental justice communities." ³¹⁰

The Comfort Partners program is available to low-income households defined as having an income at or below 250% of the federal poverty guidelines.³¹¹

³⁰⁹ CO₂ Budget Trading Program Adopted New Rule. N.J.A.C. 7:27-2.28 and 7:27C. Available at: https://www.state.nj.us/dep/aqes/docs/co2-budget-adoption.pdf

³¹⁰Executive Order 23 – Addresses Environmental Justice Issues in New Jersey's Urban Communities. Available at: https://www.nj.gov/dep/ej/eo23/docs/eo23-draft-guidance.pdf

³¹¹ Comfort Partners. New Jersey Clean Energy Program. New Jersey Board of Public Utilities. Available at: http://www.njcleanenergy.com/residential/programs/comfort-partners/comfort-partners

The state's community solar pilot program defines low income as a household with adjusted gross income at or below 200% of the federal poverty level. Moderate income is defined as a household with a total gross annual household income in excess of 50% but less than 80% of the state median income.³¹²

Lead Agencies

The N.J. Department of Environmental Protection (NJDEP) is the lead agency responsible for the state's regulations for the RGGI CO₂ budget-trading program and the Global Warming Solutions Fund regulation directing allocation of auction proceeds. NJDEP also administers the state's Office of Environmental Justice and the Environmental Justice Advisory Council. ³¹³ The NJDEP is also responsible for coordinating efforts to meet the state's 2050 greenhouse gas limit of 80% below 2006 levels established by the GWRA.

The N.J. Board of Public Utilities (NJBPU) regulates utilities that provide services including natural gas, electricity, water, telecommunications, and cable television. NJBPU oversees restructuring of utility rates, energy reform and deregulation, utility services, and responding to consumer complaints.³¹⁴ NJBPU manages and implements New Jersey's Clean Energy Program for energy efficiency and renewable energy, including the Renewable Portfolio Standard and the state's offshore wind and solar energy programs. NJBPU also serves as the State Energy Office and manages the Energy Master Plan process. NJBPU is responsible for addressing the statutory requirement to establish a greenhouse gas emissions portfolio standard or other regulatory measures to mitigate leakage.³¹⁵

The N.J. Economic Development Authority (NJEDA) is a state agency that creates public-private partnerships to bridge financing gaps and to increase access to capital by small and midsize businesses and not-for-profit organizations. NJEDA offers entrepreneurial training and mentoring programs, and undertakes real estate development projects intended to create new jobs and business opportunities and support community development and revitalization.³¹⁶

The Low Income Home Energy Assistance Program is administered by the Department of Community Affairs.³¹⁷ The Department of Community Affairs also administers the federal Weatherization Assistance Program.³¹⁸

³¹² Community Solar Energy Pilot Program-N.J.A.C. 14:8-9. Available at:

https://www.state.nj.us/bpu/pdf/rules/14%208%209%20Community%20Solar%20Pilot%20Rule%20Adoption%2 o-%20Advance%20Draft%2021119.pdf

³¹³ New Jersey Department of Environmental Protection. Available at: http://state.nj.us/dep/

³¹⁴ https://www.bpu.state.nj.us/bpu/about/index.html

³¹⁵ Potential Emissions Leakage and the Regional Greenhouse Gas Initiative (RGGI). Final Report of the RGGI Emissions Leakage Multi-State Staff Working Group to the RGGI Agency Heads. March 2008. Available at: https://mde.state.md.us/programs/Air/ClimateChange/RGGI/Documents/Leakage_Report_Final_3 -08.pdf

³¹⁶ New Jersey Economic Development Authority. Available at: https://www.njeda.com/

³¹⁷ New Jersey Department of Community Affairs. Available at:

https://www.nj.gov/dca/divisions/dhcr/offices/hea.html

³¹⁸ Weatherization Works. New Jersey State Plan and Application. New Jersey Department of Community Affairs. 2018. Available at: https://www.state.nj.us/dca/divisions/dhcr/offices/docs/wap/2018_DOE_State_Plan.pdf

Benefits Directed to Disadvantaged Communities and Consumers

The January 2018 Executive Order 7 directing the Department of Environmental Protection and Board of Public Utilities to rejoin RGGI stipulates that the agencies will develop guidelines regarding allocation of RGGI auction proceeds that will "ensure that funds are allocated to projects that will serve communities that are disproportionately impacted by the effects of environmental degradation and climate change, and which will alleviate the negative effects on human health and the environment resulting therefrom."³¹⁹

The N.J. Clean Energy Program, administered by the BPU and supported by the statewide societal benefits charge, offers several programs that direct program benefits to disadvantaged communities and consumers:

- The Electric Discount and Energy Competition Act requires the establishment of the Comfort Partners program, a free energy saving and education program for qualified low -income customers. Services include energy counseling, efficient lighting products; hot water conservation measures; replacement of inefficient refrigerators; thermostats; insulation upgrades; blower-door guided air sealing; duct sealing and repair; heating/cooling equipment maintenance; and other measures. The average annual budget for the Comfort Partners lowincome energy efficiency program is approximately \$35 million per year. The program has served more than 100,000 customers since its inception. The state Board of Public Utilities estimates an average annual savings of \$200 to each low-income household that participates in the program.
- The Electric Discount and Energy Competition Act establishes a Societal Benefit Charge that, among other programs, supports a universal service fund that provides energy assistance to lowincome families to complement the federal LIHEAP program with an annual budget of approximately \$200 million.
- The state's Comfort Partners and Weatherization Assistance programs executed a memorandum of understanding to facilitate coordinated delivery of services to low-income households.
- The state's Clean Energy Program's energy efficiency programs include enhanced incentives for low- and moderate-income residents as well as residents in urban enterprise zones. Enhanced incentives are available for businesses in urban enterprise zones and designated opportunity zones, among others.
- In December 2018, the Board of Public Utilities approved a filing for a new Multifamily Program targeted to multifamily owners and management organizations. The program is currently under development.

The N.J Board of Public Utilities adopted rules establishing the Community Solar Energy Pilot Program in 2019. The pilot program reserves 40% of the overall program capacity for low-to-moderate-income households. The NJBPU opened the first year of the pilot in January 2019 as a competitive process with an application deadline of September 2019. The applicant window closes in September 2019. The NJBPU gives higher preference to applications for low- and moderate-income and Environmental Justice projects for which at least 51% of capacity is subscribed by low- and moderate-income subscribers. There

³¹⁹ New Jersey Executive Order 7 – Directs New Jersey to Reenter the Regional Greenhouse Gas Initiative. Available at: https://nj.gov/infobank/eo/o56murphy/pdf/EO-7.pdf

is a higher preference for projects that are a partnership with a municipality, local community organization, or affordable housing provider.³²⁰

Internal Operations

A staff-level interagency workgroup emerged from the development of the concept of a strategic funding plan for RGGI auction proceeds as reflected in the NJDEP rulemaking. With participation by NJBPU, NJDEP, NJEDA, and the Attorney General's office, the workgroup collaborated on development of the rule language and will continue to collaborate on development of the first strategic funding plan.

The draft guidance issued by the NJDEP Office of Environmental Justice pursuant to Executive Order 23 indicates that NJDEP will form an EJ Interagency Council composed of executive branch agencies to "provide a forum for interagency collaboration to ensure interagency consistency, sharing of information and best practices, and leveraging of opportunities to support and assist environmental justice communities."³²¹

External Stakeholder Engagement

In March 2018, prior to the release of the department's RGGI rule proposals, the Office of Environmental Justice hosted a special extended meeting of the Environmental Justice Advisory Council, along with pubic stakeholders, to outline concepts that the agency anticipated would be reflected in its rule proposal. Later in that same month, the department hosted a public information session/webinar open to all interested parties to discuss New Jersey's path to rejoin RGGI. NJDEP received extensive comments from the state's Environmental Justice stakeholders during the rulemaking process, including advocating that the rule set mandatory emissions reduction requirements in Environmental Justice communities.

Monitoring and Measurement

The state's Clean Energy Program issues public quarterly reports, including status of the Comfort Partners program.³²²

Contact: Christine Schell, Executive Assistant to the Assistant Commissioner Air Quality, Energy and Sustainability New Jersey Department of Environmental Protection Christine.schell@dep.nj.gov

³²⁰ Community Solar Energy Pilot Program Application Form. New Jersey Clean Energy Program. New Jersey Board of Public Utilities. Available at: http://njcleanenergy.com/files/file/CommunitySolar/8E%20-%20Community%20Solar%20Energy%20Pilot%20Program%20Application%20Form_fillable.pdf

³²¹ Environmental Justice Executive Order No. 23 Guidance. New Jersey Department of Environmental Protection. Available at: https://www.nj.gov/dep/ej/eo23/index.html

³²² Clean Energy Program Financial & Energy Savings Reports, New Jersey Clean Energy Program, New Jersey Board of Public Utilities. Available at: http://www.njcleanenergy.com/main/public-reports-and-library/financial-reports/clean-energy-program-financial-reports
Appendix B-8: New York

Background on Relevant New York Climate Change Programs

In July 2019, New York enacted the Climate Leadership and Community Protection Act that combines elements of the governor's "Green New Deal" proposed in his 2019 State of the State address and elements of a legislative initiative promoted by a coalition of community-based, environmental, labor, and Environmental Justice organizations. The new law is the first time the state has established statutory, statewide climate change targets. It increases the state's Clean Energy Standard and requires investments to deliver benefits directed to disadvantaged communities. It also creates a Climate Action Council charged with developing a statewide scoping plan to provide recommendations for attaining the state's mandatory greenhouse gas reduction targets of 40% by 2030 and 85% by 2050 as well as achieving a carbon neutral economy. A more detailed summary of the law is included in Appendix D of this report.

Prior to the state's new law, New York State's climate programs were authorized through existing energy, public service, and environmental statutory authority and guided by goals set through several executive actions:

- The 2009 Executive Order 24 set a goal to reduce greenhouse gas (GHG) emissions in New York State by 80% below the levels emitted in 1990 by the year 2050;³²³
- The 2015 State Energy Plan established energy sector goals of 50% renewable electricity, 40% GHG emissions reductions, and 600 TBtu increase in statewide energy efficiency by 2030.
- In 2015 on the eve of the Paris Agreement, New York signed the international Under 2 memorandum of understanding, agreeing to limit its GHG emissions to less than 2°C.³²⁴
- The 2017 Executive Order 166 reaffirmed the state's policy for a 40% reduction in GHG emissions from 1990 levels by 2030, expanding that requirement to all sectors of the state's economy. The order also directs all state policies and programs to implement measures that have been identified to reduce emissions.³²⁵ Additionally, in response to the Trump administration's decision to withdraw the United States from the Paris Agreement, New York State collaborated with California and Washington to form the U.S. Climate Alliance. ^{326,327} The Alliance represents a bipartisan coalition of governors committed to upholding the Paris Agreement and reduce GHG emissions 26–28% by 2025 compared to 2005 levels.

³²³ Executive Order No. 24: Establishing a Goal to Reduce Greenhouse Gas Emissions Eighty Percent by the Year 2050 and Preparing a Climate Action Plan. 2009. Available at: https://www.dec.ny.gov/energy/71394.html ³²⁴ Governor Cuomo, Joined By Vice President Gore, Announces New Actions to Reduce Greenhouse Gas Emissions and Lead Nation on Climate Change. October 8, 2015. Last accessed July 1, 2019.

https://www.governor.ny.gov/news/governor-cuomo-joined-vice-president-gore-announces-new-actions-reduce-greenhouse-gas-emissions#

³²⁵ https://www.governor.ny.gov/news/no-166-red oubling-new-yorks-fight-against -economic -and - environmental-threats-posed -climate

³²⁶ Executive Order 166: Redoubling New York's Fight against the Economic and Environmental Threats Posed by Climate Change and Affirming the Goals of the Paris Climate Agreement. June 2, 2017.

https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/USClimateAllianceExecutiveOrder.pdf ³²⁷ United States Climate Alliance. Last accessed July 1, 2019. https://www.usclimatealliance.org/

New York Participation in RGGI

New York was one of the original seven states to sign the RGGI MOU in 2005. Using authority of its Air Pollution Control Act, the state Department of Environmental Conservation initially adopted its CO₂ budget trading regulations in 2008 through a new rule (6 NYCRR Part 242) and revisions to an existing rule.^{328,329} The New York State Energy Research and Development Authority (NYSERDA) simultaneously adopted regulations governing spending of auction proceeds pursuant to 21 NY Codes, Rules and Regulations (NYCRR) Part 507. The rule creates the Clean Energy Technology Account in which auction proceeds are allocated and stipulates that auction proceeds shall be used by NYSERDA to administer energy efficiency, renewable energy, and/or innovative carbon abatement programs, and to cover the costs to administer the programs.³³⁰ The authority annually publishes an operating plan for spending auction proceeds as well as a biannual program status report that outlines program spending, an estimate of program benefits, and a summary description of program activities, implementation, and evaluation.³³¹

The 2017 Biennial Report to the 2015 State Energy Plan provides an overview of state climate change and clean energy programs pursuant to the statewide goals set in the 2015 plan. The 2017 report points to the impact of RGGI in the state as having "facilitated a 46% reduction in CO₂ emissions from New York's power plants, including a 90% reduction in coal-fired generation, while providing the state with over \$1 billion in proceeds to support further carbon abatement and clean energy development."³³²

The state's RGGI regulations stipulate that state agencies will annually convene a group of stakeholders, representing a broad array of energy and environmental interests, to advise on priorities for the upcoming year's operating plan. The 2019 RGGI Operating Plan³³³ identifies the following areas of investment of RGGI auction proceeds:

- Support attainment of the state's targets of 1.5 GW of energy storage by 2025 and 3 GW by 2030; RGGI funds will contribute to an energy storage program for the state's investor-owned utilities.
- Promote plug-in electric vehicles with a NYSERDA-implemented rebate program, marketing, awareness-building, and other methods; support installation of charging stations at workplaces, municipal lots, and multifamily dwellings.
- Continue to invest RGGI proceeds in the state Clean Energy Fund, with the intent of dedicating \$25 million annually.

³²⁸ https://www.rggi.org/program-overview-and-design/state-regulations

³²⁹ 6 NYCRR Part 200, General Provisions

³³⁰ 21 NYCRR, Part 507. https://www.nyserda.ny.gov/Researchers-and-Policymakers/Regional-Greenhouse-Gas-Initiative/21-NYCRR-Part-507

³³¹ Regional Greenhouse Gas Initiative Reports. NYSERDA. Last accessed July 1, 2019.

https://www.nyserda.ny.gov/About/Publications/Program -Planning -Status - and -Evaluation - Reports/RGGI-Reports

³³² Biennial Report to the 215 New York State Energy Plan. NYSERDA. 2017.

https://energyplan.ny.gov/Plans/2015-Update

³³³ New York's Regional Greenhouse Gas Initiative Operating Plan Amendment for 2019. New York Department of Environmental Conservation and NYSERDA. Last accessed July 1, 2019.

file:///C:/Users/Jeanne/Downloads/2019-RGGI-Op-Plan-Amendment.pdf

- Continue to invest in the Green Jobs-Green New York program, which creates training programs for "green collar" careers;
- Support economic transition of communities reliant on power plants as a source of financial support.
- Support energy efficiency and renewable energy programs through the Long Island Power Authority.
- Implement financial transfers to the state general fund to support clean energy tax credits.

Relevant Definitions

Environmental Justice – the New York Department of Environmental Conservation defines potential Environmental Justice areas as those U.S. Census block groups of 250 to 500 households that met or exceeded at least one of the following thresholds:

- At least 51.1% of the population in an urban area reported themselves to be members of minority groups; or
- At least 33.8% of the population in a rural area reported themselves to be members of minority groups; or
- At least 23.59% of the population in an urban or rural area had household incomes below the federal poverty level.³³⁴

The agency provides maps by counties to identify Census Blocks that meet those thresholds.

Low income - The New York State Energy Research and Development Authority defines the low-income market segment as households with annual incomes at or below 60% of the state median income (SMI), and the moderate-income market segment as households with an annual income between 60% and 80% of the SMI or the area median income (AMI), whichever is greater.

Disadvantaged communities – The new Climate Leadership and Community Protection Act defines disadvantaged communities as: "communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate-income households." Criteria for identifying these communities will be developed by a Climate Justice Working Group and, pursuant to the law, will include the following elements: "Disadvantaged communities shall be identified based on geographic, public health, environmental hazard, and socioeconomic criteria, which shall include but are not limited to: areas burdened by cumulative environmental pollution and other hazards that can lead to negative public health effects; areas with concentrations of people that are of low income, high unemployment, high rent burden, low levels of home ownership, low levels of educational attainment, or members of groups that have historically experienced discrimination on the basis of race or ethnicity; and areas vulnerable to the impacts of climate change such as flooding, storm surges, and urban heat island effects." Both the criteria and a draft list of identified communities will be publicly issued for comment.

³³⁴ Maps & Geospatial Information system (GIS) Tools for Environmental Justice. New York State Department of Environmental Conservation. Available at: https://www.dec.ny.gov/public/911.html.

Lead Agencies

The New York State Energy Research and Development Authority (NYSERDA) – Created by statute in 1975 as a public benefit corporation, NYSERDA is governed by a board consisting of commissioners of the Departments of Transportation and Environmental Conservation, the chair of the Public Service Commission, and the president and CEO of the New York Power Authority, who serve ex officio. The remaining nine public members are appointed by the governor of the State of New York, and six of the nine must meet the following criteria: economist, engineer or research scientist, environmentalist, consumer advocate, head of a major gas utility, head of a major electric utility. The mission outcomes NYSERDA seeks to advance to support the energy transformation in New York include:

- Greenhouse gas emissions reduction;
- Renewable energy;
- Energy efficiency;
- Clean energy economy; and
- A resilient and distributed energy system.³³⁵

The New York Green Bank is a division of NYSERDA ³³⁶ created in 2014 as part of the state's implementation of its statewide energy policy Reforming the Energy Vision (REV). The Green Bank is a state-sponsored, specialized financial entity with a \$1 billion capitalization providing loans to accelerate clean energy deployment and greenhouse gas emissions reductions.

The New York Department of Environmental Conservation (NYDEC) was created in 1970 with the mission to "conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." The agency has established an Office of Climate Change that advances overall climate mitigation and resilience efforts in the state along with other agency partners. NYDEC oversees the state's CO₂ budget trading program under RGGI.³³⁷

The New York Department of Public Service (NYDPS) provides support to the state Public Service Commission that has a broad mandate to ensure access to safe, reliable utility service at just and reasonable rates. The Commission regulates the state's electric, gas, steam, telecommunications, and water utilities and cable industry. In addition, the Commission exercises jurisdiction over the siting of major gas and electric transmission facilities and has responsibility for ensuring the safety of natural gas and liquid petroleum pipelines.³³⁸

The New York State Homes and Community Renewal (HCR) is the state's affordable housing agency, with a mission to build, preserve, and protect affordable housing and increase home ownership throughout New York State. HCR administers the state's income-eligible Weatherization Assistance

³³⁵ Toward a Clean Energy Future: A Strategic Outlook; 2019-2022. NYSERDA. Available at: file:///C:/Users/Jeanne/Downloads/strategic-outlook.pdf

³³⁶ Advancing New York's Clean Energy Investment Opportunities. New York Green Bank, a Division of NYSERDA. Available at: https://greenbank.ny.gov/

³³⁷ New York Department of Environmental Conservation. Last accessed July 4, 2019. https://www.dec.ny.gov/ ³³⁸New York Department of Public Service. Last accessed July 4, 2019. https://www.dps.ny.gov/

Program for homeowners and renters. The program works closely with nonprofit community action agencies and organizations to deliver programs. It also works with affordable housing developers.³³⁹ The state energy assistance program is housed within the Office of Temporary and Disability Assistance.³⁴⁰

Benefits Directed to Disadvantaged Communities and Consumers

Enactment of the 2019 Climate Leadership and Community Protection Act is a major expansion and enhancement of New York's state climate change policies.³⁴¹ A more in-depth summary of the law is included in Appendix D. Major components include:

• Establishment of statewide targets that require 40% emissions reductions from 1990 levels by 2030 and a minimum of 85% emissions reductions by 2050. Any remaining emissions must be directly reduced or offset in ways that are verifiable, permanent, and demonstrate that they will not disproportionately harm disadvantaged communities. Electric generators are not eligible for offsets.

• Directs enhancements to the Clean Energy Standard, including requiring:

- 70% of the state's electricity must come from renewable energy by 2030, and 100% of the state's electricity supply must be emissions-free by 2040.
- 9,000 MW of offshore wind by 2035.
- 6,000 MW of distributed solar energy by 2025.
- A statewide goal of reducing on-site energy consumption by 185 trillion BTUs from the state's 2025 forecast through energy efficiency.
- 3,000 MW of energy storage capacity.
- Establishment of a 22-member Climate Action Council including heads of 12 state agencies, appointed experts, and stakeholders. The council is directed to create a scoping plan, which will set out recommendations for reducing emissions across all sectors of the economy. The scoping plan will be incorporated into the next State Energy Plan. A Just Transition Working Group and advisory panels will provide the council with recommendations to inform the scoping plan. The Climate Justice Working Group and Environmental Justice Advisory Council will be consulted during development of the scoping plan.
- Directing the Department of Environmental Conservation to be responsible for enforcing the emissions targets through "enforceable emissions limits, performance standards, or measures or other requirements to control emissions from greenhouse gas emission sources." The department is directed to promulgate regulations to ensure compliance with the limits. The act directs that any efforts to reduce emissions, including market-based strategies, shall not worsen pollution in disadvantaged communities.

³³⁹ Weatherization Assistance Program. Department of Homes and Community Renewal. Last accessed July 4, 2019. https://hcr.ny.gov/weatherization-assistance-program-o

³⁴⁰ Home Energy Assistance Program. Office of Temporary and Disability Assistance Department of Homes and Community Renewal. Last accessed July 4, 2019. https://otda.ny.gov/programs/heap/

³⁴¹ New York Climate Leadership and Community Protection Act of 2019. Last accessed July 13, 2019. https://www.nysenate.gov/legislation/bills/2019/s6599

- Setting a goal that 40% of overall benefits associated with clean energy and energy efficiency programs, projects, or investments in housing, workforce development, pollution reduction, low-income energy assistance, energy, transportation, and/or economic development be directed toward disadvantaged communities. A minimum of 35% of overall benefits associated with clean energy and energy efficiency program spending must accrue to disadvantaged communities.
- Establishing a Community Air Monitoring Program in which funding will be provided to community-based organizations in disadvantaged communities, leading to implementation of localized, enforceable strategies to reduce air pollution.

In 2014, New York adopted its statewide energy policy, Reforming the Energy Vision (REV),³⁴² to build a clean, resilient, and affordable energy system for all New Yorkers. REV includes provisions regarding reforming the utility business model, investing alongside the private sector to drive scale in the clean energy sector, and positioning the state to lead by example through actions and activities.³⁴³

The 2015 State Energy Plan provided a roadmap for REV policy with a goal to reach by 2030: 40% reduction in greenhouse gas emissions from 1990 levels; 50% renewable electricity generation; and 600 trillion Btu in energy efficiency gains.³⁴⁴ The 2015 plan includes the following principles:

- Affordability Drive savings that benefit all customers and encourage private investment in distributed clean energy solutions.
- Environment Promote clean energy markets that attract private sector capital investment and support clean transportation alternatives.
- Reliability and Resiliency Promote the development of clean, local energy resources that strengthen and improve the reliability of the grid.
- Regulatory Reform Operate energy systems more efficiently and at a lower cost.
- Environmental Justice Help communities disproportionately impacted by air pollution pursue a clean energy future.
- Clean, Reliable Transportation Guide the development and implementation of programs that will help fund and facilitate the clean transportation system of the future.

Implementation of the REV policy and statewide Energy Plan is through a series of actions by state agencies, including Public Service Commission orders, investments and programs of the New York State Energy Research and Development Authority and the New York Department of Environmental Conservation, and private sector partners. Some of these actions include:

• In 2016, the state Public Service Commission adopted a Clean Energy Standard (CES) that establishes a timeline for load serving entities to produce at least 50% of the electricity consumed in the state from renewable sources, picking up from attainment of the final target of the Renewable Portfolio Standard in 2015.

 ³⁴² Reforming the Energy Vision (REV). Public Service Commission 14-M-0101. Last accessed June 10, 2019.
http://www3.dps.ny.gov/W/PSCWeb.nsf/All/CC4F2EFA3A23551585257DEA007DCFE2?OpenDocument
³⁴³ About REV. NYSERDA. Available at: https://rev.ny.gov/about.

³⁴⁴ Reforming the Energy Vision (REV): Building a Clean, More Resilient Energy system for all New Yorkers. Last accessed June 10, 2019. https://rev.ny.gov/

- Also in 2016, the Public Service Commission adopted an order establishing the state's Clean Energy Fund and establishing a framework for its implementation. The order is focused on:
 - Adopting the REV target of meeting 50% of the state's electric consumption with renewable resources in 2030, as well as targets of a 40% reduction in greenhouse gas emissions from 1990 levels and a 600 trillion Btu increase in statewide energy efficiency;
 - Revising state policies and practices regarding governance of utilities, including business practices, retail market design, and establishment of rates and prices for electric service;
 - Reexamining how the state deploys incentives and financial support for clean energy technology; and
 - Positioning the state to lead by example with regard to adoption of clean energy and climate change actions.

Implementation of the Fund has been directed to four areas pursuant to that framework: market development to increase customer demand for clean energy; innovation and research focused on new technologies that make clean energy more affordable and accessible leading to an increase in demand; investment in the New York Green Bank and the NY Sun initiative. The 2016 order establishing the Clean Energy Fund contains 25 chapters including the following:

- Low to Moderate Income Chapter,³⁴⁵ which was revised in June 2019. The Chapter sets funding priorities for traditional incentives and standard offer programs, low to moderate-income market development interventions, and multi-agency coordination to maximize program impact through coordination of various low-to-moderate-income programs.
- Workforce Development and Training Chapter,³⁴⁶ which was revised in April 2019. The Chapter outlines partnerships with industry to identify worker skills needed by industry, creating the training infrastructure to meet those needs, and attracting and training candidates.
- Communities Chapter,³⁴⁷ which was updated in April 2019. The Chapter is focused on two programs providing more than \$5 million in grants to qualified nonprofit and community-based organizations. The Chapter outlines the state's Clean Energy Communities initiative, which supports efforts of local organizations to promote energy awareness and education and support services to increase clean energy deployment across residential, multifamily, and small businesses with an emphasis on low-to-moderate-income households. ³⁴⁸ The Chapter also outlines the Community Energy Engagement Program, which provides support to locally based organizations to drive energy efficiency and renewable energy deployment to residential,

³⁴⁵ Clean Energy Fund Investment Plan: Low- to Moderate-Income Chapter, Matter Number 16-00681. NYSERDA. Updated June 10, 2019. Last accessed July 13, 2019. file:///C:/Users/Jeanne/Downloads/CEF-Low-to-Moderate-Income.pdf

³⁴⁶ Clean Energy Fund Investment Plan: Workforce Development and Training Chapter. Matter Number 16-00681. NYSERDA. Updated April 19, 2019. Last accessed July 13, 2019. file:///C:/Users/Jeanne/Downloads/CEF-Workforce-Development-and-Training.pdf

³⁴⁷ Clean Energy Fund Investment Plan: Communities Chapter, Matter Number 16-00681, and NYSERDA. Updated April 19, 2019. Last accessed July 13, 2019. file:///C:/Users/Jeanne/Downloads/CEF-Communities-Chapter.pdf

³⁴⁸ https://www.nyserda.ny.gov/All-Programs/Programs/Community-Energy-Engagement-Program

multifamily, and small business customers. The focus of the Community Energy Engagement Program is on expanding adoption of energy efficiency and renewable resources in low-tomoderate-income households, including serving as a navigator of available resources for comprehensive clean energy, weatherization, and pre-weatherization services.

In addition to the provisions outlined earlier, the 2017 Executive Order 166 includes provisions referred to as a "Clean Climate Careers" initiative targeted at disadvantaged consumers and communities, including:

- Up to \$1.5 billion in investments in renewable energy to meet the Clean Energy Standard target of achieving 50% of electricity from renewables by 2030, including doubling solar capacity;
- \$15 million earmarked to establish a job training and apprenticeship program at the Cornell Institute of Labor Relations in partnership with utilities and labor unions; and
- Creation of an Environmental Justice and Just Transition Working Group that contributed to design and passage of the new 2019 law.

In 2017, the New York Public Service Commission issued an order adopting a universal Energy Affordability Policy, which seeks to limit energy costs for New York's LMI households to no more than 6% of household income. As part of the order, the Commission directed that utilities open their low-income discount programs to all households that currently receive the Home Energy Assistance Program (HEAP), regardless of fuel or benefit type. In concert with the Commission's adoption of the Energy Affordability Policy, a task force to develop new strategies to reduce the energy burden and increase access to clean energy benefits for all of the state's low-income households was established. The low-income Energy Task Force convenes multiple state agencies to foster collaborative multisector efforts to expand energy efficiency and clean energy programs in low-income communities. The governor's 2019 State of the State address directed the Task Force to propose modifications to program design, administration, and policies to increase impact of relevant programs.³⁴⁹

In 2016, the Public Service Commission established a Clean Energy Advisory Council, which included a Low- and Moderate-Income Clean Energy Initiatives Working Group. The working group produced a report with 43 specific recommendations to NYSERDA and utilities, with an overarching recommendation for a holistic approach to improve the delivery of clean energy services that coordinate and leverage all available resources.³⁵⁰

New Efficiency: New York is designed to accelerate energy efficiency outcomes in New York. The strategies in New Efficiency: New York informed the Public Service Commission's approval of the Order Adopting Accelerated Energy Efficiency Targets (Case 18-M-0084) in December 2018. Among the initiative's elements is a commitment to advance energy affordability by developing initiatives focused on energy solutions for low- to moderate-income (LMI) consumers, while dedicating at least 20% of any

³⁴⁹ 2019 Justice Agenda: The Time is Now. 2019 State of the State Address. Governor Andrew Cuomo. Available at: https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2019StateoftheStateBook.pdf

³⁵⁰ Report on Alternative Approaches to Providing Low and Moderate Income (LMI) Clean Energy Services. Matter 16-01007. Clean Energy Advisory Council (CEAC) LMI Clean Energy Initiatives Working Group. 2017. Available at: file:///C:/Users/Jeanne/Downloads/%7BF84BD434-DD25-483F-B481-CCDD92B0A187%7D.pdf.

additional levels of public investment in energy efficiency to the LMI sector. The plan guiding the New Efficiency: NY program acknowledges that barriers to adoption of energy efficiency programs in the low-to-moderate income sector need to be addressed. These barriers include capital constraints on homeowners and building owners as well as unclear value propositions to third-party capital providers. The plan notes that, since 2006, state energy efficiency and weatherization programs targeted at the low-to-moderate-income market segment reached only 12% of eligible households.³⁵¹ To inform the planning for initiatives to increase adoption of energy efficiency within the LMI market segment, NYSERDA and the NYS DPS hosted a series of seven stakeholder forums across New York State during the fall of 2018. The forums were attended by 250 participants from 129 organizations and resulted in 44 recommendations for improving access to and increasing the impact of energy efficiency initiatives. The forums were summarized and filed by NYSERDA and DPS, and the agencies filed an assessment of the recommendations.^{352,353}

New York manages its RGGI auction proceeds as a complement to investments from its Clean Energy Fund and, combined, they serve as the foundation for implementation of the state's clean energy and climate change commitments. The Clean Energy Fund supported the following programs to implement the REV's broader energy vision:³⁵⁴

- EmPower NY This program provides no-cost energy efficiency services to households at or below 60% of the state median income (SMI), and is available to homeowners and renters. Eligible measures include in-home energy education, comprehensive home assessment, electric load reduction, air sealing, insulation, and health and safety improvements. Work scopes are capped at \$7,000 per household. The program is funded through the Clean Energy Fund and is delivered by a network of more than 200 energy efficiency and weatherization contractors across the state.
- Assisted Home Performance with ENERGY STAR[®] This program is a whole-house energy efficiency program administered by NYSERDA and funded through the CEF. The program provides incentives for energy efficiency upgrades to households that have an annual income of up to 80% of area median income or SMI, whichever is higher. Eligible customers receive a discount covering 50% of the cost of eligible energy efficiency improvements up to \$4,000 per project for single-family homes and up to \$8,000 for two- to four-unit residential homes.
- Multifamily Performance Program NYSERDA's low-to-moderate-income component of the Multifamily Performance Program addresses cost barriers experienced by owners of low to

³⁵¹ New Efficiency: New York. NYSERDA, New York Department of Public Service. April 2018. Last accessed June 10, 2019. file:///C:/Users/Jeanne/Downloads/New-Efficiency-New-York.pdf

³⁵² LMI Stakeholder Forums Summary Report. Case 18-M-0084. New York State Energy Research and Development Authority and New York State Department of Public Service. Available at:

file: ///C: /Users / Jeanne / Download s / % 7 B68534628 - 6 A 55 - 4 F6C - B CoE - 5 F A D D 9 C 39 09 C % 7 D. pdf.

³⁵³ Assessment of Input Received at 2018 LMI Stakeholder Forums. Case 18-M-0084. New York State Energy Research and Development Authority and New York State Department of Public Service. 2019. Available at: file:///C:/Users/Jeanne/Downloads/%7B425E5180-C16A-49A5-AC19-A79C1EA258C3%7D%20(1).pdf.

³⁵⁴ Biennial Report to the 2015 New York State Energy Plan. NYSERDA. 2017. Last accessed June 10, 2019. https://energyplan.ny.gov/Plans/2015-Update

moderate-income properties when implementing clean energy upgrades. The program provides incentives for work scopes designed to achieve at least 25% of whole-building energy savings.

- Affordable New Construction NYSERDA's new construction program promotes high performance for the construction of affordable low-rise and high-rise multifamily projects by providing: financial incentives to overcome the incremental cost of building to a higher performance threshold, such as passive house design or net-zero energy standards; and providing technical assistance, tools, and resources on high-performance new construction techniques, with an emphasis on integrated design solutions and predevelopment cost reductions.
- RetrofitNY This program is designed to preserve and improve the energy performance of affordable housing properties as part of the renovation process with the goal of near net-zero energy use by 2025. The program involves:
 - Aggregating demand among building owners to more significantly drive markets;
 - Mobilizing the building industry to develop innovative technical solutions to substantially improve affordable housing buildings while residents continue to live in their apartments;
 - Engage with manufacturers to help drive innovation, availability, and cost compression of relevant technologies;
 - Working with financial organizations to fund projects by capturing energy savings; and
 - Engaging regulatory agencies to help facilitate widespread adoption.
 - A set of pilot and demonstration projects are currently under way.³⁵⁵
- NY-Sun This is the state's overarching program to make solar accessible to all residents through community solar and provide solar cost savings for low-to-moderate-income households. Several efforts are underway:
 - The state issued an Affordable Solar Predevelopment and Technical Assistance solicitation designed to address resource gaps and solve market barriers preventing the development of solar installations serving low-to-moderate-income households. The program provides funds to community-based organizations, affordable housing developers, and technical assistance providers with a focus on implementation of solar installations for multifamily affordable housing buildings and establishment of shared community solar programs. Funding up to \$200,000 can be used for predevelopment and technical assistance work on a proposed solar project or group of projects, including financing, legal analyses, procurement and contracting, customer outreach and enrollment, and business model design for multifamily affordable housing;³⁵⁶
 - The state has established low-income community distributed generation working groups to investigate barriers and solutions to advance solar adoption in low-income households. In 2018, the Public Service Commission issued an order directing the development of a suite

³⁵⁵ Retrofit New York. Timeline and Update. NYSERDA. Last accessed June 10, 2019.

https://www.nyserda.ny.gov/All-Programs/Programs/RetrofitNY/Timeline

³⁵⁶ Affordable Solar Predevelopment and Technical Assistance. NYSUN. NYSERDA. Available at:

https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Communities-and-Local-

Governments/Predevelopment-and-Technical-Assistance

of new programs to broaden low-income customer participation in solar programs.³⁵⁷ The order includes:

- Directing utilities to adopt a Bill Discount Pledge program, which allows recipients of income-qualified utility bill discounts to pledge their discounts toward the cost of participating in a community distributed generation project;
- Access to an income verification system developed by the state for income-eligible community distributed generation subscribers; and
- Establishment of a loss reserve program to facilitate the construction and operation of community distributed generation projects serving low-income households.
- The Solar for All program, which is a NYSERDA program,³⁵⁸ provides income-eligible households with monthly credits on electricity bills up to \$15/month, with no up-front costs to participate in community solar projects.
- REVitalize The State works with community-based organizations in low-to-moderate-income and Environmental Justice communities to support planning and development of communityscale clean energy projects. The state issued a request for proposals that provides Clean Energy Fund support to five community-based organizations that provide services to or represent lowto-moderate-income or Environmental Justice communities. Additional state support includes assisting community-based organizations with identifying successful models of community engagement, site selection, identifying ownership and finance structures, customer enrollment, and mechanics for the allocation of benefits. NYSERDA is also using these efforts to better understand challenges of low-to-moderate-income and Environmental Justice communities in planning and developing community-scale clean energy projects to develop a set of best practices.³⁵⁹
- NYS Healthy Homes Value Based Payment (VBP) Pilot This pilot program seeks to develop a replicable model for implementing a healthy homes approach to residential building improvements under the Medicaid Value-Based Payment (VBP) framework. The program validates impacts, such as healthcare cost savings, and provides market development support, including specification of services and contracting. TPilot will facilitate the adoption of healthy homes treatments by Medicaid managed care organizations as part of their Medicaid VBP Arrangements that incorporate social determinants of health. Adopting this approach addresses avoidable medical costs associated with asthma and household injury, while also encouraging third party capital investment in residential energy efficiency through MCO adoption of healthy homes interventions within the value-based payment social determinants of health framework

³⁵⁷ Order Adopting Low-income Community Distributed Generation Initiatives. New York Public Service commission. Cases 15-E-0751 and 15-E-0082. July 12, 2018.

http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BA3AC5DF4-C427-4B47-AAAB-1BF50965EB76%7D

³⁵⁸ Low-income solar policy guide. GRID Alternatives, Vote Solar, and Center for Social Inclusion. 2016. Last accessed June 10, 2019. https://www.lowincomesolar.org/about-this-guide/

³⁵⁹ REVitalize. NYSERDA. Last accessed June 10, 2019. https://www.nyserda.ny.gov/All - Programs/Programs/REVitalize

after the completion of the Pilot. The Pilot is being planned and implemented in partnership with the New York State Department of Health (DOH).

 Peaking Power Plants - In February 2019, the New York Department of Environmental Conservation proposed a regulation that would lower thresholds for nitrogen oxide (NOx) emissions and phase in control requirements giving facilities options to meet the new standards by installing renewables or batteries. As part of its proposal, the state indicated, "Dozens of simple cycle and regenerative combustion turbines at power plants across the state many approaching 50 years old and operating infrequently—emit NOx at levels that are at least 30 times more than newer turbine emissions. However, when they do operate, these turbines collectively can account for over a third of New York's daily power plant NOx emissions while producing less electricity for consumers than cleaner sources. In addition, they are often located in proximity to Environmental Justice areas."^{360,361}

Internal Operations

- New York has several efforts in place to facilitate the coordination of design and delivery of climate-change-related programs. The New Efficiency: NY plan states: "the coordination of energy efficiency programs and other social service and housing programs at the State and local levels can reduce administrative overlap, increase the impact of limited public dollars, improve impacts for LMI residents and communities, and preserve affordable housing stock across the State. Leveraging program enrollment processes and eligibility determination systems can help reduce the administrative burden for customers and reduce administrative costs for program administrators." Executive Order 166 directs all cabinet agencies to develop plans detailing how the agencies will contribute to meeting the states greenhouse gas limits. It further directs NYSERDA and the New York Department of Environmental Conservation to develop an approach to emissions reduction measurement and accounting that the other agencies are directed to utilize. More comprehensive provisions in the 2019 Climate Leadership and Community Protection Act are expected to enhance these efforts.
- Development of the State Energy Plans involves participation and coordination with multiple executive branch agencies.

External Stakeholder Engagement

- The public-member Environmental Justice and Just Transition Working Group established under the 2017 Executive Order 166 will be furthered through the 2019 Climate Leadership and Community Protection Act.
- Regulations authorizing the state's participation in RGGI require that stakeholders be consulted in the development of the annual RGGI Operating Plan.

³⁶¹ Proposed Part 227-3, Ozone Season Oxides of Nitrogen (NOx) Emission Limits for Simple Cycle and Regenerative Combustion turbines. New York Department of Environmental Conservation. Available at: https://www.dec.ny.gov/regulations/116131.html

³⁶⁰ Governor Cuomo Announces Proposed Regulations to Improve Air Quality and Reduce Harmful Ozone Caused by Power Plant Emissions. NYSERDA. February 28, 2019. Available at:

https://www.nyserda.ny.gov/About/Newsroom/2019-Announcements/2019-02-28-Governor-Cuomo-Announces-Proposed-Regulations-to-Improve-Air-Quality-and-Reduce-Harmful-Ozone

- The Low Income Forum on Energy is a NYSERDA- and DPS-led stakeholder initiative that shares information and resources on energy programs designed to address the needs of low-income communities as well as offer recommendations to the state to strengthen current programs. Its mission is to:
 - Maintain a forum that attracts a diverse range of parties whose efforts will have an impact on the ability of low-income customers to meet their energy needs.
 - Seek, identify, and address the full range of low-income energy issues.
 - Broaden participation and encourage involvement of all stakeholders in the energy forum.
 - Encourage linkages through the forum to strengthen the understanding of and support for the energy needs of low-income New Yorkers.
 - Encourage an interactive exchange of information and collaboration among the programs and resources that helps the state's low-income households.
 - Provide a venue for policy makers to hear of emerging issues from those at the front end of program delivery, identification of best practices, and networking opportunities for those in the low-income energy field.³⁶²

The LIFE initiative hosts a statewide conference focused on low-income energy issues every two years and a series of regional meetings across the state in opposite years. In addition, LIFE hosts a monthly webinar series and distributes an electronic newsletter on low-income energy issues.

Monitoring and Measurement

- The newly enacted Climate Leadership and Community Protection Act includes specific provisions for the state to develop an implementation report to track progress of the law's provisions, including those related to disadvantaged communities.
- The state issues a biennial report on progress associated with the State Energy Plan. The report provides detailed, yet publicly accessible, quantitative as well as qualitative data on implementation and status of provisions of the most current State Energy Plan, including provisions associated with commitments made in the plan's low-income, communities, and workforce development chapters.³⁶³
- The State Public Service Commission maintains a website with detailed information on rate cases, PSC orders, and mandatory status reporting from utilities.³⁶⁴
- New York hosts a Clean Energy Dashboard that provides the latest information on program activity by electric and gas utilities and NYSERDA programs.³⁶⁵ The dashboard aggregates information on utility programs and is linked to Open NY, the state's single point of entry for all state data resources.³⁶⁶ The dashboard is updated quarterly.

³⁶² Low Income Forum on Energy. NYSERDA. Last accessed July 10, 2019. https://www.nyserda.ny.gov/All-Programs/Programs/Low-Income-Forum-on-Energy

³⁶³ Biennial Report to the 2015 State Energy Plan. NYSERDA. Last accessed July 10, 2019.

³⁶⁴ New York Department of Public Service. Last accessed July 10, 2019. http://www.dps.ny.gov/

³⁶⁵ Clean Energy Dashboard. New York State. Available at: https://rev.ny.gov/cleanenergydashboard.

³⁶⁶ Open NY: Providing Unprecedented Access to Data. New York State. Available at: https://data.ny.gov/.

Contact: Kara Allen, Senior Advisor New York State Energy Research and Development Authority Kara.Allen@nyserda.ny.gov

Appendix B-9: Rhode Island

Background on Relevant Rhode Island Climate Change Programs

In July 2014, Rhode Island enacted the Resilient Rhode Island Act that set statewide greenhouse gas emissions targets, established the Executive Climate Change Coordination Council (EC4), and directs state agencies to consider impacts of climate change in their mission programs and responsibilities. The Act also directs the EC4 to develop a plan to meet the law's greenhouse gas emissions targets:

- 10% below 1990 levels by 2020;
- 45% below 1990 levels by 2035; and
- 80% below 1990 levels by 2050.

The 2017 Executive Order 17-06 reaffirmed the state's commitment to the Paris Accord.³⁶⁷ The 2017 Executive Order 17-10 directs the state's Chief Resilience Officer to develop a comprehensive plan to "recommend key actions to make Rhode Island's residents, economy, infrastructure, health system, and natural resources more resilient to the impacts of climate change" and directs that the plan use a "social equity lens to help inform the vision, goals, and actions of the plan."³⁶⁸

In 2007, the Rhode Island General Assembly enacted Chapter 23-82 of the General Laws, ³⁶⁹ entitled Implementation of the Regional Greenhouse Gas Initiative Act. In doing so, the General Assembly declared that "scientific findings indicate that the increase in greenhouse gas emissions, including carbon dioxide, is accelerating the natural greenhouse effect resulting in changes in the Earth's climate" and that "climate changes pose serious health risks to humans, as well as danger to ecosystems worldwide." The Act enabled Rhode Island to coordinate with other states in the formation of the Regional Greenhouse Gas Initiative (RGGI) – the nation's first mandatory multistate program to reduce power sector carbon dioxide (CO_2) emissions. In the years since, state participation in RGGI has generated auction proceeds that have been strategically deployed to advance Rhode Island's energy policy goals, while simultaneously growing clean energy jobs and reducing greenhouse gas emissions.

Per statute, the state Office of Energy Resources is authorized to allocate state RGGI auction proceeds for the following purposes:

- Promotion of cost-effective energy efficiency and conservation;
- Promotion of cost-effective renewable non-carbon emitting energy technologies;
- Cost-effective direct rate relief for consumers;
- Direct rate relief for low-income consumers;
- Reasonable compensation to RGGI, Inc.; and
- Reasonable costs of Office of Energy Resources (OER) and the Department of Environmental Management (DEM) in administering the RGGI program.

³⁶⁷ R.I. Exec. Order No. 17-06 (June 12, 2017), http://www.governor.ri.gov/documents/orders/ExecOrder_17-06_06112017.pdf.

³⁶⁸ R.I. Exec. Order No. 17-10 (September 15, 2017), http://www.governor.ri.gov/documents/orders/ExecOrder-17-10-09152017.pdf.

³⁶⁹ Implementation of the Regional Greenhouse Gas Initiative Act, R.I. Stat. §§ 23.82.1-23.82.7 (2007).

RGGI auction proceeds are allocated by the state's Office of Energy Resources (OER) to drive investment in – and expansion of – clean energy resources, including cost-effective energy efficiency and renewables. In doing so, OER seeks to support investment and job growth in Rhode Island's burgeoning clean energy sector; reduce barriers to consumer adoption of clean energy solutions; place downward pressure on long-term energy costs; and shrink carbon footprints.

RGGI auction proceeds are driving the adoption of cleaner, more sustainable energy solutions across public and private sector institutions, and in Ocean State communities. These investments are being made in a manner consistent with the Regional Greenhouse Gas Initiative Act, Rhode Island's State Energy Plan, Energy 2035,³⁷⁰ and broader state energy and environmental policy goals.

Pursuant to RIGL §23-82-5, RGGI, Inc., is authorized to receive, hold, and sell CO_2 allowances for the long-term benefit of consumers. The statute also authorizes RGGI, Inc., to conduct the auctions or sales, collect the auction proceeds, and transfer such proceeds to OER. OER then distributes and allocates the proceeds of the auctions or sales in accordance with §23-82-6.

To accomplish these purposes, OER, in consultation with DEM and the Energy Efficiency and Resource Management Council (EERMC), periodically draft and implement allocation plans describing how auction proceeds are to be expended. Each proposed allocation plan is made available for public comment and public hearing.³⁷¹ A notice is posted on the websites of OER and the Rhode Island Secretary of State announcing a public comment period to accept comments on the proposed plan. OER provides at least 30-day notice of the public hearing. After the public hearing, OER allows an additional 10-day period for interested persons to submit data, views, or arguments in writing. OER maintains a record of all public comments and responds to each substantive issue raised. It is then that OER finalizes the allocation plan and posts a copy on its website. No auction proceeds have been applied to ratepayer relief.

Lead Agencies/Partners

The Rhode Island Department of Environmental Management manages the CO₂ budget-trading program.

The Office of Energy Resources is Rhode Island's lead state agency on energy policy and programs. OER works closely with private and public stakeholders to increase the reliability and security of the state's energy supply, reduce energy costs, mitigate price volatility, and improve environmental quality. OER is responsible for allocating and distributing RGGI auction proceeds. ³⁷²

³⁷⁰ State of Rhode Island Office of Energy Resources. 2019. State Energy Plan. Available at http://www.energy.ri.gov/policies-programs/ri-energy-laws/state-energy-plan.php.

³⁷¹ 42 35 R.I. Code R. § 35.1-35.18

³⁷² State of Rhode Island Office of Energy Resource. 2019. Programs & Incentives. Available at http://www.ri.gov/policies-programs/programs-incentives/rggi.php.

The Rhode Island Department of Human Services administers the state's Weatherization Assistance Program and Home Energy Assistance Programs and directs resources to income eligible households in partnership with National Grid and Community Action Agencies.³⁷³

The Rhode Island Public Utilities Commission regulates energy supply and rates. The Rhode Island PUC has focused on promoting adoption of programs to reach more low-and-moderate income customers by National Grid, which manages the energy distribution system for 99% of Rhode Island Properties.³⁷⁴ Programs nclude:

- Low-Income Home Energy Assistance Program (LIHEAP) helps eligible low-income families pay their heating bills and offers weatherization services through federal grants to the household.
- Weatherization Assistance Program (WAP) assists eligible residents that already quality for LIHEAP with house energy efficiency services.
- Heating System Repair/Replacement (HSR) is offered to low-income homeowners that are eligible for heating assistance and/or weatherization services.

The Rhode Island Commerce Corporation (Commerce Corporation)³⁷⁵ is a quasi-public agency that is the official full-service economic development organization for the state. Commerce Corporation administers the Renewable Energy Fund (REF). REF uses monies from a surcharge on electricity bills to provide grants and loans for renewable energy projects in both the residential and commercial sectors promoting the state's long-term economic health and prosperity.³⁷⁶

The mission of the Rhode Island Infrastructure Bank is to actively support and finance investments in the state's infrastructure. The Infrastructure Bank does so through a variety of means, including the issuance of bonds, originating loans, making grants, and engaging with and mobilizing sources of public and private capital. Through its activities, the bank fosters infrastructure improvements that create jobs, promote economic development, and enhance the environment. Established by law in 1989 as the Clean Water Finance Agency, the Rhode Island Infrastructure Bank administers a revolving fund to offer innovative financing for an array of infrastructure-based projects, including water and wastewater, road and bridge, energy efficiency and renewable energy, and brownfield remediation.³⁷⁷

The Executive Climate Change Coordinating Council (EC4) is comprised of cabinet members in executive branch agencies and is advised by a public EC4 Advisory Board and the EC4 Science and Technical Advisory Board. EC4's focus is on both climate change mitigation and adaptation. ³⁷⁸

³⁷³ State of Rhode Island Department of Human Services. 2019. Available at http://www.dhs.ri.gov/Programs/index.php.

³⁷⁴ National Grid 2018-2020 Energy Efficiency and System Reliability Procurement Plan. The Narragansett Electric Company and National Grid. 2017. http://www.ripuc.org/eventsactions/docket/4684-NGrid-3-YearPlan(8-30-17).pdf.

³⁷⁵ Rhode Island Commerce Corporation. 2019. Available at https://commerceri.com/.

³⁷⁶Rhode Island Commerce Corporation. 2019. Renewable Energy Fund. Available at

https://commerceri.com/financing/renewable-energy-fund/.

³⁷⁷ Rhode Island Infrastructure Bank. 2018. Mission. Available at https://www.riib.org/who-we-are.

³⁷⁸ State of Rhode Island Climate Change. 2019. EC4 Summary. Available at http://climatechange.ri.gov/state-actions/ec4/.

The Energy Efficiency Resource Management Council provides integrated, comprehensive stakeholder feedback about state energy decisions.³⁷⁹

Benefits Directed to Disadvantaged Communities and Consumers

In 2016, the EC4 issued the Rhode Island Greenhouse Gas Emissions Reduction Plan outlining strategies to meet the statewide emissions limits. The plan stated, "Policymakers should give particular attention to engaging with low-income and vulnerable communities to ensure that all citizens have opportunities to participate in and benefit from the new clean energy economy."³⁸⁰ In the upcoming year, OER (a member of the EC4) will be using resources from the Rhode Island Attorney General Settlement Funds to undertake a carbon pricing study with a request for proposals expected in spring 2019.

Urban Forestry - In April 2019, Rhode Island Governor Gina Raimondo announced a \$650,000 grant from the Doris Duke Charitable Foundation to form a partnership with the national nonprofit American Forests to implement forestry projects that meet a criterion of beautifying urban areas, mitigating climate change, and improving public health. Grant funds will be use to "develop stronger relationships with nursery and landscape associations, develop an online "decision support tool" to assist with optimizing urban tree planting for environmental and public health benefits, and create a two-year grant funded position (an American Forests employee) to be housed at DEM to manage the grant."³⁸¹

Community Renewables - Administered by the Commerce Corporation, the Community Renewables Pilot Program is a structured, first-come-first-served, rolling-basis application process for low-tomoderate-income (A-60 National Grid Rate Code) and basic residential (A-16 National Grid Rate Code) customers.³⁸² A-60 customers will receive \$500, and A-16 customers will receive a \$300 flat rebate on their community solar bill.³⁸³

State Low- and Moderate-Income Energy Strategies Project - In partnership with the Clean Energy States Alliance and with funding support from the federal Department of Energy through the end of 2019, Rhode Island, along with other states, is working to develop and implement low- and moderate-income solar strategies: "RI has worked with key stakeholders to identify approaches that are most promising, based on the state's particular demographics, the maturity of the solar market, and others."³⁸⁴

³⁷⁹ State of Rhode Island Energy Efficiency & Resource Management Council. 2017. About. Available at https://rieermc.ri.gov/about/.

³⁸⁰ Rhode Island Greenhouse Gas Emissions Reduction Plan. Executive Climate Change Coordinating Council. 2016. http://climatechange.ri.gov/documents/ec4-ghg-emissions-reduction-plan-final-draft-2016-12-29-clean.pdf.

³⁸¹ "Governor Raimondo Marks Arbor Day with Grant Awards." April 26, 2019. Rl.gov. https://www.ri.gov/press/view/35740.

³⁸² National Grid USA. 2019. Service Rates. Available at https://www.nationalgridus.com/RI-Home/Rates/Service-Rates.

³⁸³ Community Renewables Program. Rhode Island Commerce Corporation. 2018. https://commerceri.com/wp-content/uploads/2018/05/Community-Renewables-Requests-5.11.18-1.pdf.

³⁸⁴ Clean Energy States Alliance. 2019. State Energies Strategies Project. Available at

http://www.cesa.org/projects/low-income-clean-energy/state-energy-strategies-project/

Electric and Natural Gas Energy Efficiency - OER supports the development and implementation of the state's electric and natural gas energy efficiency programs. National Grid offers comprehensive programs through Rhode Island Community Action Program agencies to customers who are currently on the A-60 or 1301 low-income rate; qualify for LIHEAP funds from the state; or whose household income falls below 60% of area median income. These programs help reduce electricity and heating costs for residential customers without any financial obligation from the customer and have been supported with RGGI dollars. The programs are monitored and evaluated to ensure they are cost efficient and cost effective to maximize benefits.

Health Equity Zones - The Rhode Island Department of Health (DOH) Health Equity Zone Initiative directs more than \$10.4 million in funding from the federal Centers for Disease Control to nine community-led Health Equity Zones designed to promote the building of healthier, more resilient communities. As part of the program, the state identified nine communities with high rates of health disparities and is collaborating with local officials and community-based partners to develop community-specific action plans. Three of the nine zones also have focused efforts on assessing climate change impacts to public health.³⁸⁵ The DOH points to the social vulnerability index administered by the Centers for Disease Control and Prevention.³⁸⁶

Environmental Justice and VW funds - The Rhode Island Department of Environmental Management has released a final Beneficiary Mitigation Plan (BMP) for implementing the state's initial allocation of more than \$14.3 million from the Volkswagen Diesel Settlement (VW Settlement) Environmental Mitigation Trust (EMT). The purpose of the EMT is to execute environmental mitigation projects that reduce emissions of nitrogen oxides (NOx). Accordingly, the state will fund electric buses along transit routes serving areas adversely affected by the state's densest traffic, highest smog levels, and highest ratio of Environmental Justice communities.³⁸⁷

Autonomous Shuttle Pilot - The Little Roady Pilot Project brings the first self-driving shuttles to Rhode Island. The fleet of electric vehicles offers rides along a fixed route in Providence's Woonasquatucket River corridor. This initiative engages the community, stakeholders, and policy makers in research and planning for the future of transportation. The R.I. Department of Transportation (RIDOT) launched the Little Roady Autonomous Shuttle Pilot Project to help the department better understand the opportunities and challenges that come with integrating this new technology into RIDOT's transportation planning. This innovative research initiative positions Rhode Island at the forefront of mobility testing, while filling a gap in the state's transportation network. ³⁸⁸

³⁸⁵ State of Rhode Island Department of Health. 2019. Health Equity Zones Initiatives. Available at http://www.health.ri.gov/programs/detail.php?pgm_id=1108.

³⁸⁶ State of Rhode Island Department of Health. 2019. Social Vulnerability Data. Available at http://health.ri.gov/data/healthequity/socialvulnerability/.

³⁸⁷ Rhode Island Department of Environmental Management. 2019. Volkswagen Settlement. Available at http://www.dem.ri.gov/programs/air/vwsettle.php.

³⁸⁸ Rhode Island Department of Transportation. 2019. Autonomous Shuttle Pilot Project. Available at http://www.dot.ri.gov/projects/trip/LittleRoady.php.

RGGI Proceeds - The state develops a plan for allocation of RGGI auction proceeds that seeks to leverage RGGI funds with other public and/or ratepayer monies. Previously, RGGI funds were used to support a Community Buildings Non-Profit Program.³⁸⁹ The program provided up-front capital to promote clean energy at community-based nonprofit institutions such as Boys and Girls Clubs. The most recent RGGI allocation plan, 2019-A, has allocated funds for the following:³⁹⁰

- \$250,000 to DEM to support the Rhode Island Agricultural Energy Grant Program, a collaborative project of DEM, OER, and the Rhode Island Resource Conservation & Development Area Council to help local farms "green" options through energy efficiency and renewable energy projects;
- \$1 million to the Rhode Island Commerce Corporation's Renewable Energy Fund (REF) to support solar development on brownfields;
- \$1 million to the Rhode Island Commerce Corporation's REF to support grants related to carport solar PV projects under REF's Commercial Scale Program;
- \$110,000 to support the DEM's Energy-Saving Trees Program, which helps homeowners conserve energy and reduce their utility costs in coordination with the Arbor Day Foundation and the Rhode Island Tree Council; and
- \$150,000 to support a pilot program with Rhode Island Housing and National Grid designed to increase availability of energy efficiency and renewable, thermal, and solar PV technologies to low- and moderate-income households. The project will create a replicable zero-net-energy building design and install solar PV and air source heat pumps in residential low-to-moderate-income properties that have installed a number of energy efficiency measures.

Internal Operations

The EC4 serves as an overarching, cabinet-level entity to facilitate collaborative initiatives between executive branch agencies.

External Stakeholder Engagement

DEM holds informational workshops and listening sessions on emerging issues, such as:

- A 2018 Transportation Listening Session was held with a variety of stakeholders to identify emerging emissions reduction opportunities and challenges in the transportation sector. ³⁹¹
- A 2017 listening session regarding on-road heavy-duty diesel workshop was held with interested stakeholders regarding replacement of vehicles and/or equipment.

³⁸⁹ Rhode Island Regional Greenhouse Gas Initiative: 2013-2015 Plans for the Allocation and Distribution of Regional Greenhouse Gas Initiative Auction Proceeds Report. Rhode Island Office of Energy Resources. 2017. http://www.energy.ri.gov/documents/rggi/2013-

^{2015%20}Plans%20for%20the%20Allocation%20and%20Distribution%20of%20Regional%20Greenhouse%20Gas %20Initiative%20Auction%20Proceeds%20Report.pdf

³⁹⁰ A Plan for the Allocation and Distribution of Regional Greenhouse Gas Initiative Auction Proceeds. Rhode Island Office of Energy Resources. 2019. http://www.energy.ri.gov/documents/rggi/2019%20Plan%20Items/2019-A%20Final%20RGGI%20Allocation%20Plan%20May%202019.pdf.

³⁹¹ State of Rhode Island Climate Change. 2019. Clean Transportation Listening Sessions. Available at http://climatechange.ri.gov/state-actions/listening-sessions.php.

- In 2018, DEM held an informational marine workshop on the State Diesel Emissions Reduction Act Program (State DERA) at the Port of Galilee for stakeholders interested in funding to replace engines and/or exhaust controls on older equipment.³⁹²
- DEM works closely with school districts to apply to State DERA funding as well as the federal School Bus Rebate program.
- In May 2018, DEM held an information session on the Beneficiary Mitigation Plan for implementing the state's initial allocation from the Volkswagen Diesel Settlement Environmental Mitigation Trust that informed the state's decisions.

Contact:

Dena Gonsalves, Senior Air Quality Specialist Rhode Island Department of Environmental Management dena.gonsalves@dem.ri.gov

³⁹² Rhode Island Department of Environmental Management. 2019. Diesel Emissions Reduction Act. Available at http://www.dem.ri.gov/programs/air/diesel-reduction.php.

Appendix B-10: Vermont

Background on Relevant Vermont Climate Change Programs

Vermont's most recent state climate legislation, An Act Relating to the Regulation of Hydrofluorocarbons, was enacted in June 2019. The new law requires the phase out of the use of hydrofluorocarbons in major applications where there are safer alternatives, consistent with statutory and regulatory commitments already in place in California, Washington, New York, Maryland, and Connecticut.

By law, the state Department of Public Service is required to prepare a comprehensive Energy Plan³⁹³ and a statewide Electric Energy Plan and to update the plans every six years. In 2006, Vermont enacted statutory goals calling for a 50% reduction of the state's greenhouse gas emissions below 1990 levels by 2028 and a 75% reduction by 2050. The 2011 Comprehensive Energy Plan set a goal of having 90% of the state's total energy use come from renewable sources by 2050. In 2015, Vermont enacted a law authorizing establishment of the statewide Renewable Energy Standard requiring utilities to purchase increasing amounts of renewable electricity up to 75% by 2032.³⁹⁴ In 2016, the Department of Public Service issued the Comprehensive Energy Plan, which also embodies the statewide Electric Energy Plan.³⁹⁵ The 2016 updated Comprehensive Energy Plan set additional goals of:

- 0 Reducing total energy consumption per capita by 15% by 2025, and by more than one-third by 2050;
- Meeting 25% of the remaining energy need from renewable sources by 2025, 40% by 2035, and 90% by 2050; and
- O Achieving 10% renewable transportation by 2025, 30% renewable buildings by 2025, and 67% renewable electric power by 2025.

The 2016 Comprehensive Energy Plan updated the 2006 statewide greenhouse gas emissions goals to 40% reduction below 1990 emissions levels by 2030 and 80-95% reduction of emissions below 1990 levels by 2050. Additionally, the 2016 Comprehensive Energy Plan adopted a set of goals to guide energy policy in the state. Among the goals is the intent to promote a vibrant and equitable economy by ensuring "an equitable distribution of benefits and burdens by assisting those least able to pay the increasing costs of energy and the up-front costs for investments in efficiency and fuel switching." A second goal is to promote healthy Vermonters by assessing "health impacts of our energy system in order to avoid or mitigate potential negative impacts, especially for the most vulnerable population groups

³⁹³ 30 V.S.A. §202. Available at: https://legislature.vermont.gov/statutes/section/30/005/00202 ³⁹⁴ Vermont Comprehensive Energy Plan. Department of Public Service. Available at:

https://publicservice.vermont.gov/publications-resources/publications/energy_plan/2016_plan ³⁹⁵ The Vermont Electric Plan. Available at: https://publicservice.vermont.gov/publications -

resources/publications/electric_plan

such as the elderly, low-income households, and those with chronic or pre-existing medical conditions."³⁹⁶

In 2018, the law authorizing the development of the two plans was updated to incorporate state agency energy plans and transportation planning and to require an annual report on progress in meeting the goals of the Comprehensive Energy Plan.³⁹⁷

Vermont Participation in RGGI

Vermont was an original signatory to the 2005 RGGI MOU and it has participated in the program since the initial 2008 auction.³⁹⁸ Regulations governing Vermont's participation in the RGGI CO₂ budget-trading program are pursuant to the state's Air Pollution Control Regulations.³⁹⁹

Authority regarding the distribution of RGGI auction proceeds is pursuant to the statutory general powers of the Public Utility Commission, which directs that 100% of RGGI auction proceeds are directed to the state's Electric Efficiency Fund for use by utilities for programs that:

- Minimize windfall financial gains to power generators;
- Establish a program administrative structure;
- Optimize benefit to Vermont energy consumers and the state economy;
- Minimize incentives for increases in carbon emissions by utilities;
- Lower power and heating costs, improve energy efficiency, and lower the state's carbon profile while minimizing adverse impacts on system reliability and costs;
- Ensure that benefits are particularly focused on energy efficiency; and
- Support the state's efforts to stimulate investment in innovative carbon abatement technologies.

The state's utilities combine the RGGI auction proceeds with other funding sources to offer a variety of programs as authorized by the Commission. The Commission's initial order directing allocation of the auction proceeds was issued in 2008. A 2009 Commission order required that 1% of CO_2 allowances from the RGGI auction be held for retirement to support participation of voluntary renewable programs. The Commission's most recent RGGI auction proceeds order was adopted in 2014. The 2014 order authorizes that the state Agency for Natural Resources and the Department of Public Service may make reasonable requests for administrative costs and funds to "stimulate or support investment in the development of innovative carbon emissions abatement technologies that have significant carbon reduction potential."

³⁹⁶ 2016 Vermont Comprehensive Energy Plan. Vermont Department of Public Service. Available at: https://publicservice.vermont.gov/sites/dps/files/documents/Pubs_Plans_Reports/State_Plans/Comp_Energy_Pla n/2015/2016CEP_ES_Final.pdf

 ³⁹⁷ 30 V.S.A. § 202. Available at: https://legislature.vermont.gov/statutes/section/30/005/00202
³⁹⁸ 30 V.S.A. § 255

³⁹⁹ CO₂ Budget Trading Regulations. State of Vermont, Agency of Natural Resources. Aguste 31, 2018. Available at: https://dec.vermont.gov/sites/dec/files/aqc/laws-

regs/documents/Vermont_CO2_Budget_Trading_Program_Rule_adopted_08292018.pdf#page=34 400 RGGI Auction Procedures and Voluntary Renewable Energy Set-aside Program. Vermont Public Service Board.

April 2, 2014. Available at: https://puc.vermont.gov/sites/psbnew/files/doc_library/rggi-order-2014.pdf

Lead Agencies

The Department of Public Service (DPS) is an executive branch agency that represents the public interest in utility cases before the Public Service Board, provides long-range planning for the state's energy and telecommunications needs, implements programs that facilitate energy efficiency, administers federal energy programs, resolves consumer complaints, and administers state power purchase contracts.⁴⁰¹

The Vermont Public Utility Commission (formerly known as the Public Service Board) regulates the siting of electric and natural gas infrastructure and supervises the rates, quality of service, and overall financial management of Vermont's public utilities: electric, gas, energy efficiency, telecommunications, cable television terms of service, water, and large wastewater companies. The Commission is responsible for orders directing allocation of RGGI auction proceeds.⁴⁰²

The Department for Children and Families administers the state's energy assistance programs and weatherization programs for low-income households.

The Department of Environmental Conservation is one of three departments in the Agency of Natural Resources. The department's Air Quality and Climate Division is responsible for implementing the RGGI CO_2 budget-trading program.⁴⁰³

Benefits Directed to Disadvantaged Communities and Consumers

In 2018, the Commission issued a report to the governor that included the following recommendations, among others:

- Double low-income weatherization through the State Weatherization Assistance Program;
- Accelerate the adoption of advanced wood heat to replace high-greenhouse-gas emitting systems through measures that include providing low-income rebates on clean advanced wood heat through a heating assistance fee on new high-greenhouse-gas heating systems;
- Adopt and implement a roadmap for all new buildings to be net zero by 2030, including efforts to ensure that cost effective technologies are introduced into new affordable housing stock;
- Increase low-to-moderate-income homes weatherized through the Energy Efficiency Utility programs;
- Expand urban forestry initiatives.404

The state low-income energy assistance programs, offered by the state's two energy providers, and administered by the Department for Children and Families include:

 ⁴⁰¹ About Us. Vermont Department of Public Service. Available at: https://publicservice.vermont.gov/about_us
⁴⁰² Regional Greenhouse Gas Initiative. Vermont Public Utility Commission. Available at:

https://puc.vermont.gov/electric/regional-greenhouse-gas-initiative

⁴⁰³ Regional Greenhouse Gas Initiative. Vermont Department of Environmental Conservation. Available at: https://dec.vermont.gov/air-quality/climate-change/rggi

⁴⁰⁴ Report to the Governor. Vermont Climate Action Commission. July 31, 2018. Available at:

https://anr.vermont.gov/sites/anr/files/Final%20VCAC%20Report.pdf

• Green Mountain Power's energy assistance program, which includes a 25% discount on monthly electricity bills and arrears forgiveness.

The state's WAP, administered by the Division for Children and Families offers services for income eligible homeowners and renters.

Vermont invests the majority of its CO₂ allowance proceeds in programs managed by Efficiency Vermont, a statewide energy efficiency utility established statutorily in 1999 by the Vermont Legislature and by an order of the Vermont Public Utility Commission. In 2016, 95% of Vermont's RGGI auction proceeds were committed to energy efficiency programs.⁴⁰⁵ In addition to RGGI auction proceeds, Efficiency Vermont is also funded through the state participation in the regional grid's forward capacity market. Prior to Efficiency Vermont's establishment, energy efficiency services were provided by more than 20 electric utilities. The structure of Efficiency Vermont allows energy efficiency services to be bid into the regional electric grid. In 2008, Efficiency Vermont Fuel dealers Association, and Vermont contractors.⁴⁰⁶ In 2016, RGGI auction proceeds supported the Home Performance with ENERGY STAR® service for residential customers and the Building Performance service providing incentives for efficiency services to small business. Other programs offered by Efficiency Vermont include:

- Multifamily program initiative In 2018, Efficiency Vermont launched an account-managed approach to serving private multifamily property owners (approximately 83% of Vermont's multifamily units, 70% of which are occupied by low-income renters) as part of efforts to retrofit or make improvements to buildings.
- Low-income household targeted programs Partners include low-income housing and service providers; affordable housing funders, including the Vermont Housing Finance Agency; and multifamily housing developers. Projects include expansion of low-income electrical energy efficiency programs; identification of effective integration of energy efficiency services during the predevelopment and development phases of affordable multifamily housing projects; support to private multifamily property owners to integrate energy efficiency into long-term capital improvement planning; creation of a zero-energy modular home pilot effort; and integration of an income eligible adder incentive on qualifying new construction projects.⁴⁰⁷
- Healthy homes Efficiency Vermont also collaborates with the Vermont Department of Health on launching a healthy homes pilot program for low-income homes.

Internal Operations

The Governor's Climate Cabinet was established in 2011 and renewed in 2012 by Executive Order 15-12. Lasting collaborative partnerships among agencies were developed through cabinet participation. The cabinet was reconstituted as the Vermont Climate Action Commission in 2017 by Executive Order 12-

⁴⁰⁵ Investment of RGGI Proceeds in 2016. RGGI, Inc. Available at:

https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2016.pdf

⁴⁰⁶ Our History: Efficiency Vermont. Available at: https://www.efficiencyvermont.com/about/history

⁴⁰⁷ 2018 Savings Claim Summary. Efficiency Vermont. April 1, 2019. Available at:

https://www.efficiencyvermont.com/Media/Default/docs/plans-reports-highlights/2018/2018-savings-claim-summary.pdf

17.⁴⁰⁸ The earlier climate cabinet was comprised of executive branch cabinet members. The Commission included both executive branch cabinet and public members. The final report of the Commission was submitted to the governor on July 31, 2018.

Contact: Heidi Hales, Director, Air Quality and Climate Division Contact Vermont Department of Environmental Conservation heidi.hales@vermont.gov

⁴⁰⁸ Executive Order 12-17: Vermont Climate Action Commission. July 20, 2017. Available at: https://governor.vermont.gov/sites/scott/files/documents/EO%2012-17%20-%20Climate%20Action%20Commission.pdf

Appendix B-11: Virginia

Background on Relevant Virginia Climate Change Programs

Virginia Executive Order 57, Development of Carbon Reduction Strategies for Electric Power Generation Facilities, established a workgroup to offer the governor recommendations on strategies to reduce CO₂ emissions from existing power plants. ⁴⁰⁹ Among the considerations included in the workgroup's charge, was a directive to consider "the impact of reducing carbon pollution on low income and vulnerable communities."⁴¹⁰

In 2018, Virginia adopted the Grid Transformation and Security Act, which included several major provisions:

- 5,000 megawatts (MW) of utility-owned and utility-operated wind and solar resources;
- 500 MW of rooftop solar resources that are less than 1 MW in size;
- \$1.1 billion investment in energy efficiency programs by investor-owned utilities;
- Cost recovery structures for projects that modernize the grid and support the integration of distributed energy resources; and
- Elimination of a 2015 rate freeze that prohibited the State Corporation Commission to order customer refunds and set utility rates.⁴¹¹

In 2017, Virginia issued Executive Order 73, Establishment of an Advisory Council on Environmental Justice. The order established the Virginia Advisory Council on Environmental Justice, which is charged with providing independent advice on recommendations to the Executive Branch on environmental justice issues.⁴¹² The council is staffed by the office of the Secretary of Natural Resources.

Virginia Participation in RGGI

The 2016 Virginia Executive Order 57, *Development of Carbon Reduction Strategies for Electric Power Generation Facilities*, directs the Secretary of Natural Resources to convene a Work Group to study and recommend methods to reduce carbon emissions from electric power generation facilities.⁴¹³ Following up on the recommendations of the Workgroup, a subsequent Executive Directive was issued in 2017 directing the Department of Environmental Quality, in coordination with the Secretary of Natural

⁴¹² Executive Order 73. Establishment of an Advisory Council on Environmental Justice. October 31, 2017. Available at: https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-naturalresources/pdf/eo-73-establishment-of-an-advisory-council-on-environmental-justice.pdf

⁴⁰⁹ Executive Order 57: Development of Carbon Reduction Strategies for Electric Power Generation Facilities. 2016. Available at: https://www.naturalresources.virginia.gov/media/governorvirginiagov/governor-ofvirginia/pdf/eo/eo-57-development-of-carbon-reduction-strategies-for-electric-power-generation-facilities.pdf ⁴¹⁰ Report and Final Recommendations to the Governor. Commonwealth of Virginia Governor Terence R. McAuliffe's Executive Order 57 Work Group. May 12, 2017.

https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/eo57-report-final-5-12-17.pdf

⁴¹¹ Code of Virginia § 56-585.1 A6 (2018). https://lis.virginia.gov/cgi-bin/legp604.exe?181+sum+SB966

⁴¹³ Executive Order 57, Development of Carbon Reduction Strategies for Electric Power Generation Facilities. 2016. Available at: https://www.naturalresources.virginia.gov/media/governorvirginiagov/governor-ofvirginia/pdf/eo/eo-57-development-of-carbon-reduction-strategies-for-electric-power-generation-facilities.pdf.

Resources, to develop regulations for consideration by the state Air Pollution Control Board to control CO_2 from electric power facilities through multistate trading.⁴¹⁴ Relying on the Virginia Air Pollution Control Act (Virginia Code § 10.1-1300,et.seq. and Virginia Code § 2.2-4000, et.seq.) the Air Pollution Control Board approved the regulations in spring 2019.⁴¹⁵ The regulation authorizes the state's power plants to trade allowances through RGGI but, lacking statutory authority to auction allowances, any revenue generated under the proposed rule would have gone directly to the regulated entities. However, the regulation would have established a 5% set-aside of traded allowances dedicated to energy efficiency for the purpose of enhanced CO_2 reductions and administered by the Department of Mines, Minerals and Energy. A provision blocking participating in RGGI was approved by the state legislature as part of the current state budget and, as a result, the state's proposed rule has not yet been implemented. The governor directed the Department of Environmental Quality to explore ways to implement the regulation and achieve carbon-reduction goals.⁴¹⁶

Relevant Definitions

The state Advisory Council on Environmental Justice identifies the following definitions:

"Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, faith, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment (nondiscriminatory actions) is the fair and equitable treatment of all whereby no group of people bear a disproportionate share of negative environmental consequences resulting from environmental decisions. Meaningful involvement is the guarantee that: (a) Impacted and vulnerable community residents have a realistic opportunity to participate in the full cycle of the decision-making process about a proposed activity that will affect their environment and/or health; and (b) Decision-makers will seek out and consider participation, allowing it to shape and influence the decision."⁴¹⁷

Several partner organizations in Virginia have established a web-based data visualization platform intended to support efforts in Virginia to enhance resilience to changing climate conditions. Partners include: The College of William and Mary, Wetlands Watch, and the Center for Coastal Resources Management at the Virginia Institute for Marine Science. The site, ADAPTVA,⁴¹⁸ has been designated as the state repository for adaptation-related information. The site's materials include the following definition of *social vulnerability*: "Social vulnerability refers to the characteristics of an individual or group

⁴¹⁸ Adapt Virginia: Evidence-based planning for Climate Change. Available at: http://adaptva.com/info/planning_sv.html

 ⁴¹⁴ Executive Directive 11. Reducing Carbon Dioxide Emissions from Electric Power Facilities and Growing
Virginia's Clean Energy Economy. Available at: http://jlarc.virginia.gov/pdfs/fiscal_analysis/FIR/2017_ED11.pdf
⁴¹⁵ Carbon Trading. Virginia Department of Environmental Quality. Available at:

https://www.deq.virginia.gov/Programs/Air/GreenhouseGases/CarbonTrading.aspx

⁴¹⁶ Governor Northam Announces Final Action and Signature of Budget, Virginia Governor Ralph S. Northam. May 2, 2019. Available at: https://www.governor.virginia.gov/newsroom/all-releases/2019/may/headline-840390-en.html.

⁴¹⁷ Structure of the Virginia Advisory Council on Environmental Justice. Secretary of Natural Resources. Available at: https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/Virginia-ACEJ-Structure-FINAL.pdf

that impacts their ability to anticipate, cope with, resist and recover from a physical hazard. The level of social vulnerability is dependent on physical, social, economic, and environmental factors. As social vulnerability in a population increases, their resiliency to natural hazards decreases. Knowing where vulnerability of individuals lies in a population can help governments and policymakers better aid their communities in the event of a natural disaster like sea level rise." Additionally, the site uses the social vulnerability index, SoVI, developed by the Hazards and Vulnerability Research Institute at the University of South Carolina.⁴¹⁹

The Virginia Weatherization Assistance Program, administered by the Department of Housing and Community Development, and energy assistance program, administered by the Department of Social Services, define *low-income* to be households below 200% of the federal poverty level (FPL) or 60% of state median income (SMI), whichever is greater.⁴²⁰

Lead Agencies

Virginia Department of Environmental Quality (DEQ) - is the lead agency for implementing the provisions of the state's Air Pollution Control Law and the state's mandates under the federal Clean Air Act. The DEQ is the lead agency for developing the state's regulation to participate in RGGI.

Virginia State Corporation Council - serves as the state's public utility commission overseeing regulated water and wastewater, electricity, natural gas, and telecommunications.⁴²¹ It also operates an energy education program, Virginia Energy Sense.⁴²²

Department of Mines, Minerals and Energy (DMME) - The mission of the DMME is to "enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner in order to support a more productive economy in Virginia."⁴²³ In 2018, the DMME issued the 2019 Virginia Energy Plan with four priorities to advance clean energy in Virginia:

- "Diversify Virginia's economy by strategically growing the energy sector.
- Innovate to reduce greenhouse gas emissions and lower energy consumption throughout the Commonwealth.
- Strengthen Virginia's business climate by investing in reliable and resilient energy infrastructure.
- Prepare Virginia's workforce to drive the energy economy into the future."424

⁴¹⁹ Social Vulnerability Index for the United States, Hazards & Vulnerability Research Institute; University of South Carolina. Available at: http://artsandsciences.sc.edu/geog/hvri/sovi%C2%AE-o

⁴²⁰ Virginia Weatherization Assistance Program. Income Eligibility Limits, 2018. Available at:

https://www.dhcd.virginia.gov/sites/default/files/Docx/weatherization/income-limits.pdf

⁴²¹ Commonwealth of Virginia State Corporation Commission. Available at: http://www.scc.virginia.gov/#

⁴²² Value Your Power. Virginia EnergySense. Last accessed July 1, 2019.

https://www.virginiaenergysense.org/about-us/

⁴²³ History of the Department of Mines, Minerals and Energy. Available at:

https://www.dmme.virginia.gov/dmme/history.shtml

⁴²⁴ The Commonwealth of Virginia's 2018 Energy Master Plan. Office of the Secretary of Commerce and Trade, Department of Mines, Minerals and Energy. Available at:

Benefits Directed to Disadvantaged Communities and Consumers

In August 2019, the Virginia Secretary of Natural Resources issued final report to the Governor with recommended actions for enhancing environmental and public health protections as required by the 2018 Executive Order 6. The report provides a summary of actions already taken by state agencies pursuant to Executive Order 6 and outlines recommendations for additional actions. Among the recommendations are the following:

- Improve air quality monitoring with a focus on Environmental Justice communities;
- Assess impacts of climate change on DEQ programs and develop a statewide climate action plan;
- Conduct a robust analysis of existing and potential pollution "hot spots" and their location relative to environmental justice communities;
- Undertake enhancement of public engagement efforts; and
- Pursue legislation allowing DEQ to charge fees for CO₂ pollution.⁴²⁵

In 2017, the workgroup established by Executive 57 issued its final recommendation report to the governor, including the following recommendations:

- "Virginia should undertake a regulatory process to establish a 'trading-ready' carbon emissions reduction program for fossil-fuel-fired electric generating facilities that will enable participation in a broader, established multi-state carbon market
- Update the state's building codes to reflect current technology and standards
- Update Virginia's current renewable energy procurement target and develop a comprehensive plan to increase corporate access to renewable energy as an economic development tool.
- Examine whether an energy efficiency registry could be a starting point for an energy efficiency accounting and trading mechanism conceptually similar to the currently used Renewable Energy Certificate
- o Establish a statewide Environmental Justice Advisory Council."426

During the RGGI rulemaking process, the DEQ hosted an extensive stakeholder process and, additionally, established a 2016 advisory committee to the rulemaking team, which is a frequent practice by DEQ.

https://www.governor.virginia.gov/media/governorvirginiagov/secretary-of-commerce-and-trade/2018-Virginia-Energy-Plan.pdf

⁴²⁵ Report to Governor Ralph S. Northam on Executive Order Number Six, Secretary of Natural Resources Matthew J. Strickler. August 19, 2019. Available at:

https://www.governor.virginia.gov/media/governorvirginiagov/media/EO-6-Final-Report-from-SNR.pdf ⁴²⁶ Report and Final Recommendations to the Governor. Commonwealth of Virginia Governor Terence R. McAuliffe's Executive Order 57 Work Group. May 12, 2017.

https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/eo57-report-final-5-12-17.pdf

Discussions among advisory committee members, as well as stakeholders, point to concerns about the impact of potential increased power costs on disadvantaged communities and consumers.⁴²⁷

The state Advisory Council on Environmental Justice stated that the council's first priority topic is "to identify information and outreach needs associated with Executive Directive 11"(Reducing Carbon Dioxide Emissions from Electric Power Facilities and Growing Virginia's Clean Energy Economy) to ensure that Environmental Justice concerns and issues are addressed.⁴²⁸ Additionally, the council has had a focus on identifying concerns associated with potential natural gas infrastructure impacts on Environmental Justice communities, including issuance of an August 2018 set of recommendations to the governor.⁴²⁹ The Council identified other priorities for state action, including a focus on coastal communities affected by flooding and sea level rise and communities that have had a historic dependence on fossil fuels.⁴³⁰

As part of the state's final RGGI rule, Article 10 includes language stating that the DEQ will "evaluate impacts of the program specific to Virginia, including economic, energy, and environmental impacts and impacts on vulnerable and environmental justice and underserved communities. The department will, in evaluating the impacts on environmental justice communities, including low income, minority, and tribal communities, develop and implement a plan to ensure increased participation of environmental justice communities in the review."⁴³¹

The Virginia Saves Green Community Program⁴³² is a loan program created to lower financing costs for energy efficiency, renewable energy generation, and alternative fuel projects. Its low-cost financing tool is available to local government, institutional, commercial, and industrial entities in the state. The program is funded through Virginia's allocation of Qualified Energy Conservation Bonds that were allocated to Virginia in 2010 by the U.S. Department of Energy and re-authorized for use in 2014 under Executive Order 36. Implementation of the program has focused on directing funds to be managed by the state to increase availability to smaller local governments. The program encourages use of small, women-owned, and minority-owned contractors in implementing the program.

resources/pdf/VAEJ.Draft-Annual-Report.12.24.18.pdf

⁴²⁷ Final Activity Report - Stakeholder Group Concerning the Clean Power Plan for Greenhouse Gases. Interagency Memo. April 18, 2016. Available at:

https://www.deq.virginia.gov/Portals/o/DEQ/Air/GHG/final%20report.pdf

⁴²⁸ Structure of the Virginia Advisory Council on Environmental Justice. Secretary of Natural Resources. Available at: https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary -of-natural-

resources/pdf/Virginia-ACEJ-Structure-FINAL.pdf

⁴²⁹ Environmental Justice Review of Virginia's Gas Infrastructure. Memo from the Virginia Environmental Justice Advisory Council. August 16, 2018. Available at:

https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/ACEJ-Letter~-approved-8_28_18.pdf

⁴³⁰ Virginia Advisory Council on Environmental Justice members. December 24, 2018. Available at:

https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-

⁴³¹ CO₂ Budget Trading Program Final Rule. 9VAC5-140-6010-6449. Available at:

http://www.townhall.virginia.gov/L/ViewXML.cfm?textid=13287

⁴³² Virginia Saves. Division of Energy. Department of Mines, Minerals and Energy. Available at: https://www.dmme.virginia.gov/de/VirginiaSaves.shtml

In 2018, the DMME issued the state Energy Plan.⁴³³ The plan prioritizes development of policies and programs associated with solar energy and onshore wind, offshore wind, energy efficiency, energy storage ,and electric vehicles and transportation. The 2018 plan specifically notes that the DMME received feedback from stakeholders as part of public comments on development of the plan that a priority of the state's policies and programs should be to "ensure that there are not disproportionate impacts to low-income and minority communities as energy sector investments are made." Language included in the plan outlining the state's commitment to supporting disadvantaged communities and consumers includes the following:

- "Virginia is dedicated to ensuring that there are not disproportionate impacts on economicallydisadvantaged or minority communities during the siting of energy resources. Ensuring that certain populations are not disproportionately impacted during energy development is critical to environmental justice efforts.
- The siting of projects is one aspect of environmental justice, but there are broader environmental justice initiatives percolating and developing within the Commonwealth.
- In addition, Virginia has deployed mechanisms to assist low-income communities by increasing access to energy efficiency and renewable energy resources.
- Finally, DEQ's existing obligations to ensure that all regulated entities comply with health-based standards will continue in all permitting activities to reduce public health burdens on all populations."

Specific examples of recommendations in the plan to address the input received from stakeholders include:

- Advancing opportunities to ensure the engagement of disadvantaged and low-income communities in the community solar program, such as: evaluating whether the state's current limits on the size of the community solar program should be increased in order to decrease costs through economies of scale; ensuring transparency in pricing and purchasing is sufficient to encourage greater participation; and exploring the benefits of using third-party developers to build and operate projects to drive down costs.
- The 2018 Grid Transformation and Security Act stipulates that at least 5% of ratepayer funded energy efficiency programs be directed toward low-income, elderly, and disabled persons. In addition to ratepayer-funded programs, the legislation directs that \$1.1 billion in ratepayer funded, utility-managed energy efficiency programs be directed to low-income, elderly, and disabled individuals through 2028.

The 2018 Virginia Executive Order 6⁴³⁴ directs the Secretary of Natural Resources to review the Department of Environmental Quality's permitting and enforcement programs to ensure that the

⁴³³ The Commonwealth of Virginia's 2018 Energy Master Plan. Office of the Secretary of Commerce and Trade, Department of Mines, Minerals and Energy. Available at:

https://www.governor.virginia.gov/media/governorvirginiagov/secretary-of-commerce-and-trade/2018-Virginia-Energy-Plan.pdf

⁴³⁴ Executive Order 6 – Supporting the Critical Role of the Virginia Department of Environmental Quality in Protection of Virginia's Air, Water, and Public Health. April 3, 2018. Available at:

https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/gov73-eox2fed/eo-6-

programs are as protective of public health and the environment as authorized under state and/or federal law; identify necessary critical updates to regulations or guidance; identify any gaps in environmental monitoring, especially in areas where there is credible evidence to support an indication of impairment to public health or the environment; identify causes of delays or backlogs in permitting programs; and determine if any rollback in federal laws would alter the department's ability to protect public health and the environment. The order also directs the secretary to work with stakeholders to improve communication with the public and the regulated community and provide more opportunities for proactive education, especially among underserved and lower income populations.

Contact: Michael Dowd Director, Air Division Virginia Department of Environmental Quality Michael.Dowd@deq.virginia.gov

executive-order-supporting-the-critical-role-of-the-virginia-department-of-environmental-quality-in-protection-of-virginia-s-air-water-and-public-health.pdf

Appendix C – Summary of Non-RGGI jurisdictions

Appendix C-1: City of Austin, Texas

Background on Austin Climate Change and Energy Programs

Austin, Texas, has a robust set of city mandates that develop climate change and energy policy and programs implemented throughout city government. This summary highlights those mandates and some programs, particularly with an emphasis on climate mitigation for disadvantaged communities and consumers.

- Inventory of emissions Austin's Office of Sustainability conducts both a municipal and community-wide greenhouse gas emissions inventory; the 2016 carbon footprint for city operations represented an overall 75% reduction from the baseline inventory calculated in 2007, while the 2017 inventory shows the city is on track to meet its community-wide 2020 interim emissions reductions target.^{435 436}
- Climate Change Policies and Programs Austin City Council has passed multiple resolutions 0 regarding greenhouse gas emissions reductions targets, some noted here. The first resolution in 2007 established the program framework for the Austin Climate Protection Plan with five major goal areas: to achieve carbon neutral facilities, fleets, and operations by 2020; to make the community-owned utility, Austin Energy, the leading utility in the United States for greenhouse gas emissions reductions; to implement the most energy efficient building codes in the nation and aggressively pursue energy efficiency retrofits; to create a community-wide greenhouse gas inventory, short- and long -term emissions reductions targets, and a comprehensive plan to meet those targets; and to implement a program to assist citizens, businesses, organizations, and visitors in achieving carbon neutrality.⁴³⁷ In 2014 the city established a goal of net-zero community-wide greenhouse gas emissions by 2050. This resolution also directed the city manager to create sector-specific action plans.⁴³⁸ In 2015, Austin adopted the Austin Community Climate Plan to achieve net-zero emissions, which includes interim targets for 2020, 2030, and 2040, allowing up to 10% of carbon offsets for all targets.⁴³⁹ The Austin Community Climate Plan identifies more than 130 actions to reduce greenhouse gas emissions from energy, transportation, and materials and waste sources. 440

⁴³⁶ Athenls, L. and Z. Baumer. 2019. Memo to Mayor and Council: Community Carbon Footprint Progress Report.

⁴³⁵ Athens, L. and Z. Baumer. 2018. Memo to Mayor and Council: Greenhouse Gas Emissions Reduction Progress Report. Available at

http://www.austintexas.gov/sites/default/files/files/Sustainability/030118_FINAL_Memo_from_OOS_to_MC_RE_ Greenhouse_Gas_Emissions_Reduction_Progress_Report.pdf.

⁴³⁷ City of Austin, Resolution No. 20070215-023. February 15, 2007.

⁴³⁸ City of Austin, Resolution No. 20140410-024. April 10, 2014.

⁴³⁹ City of Austin, Resolution No. 20150604-048. June, 4, 2015.

⁴⁴⁰ City of Austin. 2015. Austin Community Climate Plan. Available at

https://issuu.com/atxsustainability/docs/oos_austinclimateplan_061015

• Energy - In 2010, the city adopted its Austin Energy Resource, Generation, and Climate Protection Plan to 2020 to meet the objectives of the Austin Climate Protection Plan.⁴⁴¹ The most recent plan, Austin Energy Resource, Generation and Climate Protection Plan to 2027 (referred to as the 2027 plan), was adopted in 2017.⁴⁴² The 2027 plan includes goals and actions related to generation, local solar, energy efficiency and demand response, electric vehicles, emerging technology and energy storage, and process. Highlights of some of the 2027 specific plan goals include: meet 65% of customer electric use needs with renewables by 2027; construct a model that achieves both a 75% and an 80% renewable energy goal by 2027, including a consideration of the costs, benefits, risks and potential rate impacts; construct a model that achieves 100% carbon free energy by 2030, including a consideration of the costs, benefits, risks and potential rate impacts, assess the feasibility of achieving 100% renewable energy by 2035; achieve 200 MW solar by 2025; save 900 MW of peak electricity demand by 2025; and others.⁴⁴³

The City of Austin has an Energy Conservation Audit and Disclosure (ECAD) ordinance, requiring audits and disclosure for all homes and buildings served by Austin Energy and located within city limits.⁴⁴⁴ Sellers of residential properties (up to four units) are required to conduct an energy audit on homes 10 years or older before sale and provide the results to buyers. Annual Energy Ratings are required to be reported to the city for commercial properties greater than 10,000 square feet. Multifamily building owners/managers must conduct energy audits for buildings 10 years or older, make them available to current and prospective residents, and reduce energy by 20% for high-energy-use properties that use 150% over average energy use for similar properties. Austin Energy provides a series of rebate programs to reduce energy use. Austin notes the link between its ECAD ordinance and the goals of its Climate Protection Plan.^{445 446}

Austin Energy customers currently contribute to the Community Benefit Charge each month as part of their utility bill. A portion of these funds supports energy efficiency services, including rebates to residential customers to make improvements to their homes to reduce their electric bill. Austin Energy solar rebates are also recovered through this line item.⁴⁴⁷

 ⁴⁴¹ Austin Energy. 2017. Austin Energy Resource, Generation and Climate Protection Plan to 2027. Introduction and History. October 2017. Available at https://austinenergy.com/wcm/connect/6dd1c1c7-77e4-43e4-8789-838eb9f0790d/2027+Austin+Energy+Resource+Plan+20171002.pdf?MOD=AJPERES&CVID=IXv4zHS.
⁴⁴² City of Austin. 2017. Resolution No. 20170817-061. August 17, 2017.

⁴⁴³ City of Austin. 2017. Resolution No. 20170817-061. August 17, 2017. Available at

http://www.austintexas.gov/edims/document.cfm?id=282674.

 ⁴⁴⁴ Austin City Code. Title 6. Environmental Control and Conservation. Chapter 6-7. Energy Conservation. Available at https://austinenergy.com/wcm/connect/c8814cf7-e1a4-4d6f-8257-88445444f4oc/ECADChap6-7EnergyConservation.pdf?MOD=AJPERES&CVID=kC196.b&CVID=kC196.b&CVID=kC196.b&CVID=kC196.b.
⁴⁴⁵ Austin City Code. Title 6. Environmental Control and Conservation. Chapter 6-7. Energy Conservation. Available at https://austinenergy.com/wcm/connect/c8814cf7-e1a4-4d6f-8257-88445444f4oc/ECADChap6-7EnergyConservation.pdf?MOD=AJPERES&CVID=kC196.b&CVID=kC196.b&CVID=kC196.b&CVID=kC196.b.
⁴⁴⁶ Austin Energy. 2019. ECAD Ordinance. Available at https://austinenergy.com/ae/energy-efficiency/ecad-ordinance.

⁴⁴⁷ Athens, L. and Z. Baumer. 2017. Memo to Mayor and Council: Resolution No. 20150604-048 Austin Community Climate Plan Semi-Annual Progress Report. April 20, 2017. City of Austin, Sustainability Office. Available at
Austin Energy offers a range of energy efficiency programs for residential, commercial, and multifamily buildings; rebate programs are funded through the Community Benefit Charge. Residential offerings include rebates and incentives for appliances and equipment, cooling and heating, and home improvements.⁴⁴⁸ Multifamily offerings include rebates and incentives for appliances and equipment, cooling and heating, lighting, new construction, and property improvements.⁴⁴⁹ Commercial offerings include rebates and incentives for appliances and equipment, new construction, and property improvements.⁴⁵⁰

Renewable energy for customers of Austin Energy comes from solar power and wind. According to Austin Energy, its customers receive almost one-third of their electricity from renewables, putting the city on track to meet its goal of 55% renewable energy by 2025.⁴⁵¹ Austin offers rebates for solar system installation at residences and businesses. Residential customers (including renters) who do not want to install their own solar roof can choose the Austin Community Solar Program.^{452 453} Austin Energy also offers capacity-based incentives for multifamily properties and new single-family developments to help with the purchase of an on-site solar generation system.⁴⁵⁴

Austin Energy offers various programs to encourage electric vehicles and infrastructure. Rebates for home charging stations as well as multifamily rebates for charging station installations that benefit all residents on property are available.⁴⁵⁵ ⁴⁵⁶ Rebates are available for electric bikes, scooters, mopeds, motorcycles, or Segways for individuals as well as businesses and organizations for fleets purchases (5– 25 vehicles).⁴⁵⁷

Through a combination of public and private partners, Austin Energy is developing two energy storage systems (one pairing battery storage with a new solar community array and another linking energy

⁴⁴⁸ Austin Energy. 2019. Energy Savings for Your Home. Available at

https://savings.austinenergy.com/rebates/residential.

https://savings.austinenergy.com/rebates/commercial.

http://austintexas.gov/sites/default/files/files/Sustainability/Memo_to_Mayor_and_Council_-

_Community_Climate_Plan_Implementation_and_Progress_-_04202017.pdf

⁴⁴⁹ Austin Energy. 2019. Energy Savings for Your Multifamily Property. Available at https://savings.austinenergy.com/rebates/multifamily.

⁴⁵⁰ Austin Energy. 2019. Energy Savings for Your Business. Available at

⁴⁵¹ Austin Energy. 2018. Renewable Energy. Available at https://austinenergy.com/ae/green-power/renewableenergy

⁴⁵² Austin Energy. 2018. Solar Solutions. Available at https://austinenergy.com/ae/green-power/solar-solutions/solar-solutions.

⁴⁵³ Austin Energy. 2018. Community Solar. Available at https://austinenergy.com/ae/green-power/solar-solutions/for-your-home/community-solar/community-solar.

⁴⁵⁴ Austin Energy. 2018. Solar Photovoltaics (PV) Rebate & Incentives Install Rooftop Solar on Multiple Residences. Available at https://austinenergy.com/ae/green -power/solar-solutions/for-your-multifamily/solar-photovoltaicpv-incentives.

⁴⁵⁵ Austin Energy. 2018. Home Charging Rebates and Options Available. Available at

https://austinenergy.com/ae/green-power/plug-in-austin/home-charging/home-charging

⁴⁵⁶ Austin Energy. 2018. Multifamily Charging. Available at https://austinenergy.com/ae/green-power/plug-in-austin/multifamily-charging.

⁴⁵⁷ Austin Energy.2018. More Ways to Go Electric Rebates Available for Electric Bikes, Scooters, Mopeds, and Motorcycles. Available at https://austinenergy.com/ae/green-power/plug-in-austin/more-ways-to-go-electric.

storage with commercial and rooftop residential solar in a mixed-use development). Known as Austin SHINES (Sustainable and Holistic Integration of Energy Storage and Solar Photovoltaics), this project is intended to address reliability and assist Austin in reaching its climate protection plan goal of 65% renewable energy by 2027.⁴⁵⁸

• Other Related Plans and Initiatives

- Municipal Master Planning. There are a number of other Austin citywide plans that relate to the goals of the Austin Community Climate Plan and support the goal of community-wide emissions reductions from electricity, natural gas, transportation, and materials and waste management sources.⁴⁵⁹ The Imagine Austin Comprehensive Plan is the city's 30-year municipal master plan adopted in August 2012 and amended in 2013, 2014, 2014, and 2016; the plan is developed under the jurisdiction of Austin's Planning and Zoning Department.⁴⁶⁰
- Transportation and Mobility. Austin developed a Smart Mobility Roadmap in 2017 that builds from the Imagine Austin Plan, with a focus on the convergence of shared use, electric, and autonomous vehicles that together can decrease emissions and increase access and mobility for many sectors of society, including seniors, the disabled, and people without a driver's license.⁴⁶¹ In 2019, Austin released its Strategic Mobility Plan, which notes challenges to reducing transportation emissions and improving public health. The Strategic Mobility Plan also recognizes challenges to meet demand and provide equitable access, affordability, and engagement of all community members in planning to achieve a 50/50 mode share (50% drive alone; 50% travel by other modes combined), so Austin can manage congestion in the future by maintaining the same number of cars on the road based on forecasted growth to 2039. The plan contains a series of indicators and targets related to climate and air that connect to the Austin Climate Action Plan.⁴⁶²
- In December 2018, Capital Metro (central Texas's regional public transit agency) approved the Project Connect long-range plan offering high-capacity bus and rail options in conjunction with a local bus network and other means for last-mile connections to improve transportation and encourage less congestion throughout Austin; the approval allows the agency to move forward with preliminary engineering and further community engagement.⁴⁶³
- Austin's Bicycle Master Plan is a plan to create a connected and protected active transportation network that will provide additional transportation options for Austin

⁴⁵⁸ Austin Energy. 2019. Austin SHINE Innovations in Energy Storage. Available at https://austinenergy.com/ae/green-power/austin-shines

⁴⁵⁹ City of Austin. Climate Change Policies and Plans. 2019. Available at http://www.austintexas.gov/climate.

⁴⁶⁰ City of Austin. 2016. Imagine Austin Comprehensive Plan Amended. Available at

http://austintexas.gov/department/about-imagine-austin.

⁴⁶¹ City of Austin. 2017. Smart Mobility Roadmap. Available at

https://austintexas.gov/sites/default/files/files/Smart_Mobility_Roadmap_-_Final.pdf.

⁴⁶² City of Austin. 2019. Strategic Mobility Plan. Available at http://www.austintexas.gov/asmp.

⁴⁶³ Wilson, A. and B. Eubank. 2018. CapMetro approves Austin's 'Project Connect' plan. KVUE. Available at

https://www.kvue.com/article/news/local/capmetro-approves-austins-project-connect-plan/269-623721168.

residents and visitors. Its overarching goal is to significantly increase bicycle use and improve bicycle safety throughout Austin.⁴⁶⁴

- Trails. The Austin Urban Trails Program promotes non-motorized pathways for recreation and active transportation and its Urban Trails Master Plan provides guidelines for developing urban trails.⁴⁶⁵
- Waste. The Resource Recovery Master Plan is designed to achieve zero waste in the City of Austin.⁴⁶⁶ It is implemented through the Universal Recycling Ordinance.⁴⁶⁷
- Affordable Housing. In the spring of 2017, the Austin City Council adopted the first Austin Strategic Housing Blueprint, which includes goals for affordable housing in every city council district to ensure affordable housing throughout the city. The blueprint includes goals for construction of 60,000 housing units affordable to households at 80% median family income (MFI) and below, and another 75,000 units for households earning greater than 80% MFI broken into specific goals for households at different income levels – in line with Imagine Austin.⁴⁶⁸ The blueprint identified five community values to guide the process, including:
 - Prevent households from being priced out of Austin;
 - Foster equitable, integrated, and diverse communities;
 - Invest in housing for those most in need;
 - Create new and affordable housing choices for all Austinites in all parts of Austin; and
 - Help Austinites reduce their household costs.469

This last value related to household cost reduction also includes the recommendation to connect housing with transportation choices, increase efforts to help households to reduce utility costs through weatherization of current residences, and ensure that future housing developments are close to healthy grocery stores, health care services, and social support agencies. Such recommendations link to programs that also have benefits to address climate and energy issues.⁴⁷⁰

6SOWASE_ART5UNRE#TOPTITLE.

⁴⁶⁴ City of Austin. 2014. Bicycle Master Plan. Available at

http://www.austintexas.gov/sites/default/files/files/2014_Austin_Bicycle_Master_Plan__-_Executive_Summary.pdf.

⁴⁶⁵ Austin Urban Trails Master Plan. 2014. Available at https://app.box.com/s/i8op4ee7vytuq67k9pgz.

 $^{^{\}rm 466}$ City of Austin. 2011. Austin Resource Recovery Master Plan. Available at

 $http://www.austintexas.gov/sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf.$

⁴⁶⁷ City of Austin Municipal Code. Chapter 15-5, Article 5. Available at

 $https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeld=TIT15UTRE_CH15-interventional and intervention and i$

⁴⁶⁸ City of Austin. 2017. Strategic Housing Blueprint. Available at

 $https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf.$

⁴⁶⁹ City of Austin 2019. Neighborhood Housing and Community Development. Austin Strategic Housing Blueprint. Available at https://www.austintexas.gov/housingblueprint.

⁴⁷⁰ City of Austin. 2017. Strategic Housing Blueprint. Available at

https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf.

Lead Agencies

The Office of Sustainability is the lead coordinating entity regarding the city's climate plan, working with appropriate city departments to implement the plan. The Office of Sustainability staffs the Joint Sustainability Committee, which meets monthly. Committee members are from various city boards and commissions, and its purpose it to advise the city on policy matters related to the climate plan.⁴⁷¹

Austin Energy, the publicly owned utility that provides electricity to the city and surrounding areas, is the lead agency for implementing the Austin Energy Resource, Generation and Climate Protection Plan, as well as renewable energy and energy efficiency programs for its customers.

The Department of Transportation (DOT) is the lead agency for the Smart Mobility Plan, Strategic Mobility Plan, and Bicycle Master Plan. DOT partnered with the Capital Metropolitan Transportation Authority (Capital Metro) on the Smart Mobility Roadmap.

Project Connect partnership includes the Capital Area Metropolitan Planning Organization (CAMPO), Capital Metropolitan Transportation Authority (Capital Metro), Lone Star Rail District (LSRD), and City of Austin.⁴⁷²

Austin Resource Recovery is the lead department for the Zero Waste Plan. The Department of Public Works is the lead agency for the Urban Trails Program.

Benefits Directed to Disadvantaged Communities and Consumers

There are various climate and energy program benefits offered to disadvantaged consumers in Austin as noted below.

• Planning, Zoning, and Transit Access

The Austin Community Climate Plan has a goal of ensuring that affordable housing and residential neighborhoods are within a quarter mile of existing or funded new transit options.⁴⁷³

The Project Connect initiative is intended to reduce congestion in Austin by building out a high capacity public transit system, thereby reducing the need for and expense of an automobile. Consideration of equity has been incorporated into the growth criteria for the high capacity corridors identified in the Project Connect plan. Capital Metro is working with several cities in the region, including Austin and Project Connect partners, on a planning effort intended to meet community needs in a way that promotes access to transportation and affordable housing and creates better connections to jobs and schools; it includes a goal of making the area's transit system fully electric.^{474,475}

⁴⁷¹ City of Austin, Resolution No. 20150604-048. June 4, 2015.

⁴⁷² URS. n.d. PROJECT CONNECT Central Texas High-Capacity Transit System Plan Executive Summary. Available at https://capmetro.org/projectconnect/.

⁴⁷³ City of Austin. 2015. Austin Community Climate Plan. Available at

https://issuu.com/atxsustainability/docs/oos_austinclimateplan_061015.

⁴⁷⁴ URS. n.d. PROJECT CONNECT Central Texas High-Capacity Transit System Plan Executive Summary. Available at https://capmetro.org/projectconnect/.

⁴⁷⁵ Capital Metro. 2019. Project Connect. Available at https://capmetro.org/projectconnect/.

Austin's Strategic Mobility Plan includes policies and indicators related to equity (with a focus on historically underserved and underrepresented communities and vulnerable populations), affordability (with a focus on assessing and mitigating displacement impacts of transportation projects and reducing transportation costs as a component of housing affordability), and accessibility (with a focus on ensuring people of all functional abilities have equitable access to the transportation network and mobility services). In addition, there are a series of public interaction policies that focus on engaging community members in transportation decisions, including making engagement convenient and accessible.⁴⁷⁶ Examples of indicators in the plan include:

- Increase the mobility funding allocated to areas that are historically underserved.
- Increase the percent of transportation projects and programs that use the Equity Assessment Tool (see more below).
- Increase the percent of city employees receiving mobility equity training.
- Increase the percentage of affordable housing available at 30%, 50%, 60%, and 80% median family income] within a half mile of transit and bicycle priority networks.
- Decrease the cost of transportation as a percentage of household budget.⁴⁷⁷
- Affordable Housing

The Austin Strategic Housing Blueprint is intended "to set the community on a path to achieve an equitable housing environment where integration, diversity, and inclusion are championed."⁴⁷⁸ Although the 2017 *Blueprint* and subsequent 2019 Implementation Plan are not driven by climate or energy goals, the planning and implementation processes to address affordable housing needs are connected with mobility, transit, and energy policies that have climate and energy benefits. For example, modifications have been made to scoring criteria for affordable housing development assistance and land acquisition programs to prioritize affordable housing near current and future transit service.⁴⁷⁹ A goal in the Strategic Housing Blueprint implementation plan includes 15,000 affordable housing units in high-frequency transit and Imagine Austin centers and corridors.⁴⁸⁰ Further, the Austin Climate Action Plan goal of new transit within a quarter mile of affordable housing is echoed in the Strategic Housing Blueprint that has a goal of 25% of preserved or new affordable housing within a quarter mile of a transit stop.^{481,482}

⁴⁷⁶ City of Austin. 2019. Strategic Mobility Plan. Available at http://www.austintexas.gov/asmp.

⁴⁷⁷ City of Austin. 2019. Strategic Mobility Plan. Available at http://www.austintexas.gov/asmp.

⁴⁷⁸ City of Austin. 2017. Strategic Housing Blueprint. Available at

https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf. ⁴⁷⁹ Austin City Council Housing and Planning Committee. 2019. Austin Strategic Housing Blueprint Update Briefing.

http://www.austintexas.gov/sites/default/files/files/Housing/Blueprint_Implementation_Presentation_Feb12.pdf . ⁴⁸⁰ Austin City Council Housing and Planning Committee. 2019. Austin Strategic Housing Blueprint Update Briefing.

http://www.austintexas.gov/sites/default/files/files/Housing/Blueprint_Implementation_Presentation_Feb12.pdf. ⁴⁸¹ City of Austin. 2017. Strategic Housing Blueprint. Available at

https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf. ⁴⁸² City of Austin 2019. Neighborhood Housing and Community Development. Austin Strategic Housing Blueprint. Available at https://www.austintexas.gov/housingblueprint.

• Equity Assessment Tool

Austin's Equity Office has developed the Equity Assessment Tool as required by resolution of the Austin City Council to be used by all city departments.⁴⁸³ The tool is a general set of questions to guide city departments in development, implementation, and evaluation of policies, practices, budget allocations, and programs to begin to address their impacts on equity.⁴⁸⁴ The tool builds from the historical context of departments. It tries to help staff recognize who their work serves and doesn't serve. These assessments help Austin identify opportunities to reduce disparities.⁴⁸⁵ Austin Transportation participated in the first cohort of departments to implement the Equity Analysis Tool and developed its first Annual Equity Action Plan for 2019. Action items identified through this process include, among others, establishing a single equity point of contact; establishing public interaction and equity policies through the Austin Strategic Mobility Plan to guide transportation decision-making; and establishing a public engagement and equity plan to help implement the city's Strategic Mobility Plan after adoption.⁴⁸⁶ Austin Energy is initiating use of the Equity Assessment Tool, which will assess equity with respect to its customers as well as it workforce.⁴⁸⁷ Austin Energy is initiating use of the Equity Assessment Tool, which will assess equity with respect to its customers as well as it workforce.

Austin's Bicycle Master Plan includes an equity goal to provide equal bicycling access for all through public engagement, program delivery, and capital investment.⁴⁸⁸ Indicators toward this goal include: Provide an all ages and abilities bicycle route within a half mile of 50% of households, workplaces, and destinations by 2020. Provide an all ages and abilities bicycle route within a half mile of 100% of households, workplaces, and destinations by 2035.⁴⁸⁹

• Austin Energy's Resource, Generation, and Climate Protection Plan to 2027

As previously noted, Austin Energy's 2027 plan has numerous goals and actions related to energy generation, solar, energy efficiency, electric vehicles, emerging technology, etc. With respect to disadvantaged communities and consumers, the plan iterations establish utility targets as well as an affordability goal. The affordability goal is an average 2% per year limit on rate increases system-wide and for rates to be in the lower 50th percentile statewide with an affordability statement that "Austin Energy must be financially sound, the cost of electric service must be affordable for all classes of

⁴⁸⁸ City of Austin. 2014. Bicycle Master Plan. Available at

⁴⁸³ City of Austin, Resolution No. 20150507-027. May 7, 2015.

⁴⁸⁴ Oaks, B. 2018. Memorandum. Equity Assessment Tool Pilot Completion. Available at http://www.austintexas.gov/edims/pio/document.cfm?id=300307.

⁴⁸⁵ City of Austin. 2019. Operationalizing Racial Equity. Available at

http://www.austintexas.gov/department/operationalizing-racial-equity.

⁴⁸⁶ City of Austin. 2019. Strategic Mobility Plan. Available at http://www.austintexas.gov/asmp.

⁴⁸⁷ City of Austin. 2019. Strategic Mobility Plan. Available at http://www.austintexas.gov/asmp.

http://www.austintexas.gov/sites/default/files/files/2014_Austin_Bicycle_Master_Plan__-_Executive_Summary.pdf.

⁴⁸⁹ City of Austin. 2014. Bicycle Master Plan. Available at

http://www.austintexas.gov/sites/default/files/files/2014_Austin_Bicycle_Master_Plan__-

_Executive_Summary.pdf.

customers (with particular attention to the low income and underserved customers), and rates must be competitive to ensure the retention and attraction of businesses for a strong local economy."^{490, 491}

• Electricity Bill and Direction to Energy and Water Conservation

Austin Energy's Customer Assistance Program (CAP) assists low-to-moderate-income customers in regard to their utility bill and can include financial support, case management, dispute resolution, energy efficiency improvements, and water conservation. Discounts are provided to City of Austin utility customers on low or fixed incomes who participate in certain state, federal, or local assistance programs.⁴⁹² Other programs include the Arrearage Management Program (AMP), which is a payment matching program designed to help qualified customers to reduce and eventually eliminate past due utility balances they owe to the City of Austin. Customers in these programs attend a one-time class and learn energy and water conservation, among other things. There is also a refugee assistance program, a "Plus 1" program that provides one-time assistance for customers with an emergency situation who cannot pay their bills, and a program for medically vulnerable customers who receive extra time to pay their bills. ^{493,494}

• Energy Efficiency

Austin Energy's Weatherization Assistance Program (WAP) offers no-cost home improvements, including air infiltration, attic insulation, reflective rooftop coating, duct system improvements, solar screens, LED lighting, life safety (smoke and carbon monoxide detectors), air conditioning tune-up, and water conservation to qualified customers who own or rent single family homes, duplexes, triplexes, or four-plexes. Support for the program is through the Austin Energy Community Benefit Charge. Eligibility is for households at 200% or less of the federal poverty level. Other eligibility factors include dwelling type, a property structure value of \$300,000 or less, home size of 2,500 square feet or less, home age of more than 10 years, and not having received weatherization from Austin Energy in the last

 ⁴⁹⁰ Austin Energy. 2017. Austin Energy Resource, Generation and Climate Protection Plan to 2027. Introduction and History. October 2017. Available at https://austinenergy.com/wcm/connect/6dd1c1c7-77e4-43e4-8789-838eb9f0790d/2027+Austin+Energy+Resource+Plan+20171002.pdf?MOD=AJPERES&CVID=IXv4zHS
⁴⁹¹ City of Austin. 2017. Resolution No. 20170817-061. August 17, 2017. Available at

http://www.austintexas.gov/edims/document.cfm?id=282674.

⁴⁹² Austin Energy. 2018. CAP Discounts. Available at https://austinenergy.com/ae/residential/your-bill/customerassistance-programs/cap-discounts/cap-discounts.

⁴⁹³Austin Energy. 2018. Customer Assistance Program. Presentation at Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/39ccfae7-3f58-47ao-aoog-10ba2ec737d2/2018-capoverview.pdf?MOD=AJPERES&CVID=mtgX77w&CVID=mtgX7

⁴⁹⁴ Travis County Health and Human Services. 2018. Housing Services. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/d3ca46f5-5126-44f5-8920-5b4a15156eo9/2018-low-income-

weatherization.pdf?MOD=AJPERES&CVID=mtgZjDN&

10 years. WAP qualified customer homes are also eligible for an A/C rebate and loan program to replace old, inefficient or non-operational central A/C systems.^{495,496,497,498,499}

The Multifamily Weatherization Assistance Program is for customers living in properties that receive affordable housing subsidies from the federal, state, city, or county government or are on the Austin Tenant Council Property List Rebates. The program provides rebates at a \$/kW value for each measure and is designed to pay 100% of installed costs for measures such as duct sealing, attic insulation, solar screens, LED lighting, and water conservation device.⁵⁰⁰

Austin Energy also works with the City of Austin's Neighborhood Housing and Community Development Department and local housing repair coalition nonprofits in a referral network. Through city bond funds, the housing program works with nonprofits to perform home repairs for low-income customers (including those that would be qualified through Austin Energy's Customer Assistance Program), and these customers are referred back to Austin Energy for no-cost energy improvements to their home through Austin Energy's weatherization program, including its Home Performance with Energy Star.⁵⁰¹

• Solar Programs

Austin Energy's rebate program for residential solar installation is available for all customers regardless of home size, and thus this incentive is the same for all households and as per Austin Energy, has resulted in "improving equity."⁵⁰² In 2018, Austin Energy changed its residential solar incentive from a capacity-

⁴⁹⁶ Austin Energy. 2018. Customer Assistance Program. Presentation at Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/39ccfae7-3f58-47ao-a009-10ba2ec737d2/2018-capoverview.pdf?MOD=AJPERES&CVID=mtgX77w&CVID=mtgX

⁴⁹⁵ Austin Energy. 2019. Weatherization Assistance Rebates & Incentives. Available at

https://savings.austinenergy.com/rebates/residential/offerings/home-improvements/weatherization.

⁴⁹⁷ Austin Energy. 2018. Low-Income Weatherization. Presentation at Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/d3ca46f5-5126-44f5-8920-5b4a15156eog/2018-low-income-weatherization.pdf?MOD=AJPERES&CVID=mtgZjDN&CVID=mtgZ

⁴⁹⁸ Austin Energy. 2018. FY2019 Electric Tariff. Community Benefit Charge. Available at

https://austinenergy.com/wcm/connect/o1ab5e65-do35-4543-9411-8od62419df6c/community-benefit-

charge.pdf?MOD=AJPERES&CVID=IZU-q5y&CVID=IZU-q5y&CVID=IZU-q5y&CVID=IZU-q5y.

⁴⁹⁹ Austin Energy. 2019. Other Line Items on Your Bill. Available at

https://austinenergy.com/ae/residential/rates/other-line-items-on-your-bill.

⁵⁰⁰Austin Energy. 2018. Low-Income Weatherization. Presentation at Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/d3ca46f5-5126-44f5-8920-5b4a15156e09/2018-low-income-

weatherization.pdf?MOD=AJPERES&CVID=mtgZjDN&

⁵⁰¹ American Council for an Energy Efficient Economy. 2019. Low Income and Multifamily EE Programs. Available at https://database.aceee.org/city/low-income-multifamily.

⁵⁰² Murray, Danielle. 2018. Austin Energy Low-Income & Electric Vehicle Offerings. Expanding Access to Solar. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5caoageed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf?MOD=AJPERES&CVID=mtgVSW1&CVID=

based program to a flat rate regardless of size; Austin Energy has observed that the penetration is not concentrated in the more affluent areas as it was with the previous rebate format.

Under Austin Energy's Community Solar Program, eligible customers in the Community Assistance Program (CAP) can choose solar as their electricity source and receive a discounted electricity rate.⁵⁰³ Half of the capacity of the La Loma solar farm is reserved for CAP customers.⁵⁰⁴ The La Loma solar farm is the community-scale solar project that is coupled with energy storage to reduce demand charges as part of the aforementioned SHINES project.⁵⁰⁵ Other advantages of community solar include a rate locked in for 15 years, access to solar without owning or operating a unit on one's property, and access for renters.^{506,507}

Austin Energy provides a higher incentive level for solar installations at multifamily affordable housing properties than other properties. Residential units within the multifamily building to be served by the solar array must be reserved for households earning no more than 80% Housing and Urban Development (HUD) median family income for a minimum 20-year affordability period with at least 10 years remaining.⁵⁰⁸

Austin Energy has developed an innovative metering and billing shared solar solution program for hardto-reach solar markets that include multifamily affordable housing, low-income residents, renters, and nonprofits. The Shared Solar program aims to alleviate problems of cost and complexity by allowing a single on-site solar PV system to serve multiple units in a building using their Meter Data Management System to enable virtual, proportional metering of a single PV meter. Multiple residential electric accounts in a multifamily property will be able to receive a prorated portion of Value of Solar credits from an on-site solar PV system. All Value of Solar credits from the PV system's production will be allocated to

⁵⁰³ Austin Energy. 2018. Community Solar. Available at https://austinenergy.com/ae/green-power/solar-solutions/for-your-home/community-solar/community-solar.

⁵⁰⁴ Murray, Danielle. 2018. Austin Energy Low-Income & Electric Vehicle Offerings. Expanding Access to Solar. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5caoageed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf?MOD=AJPERES&CVID=mtgVSW1&CVID=

⁵⁰⁵ Austin Energy. 2017. Austin SHINES System Overview and Project Benefits. Available at

https://austinenergy.com/ae/green -power/austin-shines/system -overview-project-benefits

⁵⁰⁶ Austin Energy. 2018. Community Solar. Available at https://austinenergy.com/ae/green-power/solar-

solutions/for-your-home/community-solar/community-solar.

⁵⁰⁷ Murray, Danielle. 2018. Austin Energy Low-Income & Electric Vehicle Offerings. Expanding Access to Solar. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5caoageed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf?MOD=AJPERES&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1.

⁵⁰⁸ Austin Energy. 2018. Solar Photovoltaics (PV) Rebate & Incentives Install Rooftop Solar on Multiple Residences. Available at https://austinenergy.com/ae/green-power/solar-solutions/for-your-multifamily/solar-photovoltaicpv-incentives.

the residential units in the property — in proportion to the unit's square footage — and will lower the tenants' electric bills.⁵⁰⁹

Austin Energy also provides solar incentives for nonprofits under its performance-based incentives. Nonprofits are eligible for higher incentives than commercial solar installations. ^{510,511}

• Electric Vehicles

Austin Energy has been working to remove barriers to EV adoption to help meet the city's climate protection and clean air goals to disadvantaged consumers. Under a grant from the 11th Hour Project of the Schmidt Family Foundation, Austin initiated its "EVs are for EVeryone" outreach program in support of low income and/or historically underserved communities. Even though this grant has concluded, the City of Austin now supports the program based upon its success. Specifically, it has included outreach and education on alternatives to traditional light duty vehicles such as electric bicycles, mopeds, and scooters with a targeted focus on low-income apartment communities. Education has included creating awareness for these alternatives, conveying their benefits, and removing barriers to adoption.^{512,513}

EVs are for EVeryone has several program components:

- EV charging infrastructure expansion at affordable housing and youth communities Austin Energy is expanding its support for deployment of publicly available charging infrastructure working with Foundation Communities, a local nonprofit that operates 23 affordable housing communities. Austin Energy provides rebates for several Foundation Communities properties and is working with the organization to expand this to their entire portfolio of properties. Austin Energy is also supporting EV infrastructure at housing for at-risk young adults working with the nonprofit Lifeworks.
- EVs for schools Austin Energy has deployed 13 EV charging stations at five public schools and is combining this with a curriculum about electric vehicles, green energy, and sustainable mobility for middle and high school students. The program is targeting schools that serve economically disadvantaged students and is intended to provide a living

http://www.austintexas.gov/edims/document.cfm?id=269950

⁵⁰⁹ Austin Energy. 2018. Multifamily Shared Solar Pilot Program. Available at https://austinenergy.com/ae/greenpower/solar-solutions/for-your-multifamily/mf-shared-solar.

⁵¹⁰ Murray, Danielle. 2018. Austin Energy Low-Income & Electric Vehicle Offerings. Expanding Access to Solar. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4ef0-9583-c5ca0a9eed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf?MOD=AJPERES&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1.

⁵¹¹ Austin Energy. 2018. Solar Photovoltaics (PV) Incentives. Install Rooftop or Ground-Mount Solar at Your Business. Available at https://austinenergy.com/ae/green-power/solar-solutions/for-your-business/solar-photovoltaic-pv-incentives.

⁵¹² Austin City Council. 2017. Agenda Item ID 67157. Available at

⁵¹³ Atchley, A. 2018. EVs are for Everyone. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5caoa9eed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf? MOD=AJPERES&CVID=mtgVSW1&CV

laboratory for STEM education while providing charging stations for teachers, staff, and parents. Support for this program has been provided by Austin Energy, in partnership with Charge Point and SmartCharge America. The curriculum can be used off the shelf or is customized to a particular community and is being emulated now by utilities in other cities such as Madison, Wisconsin.⁵¹⁴

• E-bike Share program - An E-bike Share program is in development to provide electric bike share stations for first- and last-mile solutions at affordable housing locations. To support its development, e-bike demonstrations and safety training for underserved community members, as well as gathering feedback, is a cornerstone of the project.⁵¹⁵

Austin's Smart Mobility Roadmap provides a recommendation to deploy shared-electric mobility and charging infrastructure to include low-income neighborhoods.⁵¹⁶

In April 2019, Capital Metro approved the purchase of four electric buses, anticipated to be in use by the end of 2019, as part of the previously mentioned Project Connect goal of an all-electric fleet. These buses will have air quality as well as reduced noise benefits for Austin residents. In addition to the initial electric bus purchase, Capital Metro has initiated conversion of a warehouse to serve as a charging depot for more than 200 buses. ^{517,518, 519}

Internal Operations

Individual departments as noted under "Lead Agencies" continue to pursue the programs under their jurisdiction. The City Climate Action Team established by 2007 resolution continues working via topicbased teams of interested persons from city departments. The Office of Sustainability is the lead agency for the city's climate plan; however, the Office of Sustainability works with appropriate city departments to implement the plan. The Office of Sustainability provides an annual report on the community climate plan to the city. Austin Energy is part of the City of Austin, with budget and policy oversight by the Austin City Council. As noted by interviewees for this project, programs and staff of Austin Energy participate

Available at https://capmetro.org/About-Capital-Metro/Media-Center/News-Stories/2019-News-

Stories/4294971283/.

⁵¹⁴ Austin Energy. 2019. Plug-In Austin. School Charging. EVs for Schools. Available at https://austinenergy.com/ae/green-power/plug-in-austin/school-charging.

⁵¹⁵ Atchley, A. 2018. EVs are for Everyone. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5ca0a9eed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf? MOD=AJPERES&CVID=mtgVSW1&CV

⁵¹⁶ City of Austin. 2017. Smart Mobility Roadmap. Available at

https://austintexas.gov/sites/default/files/files/Smart_Mobility_Roadmap_-_Final.pdf.

⁵¹⁷ Metro Magazine. 2019. Texas' Capital Metro to add Proterra buses, charging infrastructure. Available at https://www.metro-magazine.com/bus/news/733889/texas-capital-metro-to-add-proterra-buses-charging-infrastructure.

⁵¹⁸ Thornton, R. 2019. Capital Metro to buy last wave of diesel, first electric buses. Austin Monitor. Available at https://www.austinmonitor.com/stories/2019/04/capital-metro-to-buy-last-wave-of-diesel-first-electric-buses/. ⁵¹⁹ Capital Metro Transportation Authority. 2019. Capital Metro takes major step toward all-electric fleet.

in initiatives and programs in coordination with other city departments or citywide initiatives to align programs, including those that specifically serve low-income customers.⁵²⁰

External Stakeholder Engagement

Stakeholder engagement is included in most if not all the initiatives reviewed including participation through the Climate Action Team established in the 2007 resolution that initiated the Climate Action Plan framework and the development of the Austin Community Climate Plan.^{521 522 523}

A Joint Sustainability Committee has been created to review city policies and procedures relevant to the city's climate plan and advise the city on policy matters related to the plan.⁵²⁴ The committee includes representatives from 11 city boards and commissions. In keeping with the enabling resolution, it is encouraged that these committee members represent a broad diversity of community stakeholders.⁵²⁵

Austin Energy holds an annual Community Connections Resource Fair to reach low -to-moderate-income customers with a focus on high poverty zip codes as a holistic approach to customer service and a onestop shop to reach basic needs services. It also holds an annual Affordable Policy Summit to introduce changes to the community and targets local social service providers, nonprofits, faith-based groups, government agencies, advocacy groups, and low-income housing representatives. Austin Energy's Community Assistance Program also participates in many other outreach events annually and partners with Austin Public Health at food pantry events to educate citizens about weatherization assistance programs. Staff also distribute energy savings light bulbs and other such devices. ^{526,527}

Austin Energy provides additional opportunities for community engagement, such as opportunities for residents to test electric bikes with cargo attachments and other vehicles. The previously described EV for Schools program is an opportunity for students in schools that serve economically disadvantaged students and their families to become more engaged. ⁵²⁸

⁵²⁰ Austin Energy. 2019. Who We Are. Available at https://austinenergy.com/ae/about/company-profile/company-profile.

⁵²¹ City of Austin, Resolution No. 20070215-023. February 15, 2007.

⁵²² City of Austin, Resolution No. 20140410-024. April 10, 2014

⁵²³ City of Austin. 2015. Austin Community Climate Plan. Available at

https://issuu.com/atxsustainability/docs/oos_austinclimateplan_061015

⁵²⁴ City of Austin, Resolution No. 20150604-048. June, 4, 2015.

⁵²⁵ City of Austin, Resolution No. 20150604-048. June, 4, 2015.

⁵²⁶ Austin Energy. 2018. Community Connections Resource Fair. Available at

https://austinenergy.com/ae/about/community-outreach/community-connections-resource-fair

⁵²⁷ Austin Energy. 2019. CES RMC Savings Report. Available at https://austinenergy.com/wcm/connect/7dcf19ef-1197-4008-a673-

⁶ad397fo5e4e/RMC_MonthlyReport_Jan_19o211.pdf?MOD=AJPERES&CVID=mzDvgVz&CVID=mzDvgVz&CVID=miQrmlY&CVID=mgkkJHy&CVID=mgkkJHy

⁵²⁸ Atchley, A. 2018. EVs are for Everyone. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/a6545bec-2bd7-4efo-9583-c5ca0a9eed2c/2018-low-income-solar-electric-vehicle-

offerings.pdf?MOD=AJPERES&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1&CVID=mtgVSW1.

Public meetings were held in development of the Urban Trails Master Plan, including several in the historically low-income, minority area of East Austin. At one of these meetings, local nonprofits taught children the basics of urban riding and a bicycle repair. The three priorities from community members regarding the plan were: 1) Improve access to trails from nearby neighborhoods or businesses, 2) Create separate areas for walkers and bicycle riders, and 3) Widen trail surfaces.⁵²⁹

Stakeholder engagement and community outreach is noted as a key component of Project Connect planning as well as the Austin Strategic Housing Blueprint.^{530,531,532}

Monitoring and Measurement

Under its 2007 resolution, Austin must annually report to city council the progress of policies, procedures, timelines, and targets that are necessary to make Austin the leading city in the nation in the effort to reduce and reverse the negative impacts of global warming. ⁵³³ The Office of Sustainability provides semi-annual updates to the city council on progress toward municipal operations under its Climate Protection Plan goals. It also reports progress on meeting its community-wide targets for emissions reductions under its Community Climate Plan.⁵³⁴ The 2016 carbon footprint for City of Austin operations reached an all-time low and represents an overall reduction by 75% from the baseline inventory calculated in 2007.⁵³⁵ The Office of Sustainability also continues to report progress on implementation of the Community Climate Plan to the Joint Sustainability Committee and other pertinent boards and commissions. As previously noted, this plan includes ensuring affordable housing is within a quarter mile of existing or funded new transit options.^{536,537,538}

⁵²⁹ Austin Urban Trails Master Plan. 2014. Available at https://app.box.com/s/i8op4ee7vytuq67k9pgz.

⁵³⁰ URS. n.d. PROJECT CONNECT Central Texas High-Capacity Transit System Plan Executive Summary. Available at https://capmetro.org/projectconnect/.

⁵³¹ Capital Metro. 2019. Participate. Available at https://capmetro.org/participate/.

⁵³² City of Austin. 2017. Strategic Housing Blueprint. Available at

 $https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf.$

⁵³³ City of Austin, Resolution No. 20070215-023. February 15, 2007.

⁵³⁴ Athens, L. and Z. Baumer. 2018. Greenhouse Gas Emissions Reduction Progress Report. Memo to Austin City Council. Available at

http://www.austintexas.gov/sites/default/files/files/Sustainability/030118_FINAL_Memo_from_OOS_to_MC_RE_ Greenhouse_Gas_Emissions_Reduction_Progress_Report.pdf.

⁵³⁵ Athens, L. and Z. Baumer. 2018. Greenhouse Gas Emissions Reduction Progress Report. Memo to Austin City Council. Available at

http://www.austintexas.gov/sites/default/files/files/Sustainability/030118_FINAL_Memo_from_OOS_to_MC_RE_ Greenhouse_Gas_Emissions_Reduction_Progress_Report.pdf.

⁵³⁶ Athens, L. and Z. Baumer. 2018. Greenhouse Gas Emissions Reduction Progress Report. Memo to Austin City Council. Available at

http://www.austintexas.gov/sites/default/files/files/Sustainability/030118_FINAL_Memo_from_OOS_to_MC_RE_ Greenhouse_Gas_Emissions_Reduction_Progress_Report.pdf

⁵³⁷ City of Austin. 2015. Austin Community Climate Plan. Available at

https://issuu.com/atxsustainability/docs/oos_austinclimateplan_061015.

⁵³⁸ City of Austin. 2017. Implementation Status of Community Climate Plan (Phase 1 Actions). Available at:

http://austintexas.gov/sites/default/files/files/Sustainability/Attachment_-

_Implementation_Status_of_Community_Climate_Plan_Phase_1_Actions_-_04202017.pdf

Austin Energy synthesizes data on its Customer Assistance Program, showing geographic maps of program participants and links between needs and services, provided through surveys and data. Austin Energy shares its findings with the public at its Affordable Energy Summit, including ways to improve its programs.⁵³⁹ The data collected include customer satisfaction, ease of applying for programs, awareness of ways to reduce electric bills (such as turning off lights, recycling, shorter showers, turning off electronics, adjusting thermostats, changing A/C filter, etc.).⁵⁴⁰ Its Customer Energy Solutions Program Progress Report FY2018 provides 10 years of data on its energy and renewable energy programs and progress towards its goals. The data include programs that assist low-income homes and affordable housing properties as well as Austin Energy's plans for the coming year.⁵⁴¹ In addition, Austin Energy provides monthly reports, program updates, and a solar PV monthly report.⁵⁴² Austin Energy's website provides a quick update of where it is with respect to its renewable energy goal. As of March 2019, renewable energy met 39% of Austin Energy customers' electric needs (the 2027goal as cited previously is 65% renewable energy).⁵⁴³

⁵³⁹Jambor, L. and J. Black. 2018. Customer Assistance Program Data Segmentation & Evaluations. Austin Energy. Presentation at Austin Affordable Energy Summit. Available at

https://austinenergy.com/wcm/connect/41682ceo-5722-4493-a750-6b5a49do911a/2018-cap-data-segment ation-evaluations.pdf?MOD=AJPERES&CVID=mtgWUin&CVID=

⁵⁴⁰ Jambor, L. and J. Black. 2018. Customer Assistance Program Data Segmentation & Evaluations. Austin Energy. Presentation at Austin Affordable Energy Summit. Available at https://austinenergy.com/wcm/connect/41682ce0-5722-4493-a750-6b5a49d0911a/2018-cap-data-segmentation-

evaluations.pdf?MOD=AJPERES&CVID=mtgWUin&CVI

⁵⁴¹ Austin Energy. 2019. Customer Energy Solutions Program Progress Report FY2018.

https://austinenergy.com/wcm/connect/1a8638b1-da8f-4495-a834-

c5ca426fed2d/CESFY18ProgramProgressReport.pdf?MOD=AJPERES&CVID=mAMGeO8&CVID=mAMGeO8&CVID=mgAayQ.&CVID=mgAAQAAAVAAAVAAAVAAAVAAAVAAAVAAAV

⁵⁴² Austin Energy. 2019. Corporate Reports & Data Library. Available at

https://austinenergy.com/ae/about/reports-and-data-library/customer-energy-solutions-program-updates.

⁵⁴³ Austin Energy. 2019. Corporate Reports & Data Library. Available at

https://austinenergy.com/ae/about/reports and -data-library/reports - and -data-library.

Appendix C-2: California

California has numerous authorities to address energy and climate change with almost 30 statutes, 10 Executive Orders, and 12 sets of regulations expressly addressing climate change dating back to at least 1988 and similarly numerous statutes, regulatory proceedings, and executive orders related to energy. This summary highlights key legislation, implementation, and investments related to climate mitigation focusing on more recent provisions relevant to directing program benefits to disadvantaged communities and consumers.

Background on California Climate Change and Energy Programs

Perhaps the most comprehensive of California's climate change statutes is its Global Warming Solutions Act of 2006 (also known as Assembly Bill, or AB32). The law requires the state Air Resources Board to:

- Adopt statewide greenhouse gas emissions limits (by 2020 they should be equivalent to 1990 levels). Note that the 2016 California Global Warming Solutions Act: Emissions Limit (Senate Bill 32) further requires California to reduce statewide GHG emissions to 40% below the 1990 level by 2030⁵⁴⁴;
- Prepare a scoping plan for achieving the limits and update the plan every five years;
- Maintain and continue reductions of emissions beyond 2020;
- Develop regulations for enforceable early action (by 2020);
- Develop regulations for a market-based system of declining annual aggregate emission limits for sources or categories of sources that emit GHG emissions;
- Convene an Environmental Justice Advisory Council to provide guidance for developing and updating the scoping plan; and
- Appoint an Economic and Technology Advancement Advisory Committee to provide recommendations for technologies, research, and GHG emission reduction measures.⁵⁴⁵

California established its cap and trade program pursuant to AB32. The program covers electricity generators, large industrial emitting facilities, distributors of transportation, natural gas, and other fuels. The program also links to programs in Quebec (in 2014) and Ontario (in 2018).⁵⁴⁶ AB32 also authorizes the Low Carbon Fuel Standard (approved in 2009, implemented in 2011) that regulates providers of gasoline and diesel transportation fuels by establishing a carbon intensity standard for fuels.⁵⁴⁷

The Air Resources Board annually collects a cost of implementation fee to administer its program under AB 32. Large greenhouse gas emitters, including oil refineries, electricity power plants (including imported electricity), cement plants, and other industrial sources pay this fee for CARB and other

⁵⁴⁵ California Assembly Bill 32, Chapter 488. 2006.

 $^{\rm 547}$ California Air Resources Board. 2019. Low Carbon Fuel Standard. Available at

https://www.arb.ca.gov/fuels/lcfs/lcfs.htm. Last Accessed May 11, 2019.

⁵⁴⁴ California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. California Air Resources Board. Available at: https://ww3.arb.ca.gov/cc/inventory/1990level/1990level.htm

⁵⁴⁶ California Air Resources Board. 2019. Unofficial electronic version of the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms. https://www.arb.ca.gov/cc/capandtrade/capandtrade/ct_reg_unofficial.pdf

California agencies to implement AB 32.^{548,549} Proceeds from the sale of state-owned allowances are deposited into the Greenhouse Gas Reduction Fund (GGRF) for California Climate Investments.⁵⁵⁰ More than \$10 billion in proceeds have been generated from the quarterly auctions from 2012 to February 2019.⁵⁵¹ A portion of allowances are freely allocated to covered entities. For electrical distribution and natural gas utilities, the law requires that the value of those allowances benefit ratepayers either by offsetting higher energy costs due to the cap-and-trade program or through greenhouse gas emissions reductions.⁵⁵² Electric utilities use greenhouse gas allowance proceeds to fund a variety of measures, including: energy efficiency projects, electric vehicle infrastructure, renewable energy, and customer rebates.⁵⁵³

In 2017, California extended its cap and trade program through 2030 and identified a series of funding priorities from auction revenues to include, but not be limited to:

- air toxic and criteria air pollutants from stationary and mobile sources;
- low- and zero-carbon transportation alternatives;
- sustainable agricultural practices that promote the transition to clean technology, water efficiency;
- improved air quality;
- healthy forests and urban greening;
- short-lived climate pollutants;
- climate adaptation and resiliency; and
- climate and clean energy research.⁵⁵⁴

As a complement to its cap and trade program, the 2017 Assembly Bill 617 tasked the Air Resources Board with developing a community emissions reduction program to measure and reduce air pollution from mobile and stationary sources at the neighborhood level in communities most impacted by air pollutants. ⁵⁵⁵ The Board is mandated to work with local air districts and communities to establish neighborhood air quality monitoring networks and a community emissions reduction program in selected locations, including providing grants to community-based organizations for technical assistance

⁵⁴⁸ Title 17, Div. 3, Chapter 1, Subchapter 10.

⁵⁴⁹ California Assembly Bill 32, Chapter 488. 2006.

⁵⁵⁰ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁵⁵¹ California Air Resources Board. 2019. Summary of Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auction/auction.htm.

⁵⁵² California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁵⁵³ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁵⁵⁴ California Assembly Bill 398, Chapter 135. 2017.

⁵⁵⁵ California Assembly Bill 617, Chapter 136. 2017.

and to support community participation in the program. The Board released its Community Air Protection Blueprint in 2018.^{556,557}

Another comprehensive state climate law is the 2007 Assembly Bill 118 that established the Alternative and Renewable Fuel and Vehicle Technology Program to provide funding to public projects to develop and deploy innovative technologies with respect to fuels and vehicles to attain state climate change policies.⁵⁵⁸ The state Clean Energy Commission funds this program in areas related to alternative fuel production; alternative fuel infrastructure; alternative fuel and advanced technology vehicles; workforce development; and other activities that accelerate progress in clean transportation through the Public Interest Research, Development, and Demonstration Fund (a system benefit charge) as well as increased fees on vehicle and vessel registrations, and identification plate service fees. ^{559,560,561,562,563} As per its March 2019 Investment Plan Update, the Commission has provided nearly \$830 million to more than 600 agreements covering a broad spectrum of alternative fuels and technologies, including infrastructure support for the 475,000 zero-emission vehicles in California, roughly half of all such vehicles in the United States.⁵⁶⁴

California's 2008 Sustainable Communities and Climate Protection Act of 2008 (Senate Bill or SB 375) is intended to reduce greenhouse gas emissions through coordinated land use, housing, and transportation planning, requiring the Air Resources Board to develop 2020 and 2035 regional greenhouse gas emissions reduction targets for passenger vehicle use for each of California's 18 metropolitan planning organization (MPO) regions.⁵⁶⁵ Each MPO must prepare a sustainable communities strategy as part of its regional transportation plan, and include land use, housing, and transportation strategies that would enable the region to meet statewide emissions targets. Incentives for developers, such as relief from certain regulatory requirements, are provided to encourage implementation of the development patterns and strategies of the SCS.⁵⁶⁶

Senate Bill 1532, adopted in 2012, requires California's Greenhouse Gas Reduction Fund be directed for specified purposes, including toward the most disadvantaged communities and households in California.⁵⁶⁷ The law also requires the California Department of Finance to submit an investment plan

⁵⁵⁶ California Assembly Bill 617, Chapter 136. 2017.

⁵⁵⁷ California Air Resources Board. 2018. Community Air Protection Blueprint. Available at https://ww2.arb.ca.gov/sites/default/files/2018-10/final_community_air_protection_blueprint_october_2018.pdf. ⁵⁵⁸ California Assembly Bill 118, Chapter 750. 2007.

⁵⁵⁹ California Assembly Bill 118, Chapter 750. 2007.

⁵⁶⁰ California Assembly Bill 8, Chapter 401. 2013.

⁵⁶¹ California Energy Commission. 2019. Alternative and Renewable Fuel and Vehicle Technology Program. Available at: https://www.energy.ca.gov/transportation/anniversary/.

⁵⁶² California Senate Bill 90, Chapter 905. 1997.

⁵⁶³ California Assembly Bill 995, Chapter 1051. 2000.

⁵⁶⁴ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁵⁶⁵ California Senate Bill 375, Chapter 728. 2008.

⁵⁶⁶ California Senate Bill 375, Chapter 728. 2008.

⁵⁶⁷ California Assembly Bill 1532, Chapter 807. 2012.

and an annual report of projects funded every three years and that revenues be appropriated annually through the Annual Budget Act.⁵⁶⁸ In 2012, California EPA was directed under Senate Bill 535 to identify disadvantaged communities for investment opportunities. Requirements were established such that 25% of the revenues allocated pursuant to the cap and trade investment plan were to be directed to projects that benefit disadvantaged communities. A minimum of 10% of the revenues were to be used within those disadvantaged communities.⁵⁶⁹ In 2016, Assembly Bill 1550 amended the percentage of funds in the investment plan allocated to disadvantaged communities and included additional funding for low-income households and low-income communities. These priority population investments total 35% of all funds in the Fund.^{570,571}

Senate Bill 862 requires the Air Resources Board to develop guidance on investments for disadvantaged communities, expenditure record preparation, reporting, tracking, and quantification approaches, and other guidance to be used by all agencies that receive appropriations from the Greenhouse Gas Reduction Fund. The law also established continuous appropriations totaling 60% of the GGRF monies beginning in FY 2015-16 as follows: 25% to the High-Speed Rail Project administered by the California High Speed Rail Authority; 20% to the Strategic Growth Council for the Affordable Housing and Sustainable Communities Program; 10% to California State Transportation Agency for the Transit and Intercity Rail Capital Program; and 5% to Low Carbon Transit Operations Program administered by Caltrans.⁵⁷² The legislature appropriates money from the Greenhouse Gas Reduction Fund to agencies to administer California Climate Investments programs that facilitate greenhouse gas emission reductions and provide economic, environmental, and public health benefits. In addition to agency administration of auction proceeds, the legislature makes additional annual investments through the Budget Act.⁵⁷³ Senate Bill 901 states that these annual Budget Acts shall include \$200 million through FY 2023-24 for forest health, fire prevention, and fuel reduction programs. 574 Additional legislation identifies other expenditures from the Greenhouse Gas Reduction Fund, such as a credit from a manufacturing tax and use fee and offsetting residents' fire prevention fee in State Responsibility Areas. As of the end of 2018, there were more than 20 state agencies involved in program development, project selection, and implementation of 60 California Climate Investments programs. 575

California's Renewable Portfolio Standard was legislatively established in 2002 to require entities regulated by the state Public Utility Commission to meet a standard of 20% of retail electricity sales from

⁵⁶⁸ California Assembly Bill 1532, Chapter 807. 2012.

⁵⁶⁹ California Senate Bill 535, Chapter 830. 2012.

⁵⁷⁰ California Assembly Bill 1550, Chapter 369, 2016.

⁵⁷¹ California Air Resources Board. Priority Population Investments. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm. Last accessed 11 May 2019.

⁵⁷² California Senate Bill 862, Chapter 36. 2014.

⁵⁷³ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁵⁷⁴ California Senate Bill 901, Chapter 626, 2018.

⁵⁷⁵ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

renewable power by 2017. ⁵⁷⁶ The Standard was increased under the Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350) to 50% of electricity sales from renewables by 2030. The law also includes energy efficiency provisions to double energy efficiency savings in electricity and natural gas end uses by 2030, and it established greenhouse gas reduction targets of 40% below 1990 levels by 2030. ⁵⁷⁷ Senate Bill 100, signed in 2018, increased the Renewable Portfolio Standard requirement from 50% to 60% by 2030. It requires that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve state agencies by December 31, 2045. ⁵⁷⁸ Other provisions of Senate Bill 350 include:

- State agencies are required to collaborate on studies by January 2017 to barriers and opportunities for renewables, energy efficiency, and near-zero and zero-emission vehicles, including studies to be led by the State Energy Commission on barrier and opportunities to increase low-income customers' access solar energy, contracting opportunities for local small businesses in disadvantaged communities, and low-income customers to access energy efficiency and weatherization investments, including those in disadvantaged communities. The Air Resources Board was directed to lead a study on barriers for low-income customers to zero-emission and near-zero-emission transportation options, including those in disadvantaged communities, as well as recommendations on how to increase access to zero-emission and near-zero-emission transportation options to low-income customers, including those in disadvantaged communities.⁵⁷⁹
- The Public Utility Commission is required to direct the six investor-owned electric utilities in California to file applications for programs that "accelerate widespread transportation electrification."⁵⁸⁰ These programs are required to reduce dependence on petroleum, increase the adoption of zero-emission vehicles, help meet air quality standards, and reduce greenhouse gas emissions.⁵⁸¹

Other state climate programs include:

- Public Interest Research Program In 1996, California established the public goods service charge for investor-owned utilities that funds public interest programs such as the Public Interest Energy Research program and renewable and energy efficiency programs under the California Public Utilities Commission.⁵⁸²
- *California Solar Initiative* The Initiative is implemented by various program administrators and is overseen by the state Public Utility Commission, was established in 2006 with a goal of 3,000 MW of solar energy on new and existing residential and commercial sites and 50% of new homes by

⁵⁷⁶ California Senate Bill 1078, Chapter 516. 2002.

⁵⁷⁷ California Senate Bill 350, Chapter 547. 2015.

⁵⁷⁸ California Senate Bill 100, Chapter 312. 2018.

⁵⁷⁹ California Senate Bill 350, Chapter 547. 2015.

⁵⁸⁰California Senate Bill 350, Chapter 547. 2015.

⁵⁸¹ California Senate Bill 350, Chapter 547. 2015.

⁵⁸² California Assembly Bill 1890, Chapter 854. 1996.

2020.^{583,584} It was designed with a declining ratepayer funded incentive structure to support the California solar market's growth while gradually reducing its reliance on subsidies. Exceeding its goal to install 1750 MW of rooftop solar on businesses and existing homes, the General Market program closed its direct incentive program in 2016. Solar customers are eligible for California's Net Energy Metering Program, which provides financial credit for customer-generated power fed back to the grid.^{585,586} The Solar Initiative has several subprograms that provide incentives, including the Multifamily Affordable Solar Housing Program and the Thermal Program.⁵⁸⁷ In addition to the state Solar Initiative, the legislature envisioned California would have other programs to support on-site solar, including the California Energy Commission's New Solar Homes Partnership and various solar programs offered through the publicly owned utilities.⁵⁸⁸ The statewide effort that includes the Solar Initiative and these other programs is collectively known as *Go Solar California*.⁵⁸⁹

- Inventory of emissions Assembly Bill 4420 of 1988 directed the California Energy Commission to conduct a greenhouse gas inventory and study climate change impacts on California's energy supply and demand, economy, environment, agriculture, and water supplies and develop recommendations on how to address impacts.⁵⁹⁰ Subsequent legislation transferred responsibility for the greenhouse gas inventory to the California Air Resources Board.⁵⁹¹ The California Climate Action Registry was established in 2000 to identify and qualify third-party organizations to provide assistance in monitoring greenhouse gas emissions, setting emissions baselines in coordination with the state Energy Commission. The Commission conducts five-year updates of the inventory.⁵⁹²
- *Mobile Sources* The 2002 California "Pavley" law tasked the state Air Resources Board with developing regulations to achieve maximum feasible reduction of greenhouse gas emissions from passenger vehicles and light-duty trucks.⁵⁹³ The federal Clean Air Act authorizes California to maintain more stringent motor vehicle emissions standards than federal standards, provided the U.S. Environmental Protection Agency has issued a "waiver" of preemption to California.⁵⁹⁴

⁵⁸³ California Senate Bill 1, Chapter 132. 2006.

⁵⁸⁴ Go Solar California. 2019. California Distributed Generation Programs. Available at https://www.californiadgstats.ca.gov/programs/#_subsection_7.

⁵⁸⁵ California Public Utilities Commission. 2019. California Solar Initiative. Available at https://www.cpuc.ca.gov/general.aspx?id=6043.

⁵⁸⁶ California Public Utilities Commission. 2019. CSI General Market Program. Available at https://www.cpuc.ca.gov/General.aspx?id=6058.

⁵⁸⁷ California Public Utilities Commission. 2019. California Solar Initiative. Available at https://www.cpuc.ca.gov/General.aspx?id=6043.

⁵⁸⁸ California Public Utilities Commission. 2019. California Solar Initiative. Available at https://www.cpuc.ca.gov/General.aspx?id=6043.

⁵⁸⁹ California Public Utilities Commission. 2019. California Solar Initiative. Available at https://www.cpuc.ca.gov/General.aspx?id=6043.

⁵⁹⁰ California Assembly Bill 4420, Chapter 1506. 1988.

⁵⁹¹ California Assembly Bill 1893, Chapter 77. 2006.

⁵⁹² California Senate Bill 1771, Chapter 769. 2000.

⁵⁹³ California Assembly Bill 1493, Chapter 200.2002.

⁵⁹⁴ 42 U.S. Code § 7543.State standards.

Other states are authorized to adopt California's standards as well.^{595,596} EPA granted such a waiver in 2009 authorizing what became known as the California Low Emission Vehicle program (LEV) and Zero Emission Vehicle (ZEV) program. California's Advanced Clean Cars Standard, developed in coordination with EPA and National Highway Traffic Safety Administration was approved in January 2012. The standard incorporates into a single coordinated regulation increasingly stringent emissions standards for criteria air pollutants and greenhouse gases for new passenger vehicles through the 2025 model year.⁵⁹⁷

- Carbon sequestration Legislation in 2011 recognized the carbon sequestration capacity of California's forests and requires the California Board of Forestry and Fires Protection to ensure its regulations governing commercial forest harvesting consider the capacity of forest resources to sequester carbon emissions sufficient to meet or exceed the state's greenhouse gas reduction requirements for the forestry sector, consistent with the AB 32 Scoping Plan. The law permits fees collected under the California Global Warming Solutions Act of 2006 to be used for related studies.⁵⁹⁸
- Electric Program Investment Charge Established by the Public Utility Commission in 2012 through ratepayer fees, the Charge supports public interest investments in applied research and development, technology demonstration and deployment, and market facilitation of clean energy technologies and approaches for the benefit of electricity ratepayers of the three large California Investor Owned Utilities.⁵⁹⁹ The Commission also cited benefits of meeting AB 32 greenhouse gas emissions reductions, the move toward a cleaner energy economy, continuing California's leadership position as a clean technology innovator, energy security and independence, environmental benefits. Eighty percent of the funds are administered by the California Energy Commission and the remaining 20% of funds are administered by the three investor owned utilities with oversight by the Public Utility Commission.⁶⁰⁰
- *Mandatory Building Standards* In 2013, California enacted legislation to adopt mandatory building standards for installation of future electric vehicle charging infrastructure for parking spaces in multifamily and nonresidential development.⁶⁰¹
- Electric Vehicles In 2014, Senate Bill 1275, "Charge Ahead California," established a goal of 1 million zero-emission and near-zero-emission vehicles in service by 2023. Planning and reporting on vehicle incentive programs and forecasting needs to meet the goal.⁶⁰²

⁵⁹⁵ 74 FR 32744 (July 8, 2009).

⁵⁹⁶ 42 U.S. Code § 7543.State standards.

⁵⁹⁷ Advanced Clean Cars Program. 2019. Available at https://ww2.arb.ca.gov/our-work/programs/advanced-cleancars-program/about

⁵⁹⁸ California Assembly Bill 1504, Chapter 534. 2011.

⁵⁹⁹ California Public Utilities Commission. 2012. Decision 12-05-037 for Rulemaking 11-10-003. May 24, 2012. Available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/167664.pdf

⁶⁰⁰ California Public Utilities Commission. 2012. Decision 12-05-037 for Rulemaking 11-10-003. May 24, 2012. Available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/167664.pdf

⁶⁰¹ California Assembly Bill 1092, Chapter 401. 2013.

⁶⁰² California Senate Bill 1275, Chapter 530. 2014.

- Short-lived Climate Pollutants Senate Bill 605 establishes the state's Short-lived Climate Pollutant strategy and the 2016 Senate Bill 1383 establishes statewide reduction targets.^{603,604}
- Environmental Quality Act guidelines In 2018, California finalized amendments to its guidelines pursuant to Senate Bill 97 for implementation of the California Environmental Quality Act (CEQA). The guidelines require lead state agencies to analyze greenhouse gas emissions of proposed projects regulated under CEQA; analyze the significance of their impacts (including considering the projects consistency with California's climate goals); consider a range of potential mitigation options when emissions are determined to be significant; and develop programmatic project-based greenhouse gas emission reduction plans as appropriate.^{605,606}
- *Regional Climate Collaboratives* In 2018, California established a regional climate collaborative program, to be administered by the Strategic Growth Council, to assist under resourced communities in a region to access statewide public and other grant monies for climate change mitigation and adaptation projects.⁶⁰⁷

Lead Agencies

The California Public Utility Commission (CPUC) is charged with protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates, with a commitment to environmental enhancement and a healthy California economy.⁶⁰⁸ The Commission regulates investorowned electric and natural gas utilities operating in California.⁶⁰⁹ Its energy responsibilities include: electric costs; electric power procurement and generation; infrastructure; customer energy resources, energy efficiency; energy advice letter and tariff information; electric rates; and natural gas and oil pipeline regulation. ⁶¹⁰ The Commission also regulates privately owned electric, natural gas, telecommunications, water, and transportation companies as well as the safety of both publicly and privately owned railroad and rail transit companies/agencies and rail crossings. It regulates ratepayer-funded energy efficiency programs as well as implements and administers the state Renewable Portfolio Standard compliance rules for California's retail sellers of electricity, including which include investor-owned utilities, electric service providers, and community choice aggregators.^{611,612} The Commission also develops policies to support deployment of zero emission vehicles (ZEV) and works with utilities to provide rebates to ZEV drivers for charging infrastructure, rates, and vehicle-grid integration technologies. Funds for these rebates come from the utilities' sales of credits received through

⁶¹¹ California Public Utilities Commission. 2019. Energy Efficiency. Available at

⁶⁰³ California Senate Bill 605, Chapter 523. 2014.

⁶⁰⁴ California Senate Bill 1383, Chapter 395. 2016.

⁶⁰⁵ CEQA, The California Environmental Quality Act. 2018. Amendments and Additions to the State CEQA Guidelines. Available at http://resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf.

⁶⁰⁶ Senate Bill 97, Chapter 187. 2007.

⁶⁰⁷ California Senate Bill 1072, Chapter 377. 2018.

 $^{^{608}}$ California Public Utilities Commission. 2019. Utilities and Industries. Available at

https://www.cpuc.ca.gov/utilitiesindustries/.

⁶⁰⁹ California Public Utilities Commission. 2019. Electric. Available at https://www.cpuc.ca.gov/energy/.

⁶¹⁰ California Public Utilities Commission. 2019. Electric. https://www.cpuc.ca.gov/energy/.

https://www.cpuc.ca.gov/egyefficiency/.

⁶¹² California Public Utilities Commission. 2019. California Renewable Portfolio Standard. Available at https://www.cpuc.ca.gov/rps/.

California's Low Carbon Fuel Standard, administered by the Air Resources Board. ⁶¹³ The Commission also oversees distribution of all investor owned utilities allocated cap and trade allowance auction proceeds to the utilities' residential, small business, and emissions-intensive, trade-exposed retail customers. The Commission is authorized to allow investor owned utilities to use up to 15% of proceeds for approved clean energy and energy efficiency projects not otherwise funded.⁶¹⁴

The California Energy Commission (CEC) is the state's primary energy policy and planning agency. Its responsibilities include: developing plans and policy through analysis; administering the state Renewable Portfolio Standard (including utility disclosure, power plant certification, and verification of targets); adopting and enforcing appliance and building energy efficiency standards; investing in energy research and development and demonstration projects and development and deployment of low carbon fuels and vehicle technologies; and managing the state's investments in electric vehicle infrastructure and hydrogen refueling stations.^{615,616} The Energy Commission is the state's lead environmental permitting authority for all thermal power plants 50 MW and greater, including a project's associated infrastructure such as electric transmission lines, natural gas lines, and water pipelines. It maintains compliance and enforcement authority over these plants.⁶¹⁷ The Commission also leads and collaborates on future energy infrastructure planning in California as well as emergency response planning for loss of energy supply.^{618,619}

California's Climate Action Team was created in 2005 by Executive Order S-3-05and directs the secretary of the California Environmental Protection Agency to coordinate efforts with meeting greenhouse gas reduction targets with the heads of other state agencies.⁶²⁰ The California Air Resources Board (CARB), formed in 1967, is charged with providing a unified statewide approach to address air pollution in the state. While CARB is designated as the lead agency to implement AB32, the law directs that the Climate Action Team continue its role of coordinating overall climate change policy.^{621,622} AB32 also directs CARB to consult with the Public Utilities Commission in development of emissions reduction measures, including limits on emissions of greenhouse gases applied to electricity and natural gas providers

⁶¹⁵ California Energy Commission. 2019. About Us. Available at

- https://www.energy.ca.gov/commission/fact_sheets/core/sit/SIT-OverseeingEnergyInfrastructure.pdf. ⁶¹⁹ California Energy Commission. 2019. About Us. Available at
- https://www.energy.ca.gov/commission/fact_sheets/core/CEC-CoreResponsibilities.pdf.

⁶²⁰ Governor's Executive Order # S-03-05. July 2005.

⁶¹³ California Public Utilities Commission. 2019. Zero Emission Vehicles. Available at https://www.cpuc.ca.gov/General.aspx?id=5597.

⁶¹⁴ California Air Resources Board. 2019. Cap-and-Trade Program Summary of 2013-2017 Electrical Distribution Utility Allocated Allowance Value Usage. Available at

https://www.arb.ca.gov/cc/capandtrade/allowanceallocation/edu2013-2017useofvaluereport.pdf.

 $https://www.energy.ca.gov/commission/fact_sheets/core/CEC-CoreResponsibilities.pdf.$

⁶¹⁶ California Public Utilities Commission. 2019. California Renewable Portfolio Standard. Available at https://www.cpuc.ca.gov/rps/.

⁶¹⁷ California Energy Commission. 2019. Overseeing Energy Infrastructure. Available at

https://www.energy.ca.gov/commission/fact_sheets/core/sit/SIT-OverseeingEnergyInfrastructure.pdf.

⁶¹⁸California Energy Commission. 2019. Overseeing Energy Infrastructure. Available at

⁶²¹ California Air Resources Board. 2019. History. Available at https://ww2.arb.ca.gov/about/history.

⁶²² California Assembly Bill 32, Chapter 488. 2006.

regulated by the Commission in order to ensure that electricity and natural gas providers are not required to meet duplicative or inconsistent regulatory requirements.⁶²³

Benefits Directed to Disadvantaged Communities and consumers

Key definitions associated with efforts in California to direct state climate program benefits to disadvantaged communities and consumers include:

Disadvantaged communities – The 2006 Global Warming Solutions Act (Assembly Bill 32) directed CARB to ensure that greenhouse gas emission reduction programs, where applicable and to the extent feasible, target public and private investment toward the most disadvantaged communities in California and provide an opportunity for small businesses, schools, affordable housing associations, and other community institutions to participate in and benefit from statewide efforts to reduce greenhouse gas emissions. The law does not define "disadvantaged communities."⁶²⁴ Senate Bill 535, adopted in 2012, requires the California Environmental Protection Agency to define "disadvantaged community" using criteria based on geographic, socioeconomic, public health, and environmental hazard criteria, including but not limited to: areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation; or areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high-rent burden, sensitive populations, or low levels of educational attainment.⁶²⁵

The Agency currently identifies disadvantaged communities as the top 25% most impacted of California's approximately 8,000 census tracts in CalEnviroScreen 3.0, a screening tool used to help identify communities disproportionally burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution. In June 2018, CalEPA's Office of Environmental Health Hazard Assessment (OEHHA) issued an update of CalEnviroScreen 3.0 results to address a minor flaw in the software algorithm, which resulted in the addition of two additional census tracts to its Disadvantaged Communities List for Climate Investments. ^{626,627}

• *Priority populations* – Priority populations include the State's disadvantaged communities, lowincome communities, and low-income households.⁶²⁸ The state's Regional Climate Collaborative Program defines *under resourced communities* to be those that are defined as "priority populations."

⁶²³ California Assembly Bill 32, Chapter 488. 2006.

⁶²⁴ California Assembly Bill 32, Chapter 488. 2006.

⁶²⁵ California Senate Bill 535, Chapter 830. 2012.

⁶²⁶ California Environmental Protection Agency. 2017. Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De León). Available at https://calepa.ca.gov/wp-content/uploads/sites/6/2017/04/SB-535-Designation-Final.pdf.

⁶²⁷ California EPA, Office of Environmental Health Hazard Assessment. 2019. SB 535 Designation of Disadvantaged Communities. Available at https://oehha.ca.gov/calenviroscreen/sb535.

⁶²⁸ Priority Populations. California Climate Investments. Available at:

http://www.caclimateinvestments.ca.gov/priority-populations

• *Low-income* - Low-income communities and households are defined as the census tracts and households, respectively, that are either at or below 80% of the statewide median income, or at or below the threshold designated as low-income by the California Department of Housing and Community Development's list of state income limits.^{629,630,631}

Funds from California's cap and trade program are directed to the Greenhouse Gas Reduction Fund and collectively implemented under the California Climate Investments initiative through various state agencies. The following section summarizes investments through the 1. California Climate Investments, 2. the California Public Utilities Commission, and 3. the California energy Commission.

1. California Climate Investments

As noted previously, legislation in 2016 (AB 1550) amended the percentage of funds in the investment plan allocated to disadvantaged communities under SB 535 and included additional funding for low-income households and low-income communities as follows:

- a minimum of 25% to projects located in and benefiting individuals living in disadvantaged communities;
- an additional minimum of 5% to projects that benefit low-income households or to projects located within and benefiting individuals living in low-income communities located anywhere in the state; and
- an additional minimum of 5% to projects located in and benefiting low-income households or low-income communities that are within a half mile of a disadvantaged community.⁶³²

CARB has developed a helpful graphic that demonstrates how the 35% minimum of "priority population investments" to disadvantaged communities and low-income communities and households is allocated:

⁶²⁹ California Assembly Bill 1550, Chapter 369. 2016.

⁶³⁰ California Assembly Bill 1550, Chapter 369. 2016.

⁶³¹ California Senate Bill 1072, Chapter 377. 2018.

⁶³² California Assembly Bill 1550, Chapter 369. 2016.

Investment Minimums and Requirements



Source: California Air Resources Board. Priority Population Investments. Available at https://www.arb.ca.gov/cc/capa ndtrade/auctionproceeds/commu nityinvestments.htm. Last accessed 11 May 2019.

The annual California Climate Investments report to the legislature provides a snapshot of investments from the proceeds of state allowances under the broad program areas of

- o Transportation and Sustainable Communities;
- o Clean Energy and Energy Efficiency; and
- Natural Resources and Waste Diversion.

Each summary below describes how the particular funds for that program reach priority populations. Extra points are often given for projects that benefit priority populations.⁶³³ Examples include:

- Transportation and Sustainable Communities:
- Zero and near-zero emissions vehicles Senate Bill 1275 establishes a goal of 1 million zeroemission and near-zero-emission vehicles in service by 2023 and provides for vehicle retirement and replacement. This law requires that use of Greenhouse Gas Reduction Funds be consistent with the appropriations processes and criteria established in the Fund's Investment Plan and Communities Revitalization Act. ^{634,635} Objectives under the law include: increasing access to and benefits from ZEVs for disadvantaged, low-income, and moderate-income communities and consumers and enhancement of California's fleet modernization program (for voluntary retirement of high polluting passenger vehicles, light- and medium-duty trucks). The law includes providing a mobility option that provides a voucher for public transit or car sharing to ensure participation for low-income motor vehicle owners.⁶³⁶ Low-income motor vehicle owner is defined as a person whose income does not exceed 225% of the federal poverty level, as published quarterly in the Federal Register by the U.S. Department of Health and Human

⁶³³ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶³⁴ California Senate Bill 1275, Chapter 530. 2014.

⁶³⁵ California Assembly Bill 1532, Chapter 807. 2012.

⁶³⁶ California Senate Bill 1275, Chapter 530. 2014.

Services.^{637,638} In 2014, Senate Bill 1204 created the California Clean Truck, Bus, and Off-Road Vehicle Equipment Technology Program funded by the Greenhouse Gas Reduction Fund for development, demonstration, piloting, and deployment of zero- and near-zero-emission truck, bus, and off-road vehicle and equipment technologies with priority given to projects benefiting disadvantaged communities.⁶³⁹ Some examples of benefits for which funding is available to benefit priority populations include:

- lower-income consumers can receive a low-interest loan and a vehicle price buydown to purchase a new or used zero-emission, plug-in hybrid electric or hybrid vehicle;
- incentives to retire older more polluting vehicles and replace them with newer, cleaner advanced technology hybrid and zero-emission vehicles,
- alternative mobility options for low-income residents within and near disadvantaged communities of the San Joaquin Valley and South Coast air districts (with expansion under way in the Bay Area and Sacramento air districts);
- larger rebates for low-income applicants and for public fleets located in disadvantaged communities for purchase or lease of light-duty vehicles, including electric, fuel-cell, and plug-in hybrid electric vehicles;
- vouchers for public and private operators of medium- and heavy-duty truck and bus fleets for the purchase of zero-emission, hybrid, and low NOx emitting trucks and buses with larger rebates for vehicles located in disadvantaged communities;
- grants for clean mobility projects (including car share, bike share, vanpool, and ride sourcing) in disadvantaged communities using zero-emission or plug-in hybrid electric vehicles and associated infrastructure;
- support for the public agency CalVans to run a program that provides access to lower greenhouse-gas -emitting and affordable vanpools for agricultural workers in disadvantaged areas of the San Joaquin Valley and other agricultural areas.⁶⁴⁰
- The Affordable Housing and Sustainable Communities program invests in projects that reduce vehicle miles traveled by supporting compact, infill development patterns, encouraging active transportation and transit usage, and protecting agricultural land from sprawl development. Key benefits of this program are creating affordable housing near biking, walking, and public transit while improving air quality and increasing transit options.⁶⁴¹ Most recent publicly available data note this program made investments to create more than 3,200 units of affordable housing near

⁶³⁷ California Senate Bill 1275, Chapter 530. 2014.

⁶³⁸ California Code, Health and Safety Code - HSC § 44062.1. Available at https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-44062-1.html.

⁶³⁹ California Senate Bill 1204, Chapter 524. 2014.

⁶⁴⁰ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁴¹ California Strategic Growth Council. 2018. Integrating Affordable Homes and Sustainable Transportation Available at https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ccidoc/ahsc_083018_ada.pdf.

transit. The Strategic Growth Council structured the program to encourage local agencies and developers to plan and build projects together that address the state's serious housing crisis, mobility, and climate goals.⁶⁴²

- Research Assembly Bill 109 allocates \$11 million from Greenhouse Gas Reduction Fund to support "research on reducing carbon emissions, including clean energy, adaptation, and resiliency, with an emphasis on California."⁶⁴³ Supporting and protecting vulnerable communities from the impacts of climate change is the first priority of the research program's Investment Plan which notes that research projects and partnerships should be designed to address and facilitate achieving climate outcomes in low-income and disadvantaged communities ... "through direct connection with communities and community-based organizations, explicit examination of replicability of projects in low-income and disadvantaged communities, or other mechanisms that demonstrate how research investments will be leveraged to support low-income and disadvantaged community engagement, are included in the evaluation criteria for research proposals.⁶⁴⁵
- The Low Carbon Transit Options Program provides operating and capital assistance for transit agencies to reduce greenhouse gas emissions and improve mobility with a priority on serving disadvantaged communities. The Department of Transportation (Caltrans) funds projects that support new or expanded bus, ferry, rail services, or transit facilities, such as zero-emission buses and new equipment, new transit routes, expansion of bus connections, fare reduction, and voucher programs. ^{646,647}
- The Advanced Technology Freight Demonstration Projects provide funding for pre-commercial demonstrations of advanced vehicles, engines, equipment, and transportation systems (zeroemission or near zero-emission vehicles and equipment) that use less petroleum and emit less GHG and air pollutant emissions than conventional, diesel-fueled equipment. All projects must benefit disadvantaged communities and projects within disadvantaged communities receive enhanced application scoring.⁶⁴⁸

646 Caltrans, and R. Improving Rus And Rail Convisor For

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ccidoc/lctop_082918_ada.pdf.

⁶⁴⁷ California Climate Investments. 2019. Transportation and Sustainable Communities.

http://www.caclimate investments.ca.gov/sustainable-communities-clean-transportation

⁶⁴² California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁴³ California Strategic Growth Council. 2018. Climate Change Research Program Research Investment Plan. Available at http://sgc.ca.gov/programs/climate-research/docs/20181003-Approved-Research_Investment_Plan.pdf.

 ⁶⁴⁴ California Strategic Growth Council. 2018. Climate Change Research Program Research Investment Plan. Available at http://sgc.ca.gov/programs/climate-research/docs/20181003-Approved-Research_Investment_Plan.pdf.
⁶⁴⁵ California Strategic Growth Council. 2018. Climate Change Research Program Round 2 Fiscal Year 2018-2019 Program Solicitation. Available at http://sgc.ca.gov/programs/climate-research/docs/20181003-Approved-Research_Investment_Plan.pdf.
CCRP_Round_2_Solicitation.pdf.

⁶⁴⁶ Caltrans. 2018. Improving Bus And Rail Services For All Californians. Available at

⁶⁴⁸ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

- Clean Mobility in Schools program is a new transportation equity project being funded through CARB's Low Carbon Transportation Program pursuant to Senate Bill 1275. The grant program will deploy scalable clean transportation and mobility strategies for reducing GHG emissions from schools in disadvantaged communities. Strategies may include electric vehicles and electric vehicle supply equipment in schools (K–12), car sharing for staff at schools to rotate using zero emission vehicles, and outreach to students, parents and the community.⁶⁴⁹
- Community Air Grants Program Assembly Bill 617 directs CARB to assess and develop measures 0 to reduce air pollution in disproportionately burdened communities across the State.⁶⁵⁰ The Community Air Grants program is designed to help local organizations build capacity to become active partners in identifying, evaluating, and ultimately reducing exposure to harmful air emissions. Projects are selected by CARB's Environmental Justice Office and are located in disadvantaged or low-income communities. ⁶⁵¹ An example of a Greenhouse Gas Reduction Fund-supported project is led by Casa Familiar a community-based organization to better understand and ultimately reduce air quality impacts from vehicle exhaust at the border crossing in San Ysidro Port of Entry. The project will allow Casa Familiar to sustain and expand a current network of community-operated air monitors, providing residents of the border region, the local air district, CARB, and the United States Environmental Protection Agency with the necessary data to better understand air quality impacts from vehicular border crossing at the new Port of Entry, currently under construction. The goals for the project are to inform San Ysidro residents of the air quality levels and leverage partnerships to work towards air quality solutions. Community-to-community outreach and training is a unique aspect of this project.⁶⁵²
- Community Air Protection Funds are used for incentive grants to help owners of older high-polluting vehicles and equipment replace them with newer models that have much lower or zero emissions. Grant funds may also be used for changes at local industrial facilities that reduce emissions of toxic or smog-forming pollutants, to build zero-emission charging stations, or to support local measures that air districts and communities identify through the Assembly Bill 617 Community Emissions Reduction Programs. At least 55% of funds go to projects benefiting disadvantaged communities. An example project is the replacement of 61 heavy-duty diesel trucks with near-zero-emission renewable natural gas trucks for solid waste collection; the new trucks are fueled by renewable natural gas produced from organic waste at the awardee's anaerobic digestion facility. The project is intended to result in NOx, diesel PM, GHG emission reductions over the seven-year project life. The awardee is also investing in strategically locating

 $https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/{\tt 2019_cci_annual_report.pdf}.$

⁶⁵⁰ California Assembly Bill 617, Chapter 136. 2017.

⁶⁴⁹ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

⁶⁵¹ California Air Resources Board. 2018. Community Air Protection Blueprint. Available at

https://ww2.arb.ca.gov/sites/default/files/2018-10/final_community_air_protection_blueprint_october_2018.pdf. ⁶⁵² California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

RNG refueling stations throughout its service area to minimize miles traveled and improve fleet operating efficiencies.⁶⁵³

- Low Carbon Transit Operations Several programs are developed to increase technical assistance and capacity building to disadvantaged communities. A pilot program was established in 2018 with the Low Carbon Transit Operations Program and the Transit and Intercity Rail Capital Program to help determine the best strategies transit agencies can implement towards enhancing the benefits of projects located in disadvantaged communities. ⁶⁵⁴
- The Transformative Climate Communities Program This program was established by Assembly Bill 2722 is administered through the Strategic Growth Council with funds from the Greenhouse Gas Reduction Fund to support community-driven, collaborative projects that integrate a variety of California Climate Investments project types within a five-square-mile area to create transformative change at the neighborhood level.^{655,656} The majority of a project area must be in census tracts that are within the top 5% of the most disadvantaged communities, with the remainder of the project occurring within a disadvantaged or low-income community. The program focuses on dense investment in a specific geographic region intended to empower the communities most impacted by pollution to choose their community vision, strategies, and projects to enact transformational change using data-driven milestones and measurable outcomes. An example is the January 2018 award of \$33.5 million to the Watts Rising Collaborative, led by the Housing Authority of the City of Los Angeles. The grant will support a suite of coordinated projects, including low-carbon transportation options, affordable housing, thousands of street trees, and other amenities that respond to the unique needs of the community.^{657,658,659} The program was developed through a stakeholder-involved process, including a statewide summit with 250 participants and workshops held throughout California.⁶⁶⁰
- Regional Climate Collaboratives Citing the Transformative Climate Communities grant program, Senate Bill 1072, adopted in 2018, established the Regional Climate Collaborative

⁶⁵³ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁵⁴ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁵⁵ California Assembly Bill 2722, Chapter 371. 2016.

⁶⁵⁶ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁵⁷ California Strategic Growth Council. 2019. Transformative Climate Communities Fact Sheet. Available at http://sgc.ca.gov/programs/tcc/docs/20190204-Facts_Sheet_TCC.pdf

⁶⁵⁸ California Strategic Growth Council. 2019. Transformative Climate Communities. Available at http://sgc.ca.gov/programs/tcc/vision/.

⁶⁵⁹ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁶⁰ California Strategic Growth Council. 2019. Transformative Climate Communities. Available at http://sgc.ca.gov/programs/tcc/vision/.

Program. Administered under the Strategic Growth Council to assist under resourced communities build capacity to access state grant funds for climate change mitigation and adaptation projects, the program is new and no funds for it are appropriated to date. The law authorizes the council to award specified annual grants to collaboratives for such assistance as funds become available from the legislature. The program is targeted to under resourced communities, low-income communities and households and/or "severely disadvantaged communities" with a median household income less than 60% of the statewide average.^{661,662} A collaborative is a coordinated body of regional stakeholder groups that are located in, serve, and represent the needs of the under-resourced communities within that region and that provide capacity building to those under resourced communities within its region to access statewide public and other grant monies for climate change mitigation and adaptation projects that maximize the benefits for the region.⁶⁶³

Clean Energy and Energy Efficiency Investments:

- Energy and Weatherization Assistance LIHEAP and the U.S. Department of Energy's Weatherization Assistance Program are administered by the California Department of Community Services and Development. The Department has traditionally partnered with a network of private, nonprofit, and local government organizations dedicated to reducing poverty by helping low-income individuals and families achieve and maintain self-sufficiency, meet their home energy needs, and reduce their utility costs through energy efficiency upgrades and access to clean renewable energy. Greenhouse Gas Reduction Funds are used to augment services provided with federal funding:
 - The Department was first allocated Greenhouse Gas Reduction funds to implement a new Low-Income Weatherization Program in FY 2014-15, including installation of energy efficiency and renewable energy projects in single and multifamily low-income housing units at no cost to residents. To be eligible for state funds, households were initially required to be in disadvantaged communities with household income up to 60% of the state median income or household income up to 80% area median income. With state funds, the program was also able to incorporate renewable energy. One provider, the nonprofit GRID Alternatives, was selected to administer the Single-Family Solar Program on a statewide basis. The Department also awarded funds to a now-sunset solar pilot project that involved a consortium of several LIHEAP agencies.
 - A new program model was introduced to overcome some of the challenges of integrating the use of LIHEAP funding and the separate administration of the Single-Family/Small Multi-Family Energy Efficiency and Solar Programs, and to achieve administrative efficiencies. Five regional administrators were selected through a competitive procurement process for an integrated Single-Family Energy Efficiency and Solar Program that continued through early 2019.

⁶⁶¹ California Assembly Bill 1550, Chapter 369. 2016.

⁶⁶² California Senate Bill 1072, Chapter 377. 2018.

⁶⁶³ California Senate Bill 1072, Chapter 377. 2018.

- Due to reduced Greenhouse Gas Reduction Fund appropriations and in response to legislative priorities that included a focus on farmworker housing, the Department has implemented a new program, the Farmworker Housing Component. This program will focus on the direct installation of energy efficiency measures and solar systems for farmworker households at no cost to the residents. Households receiving the program must qualify as low-income farmworker housing and be in one of the 12 California counties with the largest farmworker populations. Energy efficiency services will be available to single-family homes (including mobile homes and manufactured housing) and stand-alone buildings of two to four units occupied by low-income farmworker families, whether owner-occupied or rentals. Single-family homes occupied by qualifying homeowners are eligible to receive solar and fuel switching measures. If part of a two-to-four-unit building is owner-occupied, the Department will consider eligibility for these measures on a case-by-case basis.⁶⁶⁴ Households will be assessed and home repair will be allowed up to a cost cap to enable a home to receive energy efficiency or solar installations.
- State funds have also been awarded to a statewide administrator, the nonprofit Association for Energy Affordability, for the ongoing Multi-Family Energy Efficiency & Renewables Program, which provides technical assistance and incentives for the installation of energy efficiency measures and solar in low-income multifamily dwellings serving priority populations. Properties must be located in a disadvantaged community, or within a half mile of a disadvantaged community. Eligibility for properties housing farmworkers outside of these areas will be considered on a case-by case basis. All projects must reduce greenhouse gas emissions and reduce energy consumption. Buildings may qualify for services and incentives provided that at least 66% of the dwelling units in a building are occupied by households with incomes at or below 80% of area median income.⁶⁶⁵
- Community Solar The Department of Community Services and Development Solar Pilot Program was designed to expand access to renewable energy for low-income households that do not have the ability to participate in existing low-income solar programs due to a lack of home ownership or because of inadequate roofing for solar. Participants may include owners or renters of single-family homes, multifamily dwelling units, or mobile homes not already benefiting from existing solar installations. Household income eligibility is set at the Assembly Bill 1550 definition of at or below 80% of state median income or 80% of the area median income. While the generating solar facility may be located anywhere in the state in the relevant utility service territory, additional points were given to proposals if the facility is located within an Assembly Bill 1550 low-income community or a disadvantaged community and based on proximity to

https://www.csd.ca.gov/Pages/Farmworker-Housing-Component.aspx.

⁶⁶⁵ Department of Community Services and Development. 2019. Low-Income Weatherization Program Guidelines, Multi-Family Energy Efficiency & Renewables Program. Available at

⁶⁶⁴ Department of Community Services and Development. 2019. Low-Income Weatherization Program Guidelines, Farmworker Housing Component. Available at

https://www.csd.ca.gov/Pages/Multi-Family-Energy-Efficiency-and-Renewables.aspx.

participant households.⁶⁶⁶ Two awards supporting the development and installation of community solar have been made under this pilot program to GRID Alternatives; the projects will provide solar installation training and meet specific local hiring and wage requirements.⁶⁶⁷

• The Renewable Energy for Agriculture program provides funding for on-site renewable energy technologies (such as wind and solar) for agricultural operations. The State Energy Commission targets outreach with partners such as California Farm Bureau and California Department of Food and Agriculture, including a streamlined application, budget process, and schedule that aligned best with a farmer's calendar. Almost 40% of the program awards are in disadvantaged communities while almost 60% of program funding is in low-income communities.⁶⁶⁸

Natural Resources and Waste Diversion:

- Conservation Corps The California Conservation Corps that provides young men and women 18 to 25 years old a year of paid service to the state working on environmental projects and responding to natural and man-made disasters, gaining career building skills and experience. Climate investment funds have been used to support projects for fire prevention and forest health management, energy conservation, and urban greening projects. Most participants are from disadvantaged or low-income communities or low-income households. While the program does not have formal targeted hiring practices, they do actively recruit from priority populations.^{669,670}
- The Urban and Community Forestry Program of the Department of Forestry and Fire Protection is supported with Greenhouse Gas Reduction Funds for urban forest expansion, management, improvement, and utilization of urban tree waste for wood products and bioenergy. Projects benefiting disadvantaged communities are eligible for a cost-share waiver and receive enhanced application scoring. As an example, the El Centro "Free Trees" project will maintain 1,000 climate-appropriate trees within the city of El Centro, providing future shade benefits in a region where normal summer temperatures can reach 118 °F. This project will train and provide stipend-based jobs for 25 certified tree stewards serving as a workforce development project for residents in low-income and disadvantaged communities for careers in the tree-care industry.⁶⁷¹

⁶⁶⁶Department of Community Services and Development. 2018. Low-Income Weatherization Program Guidelines, Community Solar Pilot Program, Available at https://www.csd.ca.gov/Shared%20Documents/Community-Solar-Program-Guidelines.pdf.

⁶⁶⁷ Department of Community Services and Development. 2019. Press Release. Available at https://www.csd.ca.gov/Pages/Press-Releases-Page-1.aspx.

⁶⁶⁸ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁶⁶⁹ California Conservation Corps. 2019. Available at https://ccc.ca.gov/.

⁶⁷⁰ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁷¹ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

Food waste - Projects to prevent food waste from being generated and/or becoming landfill waste, promote distribution of rescued food to people, and require food waste residuals to be composted or digested receive support under the Greenhouse Gas Reduction Fund, when available. CalRecycle's Food Waste Prevention Program projects are supporting 78 full-time equivalent jobs with an average hourly wage of \$23. More than 8,000 project work hours have been performed by priority populations.⁶⁷² One project under this program will fund a new "Produce Depot" near the wholesale produce market in downtown Los Angeles and double Food Forward's (the grantee) food recovery capacity. In addition to addressing food insecurity in southern California, the project will benefit disadvantaged communities and the environment by supporting jobs and addressing climate change. By diverting food waste from landfills, this project is preventing the release of methane emissions while serving more than 1,800 hunger relief agencies.⁶⁷³

2. California Public Utilities Commission

- Utility Rate Programs California provides several income-qualified assistance programs with respect to energy that are funded as part of a public purpose program surcharge. These include the California Alternate Rates for Energy program, which provides discounted rates for low income customers on electric and natural gas bills, and the Energy Savings Assistance program, which provides weatherization and energy efficiency measures, minor home repairs for comfort and safety, and energy education at no cost to income-eligible program participants; income eligibility for both of these programs is set at 200% or less of federal poverty guidelines.⁶⁷⁴ The Family Electric Rate Assistance program is also available for families whose household income slightly exceeds the Alternative Rates allowances and bills some electricity usage at a lower rate.⁶⁷⁵
- Thermal Low-Income the state's solar program provides direct rebates to a single-family or multifamily residence utility customer who installs solar water heating systems that displace natural gas usage. To qualify, a single-family residence must be eligible for the Energy Savings Assistance Program by participating in or having previously participated in a CPUC-approved and supervised gas corporation. The property must remain low-income for at least 10 years or meet the definition of Low-Income Residential Housing in Section 2861(e), where the residence is financed with low-income housing tax credits or tax-exempt mortgage revenue bonds and is tied to a deed restriction. Multifamily housing property eligibility means property is ESAP eligible. That is, the property meets the terms in Section 2866(c)(2) by demonstrating that at least 50% of

⁶⁷² California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁷³ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁶⁷⁴ California Public Utilities Commission. 2017. PUC Low Income Energy Programs California Alternate Rates for Energy Fact Sheet. Available at http://www.cpuc.ca.gov/iqap/.

⁶⁷⁵ CARE/FERA Programs. 2019. Available at http://www.cpuc.ca.gov/lowincomerates/#fera.

all units in the multifamily housing structure are occupied by ratepayers who have or are currently participating in a CPUC-approved and supervised gas corporation. The building must remain low-income for at least 10 years or meet terms under Section 2861(e), which defines low-income residential housing as a complex in which at least 20% of total housing units are sold or rented to lower income households and are subject to a deed restriction.⁶⁷⁶

- Solar The CPUC managers several programs designed to support use of solar systems by targeted communities and households, including:
 - A ratepayer-funded mechanism for providing access to funding solar energy systems for low-income residents was established in 2006 through legislation that required CPUC to ensure that not less than 10% of funds for the California Solar Initiative are utilized for the installation of solar energy systems on low-income residential housing.⁶⁷⁷ The CPUC approved the Single Family Affordable Solar Housing program in 2007 and the Multi-family Affordable Solar Housing program in 2008. These programs were extended by legislation in 2013. The original multi-family program has been closed to new applications.^{678,679} The single-family program is overseen by CPUC and administered by the nonprofit GRID Alternatives. It provides up-front payment as incentives to qualified low-income homeowners to help offset the costs of a solar electric system. Eligible applicants must meet the low-income eligibility standard and live in a home that is defined as affordable housing by the California Public Utilities Code 2852.680,681 The program has also enabled a Third-Party Ownership Model to help finance the installation of solar projects for lowincome customers at no cost to the participants. GRID provides opportunities for job trainees and local volunteers to assist with installations, engage their communities, and participate in solar and energy efficiency programs. GRID partners with more than 90 California job-training programs to incorporate GRID's volunteer-based installation projects into their construction training curricula. GRID dedicates approximately 20% of its internal installations for these trainees to gain hands-on experience with real-world solar installations that have conditions and requirements comparable to what they would encounter in private industry. Many solar job trainees come from the same neighborhoods that the program aims to serve.682
 - Multi-family Affordable Housing Pursuant to Assembly Bill 693 and Senate Bill 92, Decision 17-12-022 of the CPUC establishes an up to \$100 million per year budget (with an

⁶⁷⁶ GoSolar California. 2019. California Solar Initiative CSI-Thermal Program Low-Income Program. Available at https://www.gosolarcalifornia.org/solarwater/low_income_solar_water.php.

⁶⁷⁷ California Assembly Bill 2723, Chapter 864. 2006.

⁶⁷⁸ California Assembly Bill 217, Chapter 609. 2013

⁶⁷⁹ California Public Utilities Commission. 2018. California Solar Initiative Annual Program Assessment. Available at https://www.cpuc.ca.gov/general.aspx?id=6043.

⁶⁸⁰ Go Solar California. 2019. Available at https://www.gosolarcalifornia.ca.gov/affordable/sash.php.

⁶⁸¹ California Public Utilities Commission. 2019. CSI Single-Family Affordable Solar Homes (SASH) Program. Available at https://www.cpuc.ca.gov/General.aspx?id=3043

⁶⁸² California Public Utilities Commission. 2018. California Solar Initiative Annual Program Assessment. Available at https://www.cpuc.ca.gov/general.aspx?id=6043.

overall target to install 300 MW of generating capacity by 2030) for the Solar on Multifamily Affordable Housing (SOMAH) program.⁶⁸³ The law requires the commission to annually authorize either \$100 million or 66.67% of available funds, whichever is less, from electric utility greenhouse gas allowance proceeds for the program to provide incentives for solar systems on multifamily affordable housing properties. 684 Projects must be located in a disadvantaged community or where 80% of the households on the property are low income.^{685,686,687} The program is overseen by CPUC and provides solar incentives to qualifying affordable housing with the service territory of five investor owned utilities administered by a team of nonprofit organizations. The program includes comprehensive no-cost services to participants, including affordable housing owners/operators, contractors, tenants, and job training participants.⁶⁸⁸ The program encourages local hiring and hiring of residents of disadvantaged communities and affordable housing, women, persons of color, or someone who has faced or overcome a barrier to employment.⁶⁸⁹ The program incorporates energy efficiency requirements whereby participants must either complete an energy audit or have recently participated in an energy efficiency program.⁶⁹⁰ Referrals between the participating property and the previously mentioned Energy Savings Assistance Program is a requirement; however, the program provides for referral mechanisms to additional clean energy and energy efficiency program opportunities by the program administrator and project manager.⁶⁹¹ Key stakeholders contribute to program development as members of the SOMAH Advisory Council.⁶⁹² To assist in finding properties eligible for SOMAH, an interactive map displays data on multifamily affordable homes and solar potential, including features that indicate the number of low-income units per property and roof size.⁶⁹³ The program launched in July 2019.⁶⁹⁴

⁶⁸³ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁸⁴ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁸⁵ California Assembly Bill 693, Chapter 582. 2015.

⁶⁸⁶ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁸⁷ California Public Utilities Commission. 2019. The Solar on Multifamily Affordable Housing (SOMAH) Program. Available at https://www.cpuc.ca.gov/General.aspx?id=6442454736.

⁶⁸⁸ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁸⁹ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁹⁰ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁹¹ CalSOMAH. 2019. Solar on Multifamily Affordable Housing Program Handbook. Available at https://www.calsomah.org/somah-program-handbook.

⁶⁹² CalSOMAH. 2019. SOMAH Advisory Council. Available at https://www.calsomah.org/advisory-council#.

⁶⁹³ CalSOMAH. 2019. Eligible SOMAH Properties Map. Available at https://www.calsomah.org/eligible-somah-properties-map.

⁶⁹⁴ California Public Utilities Commission. 2019. SOMAH Solar on Multifamily Affordable Housing. Available at https://www.calsomah.org/.
- CPUC has created a Disadvantaged Communities Single-Family Solar Homes (DAC-SASH) program that will provide up-front incentives for installation of solar generating systems for low-income resident-owners of single-family homes in disadvantaged communities to assist in overcoming barriers such as a lack of up-front capital or credit needed to finance solar installation. The program will provide \$10 million in incentives annually through 2030, to be funded by utility greenhouse gas allowance proceeds or public purpose program funds.^{695,696}
- CPUC has also created the Community Solar Green Tariff program, which is intended to
 provide consumers in disadvantaged communities with access to local solar power with an
 economic benefit and community involvement. Projects are to be sited in disadvantaged
 communities and participants must live in disadvantaged communities in close proximity to
 a project. Participants will receive a 20% discount on electric bills. Projects must include a
 local community sponsor (nonprofit or local government), including verification that site
 selection is consistent with community preference and local job creation provisions. The
 local sponsor is also eligible for the electricity discount for the lifetime of the project. This
 program will be funded by utility greenhouse gas allowance proceeds or public purpose
 program funds.^{697,698}
- The Disadvantaged Communities Green Tariff Program will provide a 20% discount on electricity bills for eligible participants (low-income customers who live in disadvantaged communities) for 100% renewable energy purchased by their utility from projects located in disadvantaged communities. This option overcomes barriers to solar for customers who rent their homes, cannot afford solar, or whose homes are unsuitable for solar. The Green Tariff program will be funded by utility greenhouse gas allowance proceeds or public purpose program funds. ^{699,700}
- Transportation Senate Bill 350 requires the CPUC to direct the six investor-owned electric utilities in the state to file applications for programs that "accelerate widespread transportation electrification," various filings with costs recovered through ratepayers have been approved by

⁶⁹⁵ California Public Utilities Commission. 2018. Fact Sheet Expanding Solar in Disadvantaged Communities. Available at https://www.cpuc.ca.gov/General.aspx?id=6442456661.

⁶⁹⁶ California Public Utilities Commission. 2018. Community Solar Program for Disadvantaged Communities \ Webinar. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Commissioners/Martha_ Guzman_Aceves/tst/California%20PUC%20Community%20solar%20Program%20webinar.pdf.

⁶⁹⁷ California Public Utilities Commission. 2018. Fact Sheet Expanding Solar in Disadvantaged Communities. Available at https://www.cpuc.ca.gov/General.aspx?id=6442456661.

⁶⁹⁸ California Public Utilities Commission. 2018. Community Solar Program for Disadvantaged Communities Webinar. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Commissioners/Martha_Guzman_Aceves/tst/California%20PUC%20Community%20solar%20Program%20webinar.pdf.

⁶⁹⁹ California Public Utilities Commission. 2018. Fact Sheet Expanding Solar in Disadvantaged Communities. Available at https://www.cpuc.ca.gov/General.aspx?id=6442456661.

⁷⁰⁰ California Public Utilities Commission. 2018. Community Solar Program for Disadvantaged Communities \ Webinar. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Commissioners/Martha_Guzman_Aceves/tst/California%20PUC%20Community%20solar%20Program%20webinar.pdf.

CPUC that meet these requirements while also targeting implementation in disadvantaged communities. Data publicly available at the time of this writing are for 2018 and include over \$780 million in approved projects for transportation electrification infrastructure investments.⁷⁰¹ Examples from these approved filings targeted to disadvantaged communities include: 25% deployment of level 2 chargers to residential customers and fast charging sites in disadvantaged communities; 25% of fleet-ready budget to support electrification of medium- and heavy-duty truck fleets and infrastructure for transit agencies in disadvantaged communities; support the expansion of electric ground support equipment at the San Diego Airport, which is adjacent to a disadvantaged community; and park and ride charging stations in or adjacent to disadvantaged communities. ^{702,703, 704}

- San Joaquin Valley Clean Energy Alternatives Pursuant to Assembly Bill 2672, in 2018, the CPUC approved a \$56 million utility investment (funded through a public purpose surcharge) in pilot projects throughout the San Joaquin Valley to bring clean energy to economically disadvantaged communities that face a high energy burden and use propane or wood to heat their homes and cook. These projects include community solar discounts, solar thermal technologies, extending natural gas pipelines, and appliance replacement and will help inform how to address the issue more broadly in the region.^{705,706,707}
- Environmental and Social Justice Action Plan The CPUC adopted an Environmental and Social Justice Action Plan in February 2019 with goals in the following areas:
 - integration of equity and access through all CPUC proceedings;
 - clean energy investment to improve air quality and health;
 - o access to high quality water, communications, and transportation; climate resiliency;
 - improved participation in CPUC decision-making and programs;
 - o enforcement for safety and consumer protection;

⁷⁰⁴ California Public Utilities Commission. 2018. Summary of Approved SB 350 Transportation Electrification Priority Review Projects for SDG&E, SCE, and PG&E. January 11, 2018. Available at

https://www.cpuc.ca.gov/sb350te/.

⁷⁰¹ California Public Utilities Commission. 2018. Transportation Electrification Activities Pursuant to Senate Bill 350. Approved SB350 Projects. Available at https://www.cpuc.ca.gov/sb350te/.

⁷⁰² California Public Utilities Commission. 2019. Transportation Electrification Activities Pursuant to Senate Bill 350. Available at https://www.cpuc.ca.gov/sb350te/.

⁷⁰³ California Public Utilities Commission. 2018. Summary of Decision on Transportation Electrification Program Proposals from the Investor-Owned Utilities May 31, 2018. Available at https://www.cpuc.ca.gov/sb350te/.

⁷⁰⁵ California Public Utilities Commission. 2018. Annual Report 2018. Available at https://www.cpuc.ca.gov/AnnualReports/.

⁷⁰⁶ California Public Utilities Commission. 2019. Identifying Disadvantaged Communities in the San Joaquin Valley and Evaluating Options to Increase Access to Affordable Energy. Available at https://www.cpuc.ca.gov/SanJoaquin/.

⁷⁰⁷ California Public Utilities Commission. 2019. CPUC Provides San Joaquin Valley Residents with Cleaner and Safer Energy Options. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Supplier_Diversity/Jan%20201 9%20nwsltr%20-%20v9.pdf

- economic and workforce opportunities;
- training and staff development within CPUC; and
- monitoring CPUC efforts.

Communities to which the Action Plan is targeted are identified as those where residents are predominantly communities of color or low-income; underrepresented in the policy-setting or decision-making process; subject to a disproportionate impact from environmental hazards; and likely to experience disparate implementation of environmental regulations and socioeconomic investments in their communities. These include disadvantaged communities; all tribal lands; low-income households; and low-income census tracts (aggregated household incomes less than 80% area or state median income). CPUC notes that use of the term "environmental and social justice" is not intended to create a new class of customers and that individual CPUC programs may focus on environmental and social justice communities in different ways, noting many energy programs are mandated to focus on the state's adopted definition of "Disadvantaged Communities."⁷⁰⁸ The Action Plan includes a workplan to support environmental and social justice, including a detailed appendix laying out a series of CPUC actions, next steps, and implementation across the plan's goals. For example, the Action Plan notes how the CPUC's Energy Division has incorporated the consideration of disadvantaged communities across the issues it covers, including its programs for integrated resource planning, energy efficiency, solar programs, electric vehicle infrastructure, and strategies for customers to control their own energy usage. Senate Bill 350 require CPUC to adopt a process for each load-serving entity to file an integrated resource plan and periodic updates to ensure they meet the greenhouse gas emissions reduction targets established by CARB and procure 50% renewable energy by 2030. The Integrated Resource Plans are required to include elements that minimize localized air pollutants and other greenhouse gas emissions, with early priority on disadvantaged communities.⁷⁰⁹ A specific action cited in the plan includes a CPUC requirement for utilities, community choice aggregators, and other load-serving entities to procure 50% of their total electricity retail sales from eligible renewable energy resources by 2030 and that annual Renewable Portfolio Standard Procurement Plans must include how projects will affect Disadvantaged Communities.⁷¹⁰ Two examples of concrete actions that are outlined in the associated Action Plan include: "develop a standard checklist to identify environmental and social justice issues in proceeding or regulatory activity to appropriately create the scope of the proceeding or activity;" and "deploy charging infrastructure for ESJ communities to use zero-emission cars to meet their transportation needs."711

3. California Energy Commission

⁷⁰⁸ California Public Utilities Commission. 2019. Environmental and Social Justice Action Plan. Available at. https://www.cpuc.ca.gov/CPUCNewsDetail.aspx?id=6442461331

⁷⁰⁹ California Senate Bill 350, Chapter 547. 2015.

⁷¹⁰ California Public Utilities Commission. 2019. Environmental and Social Justice Action Plan. Available at. https://www.cpuc.ca.gov/CPUCNewsDetail.aspx?id=6442461331

⁷¹¹ California Public Utilities Commission. 2019. Environmental and Social Justice Action Plan. Available at. https://www.cpuc.ca.gov/CPUCNewsDetail.aspx?id=6442461331

- CEC Diversity Resolution The CEC adopted a Diversity Resolution in April 2015 to optimize fair and equal opportunities for small businesses, and women-, disabled-veteran-, minority-, and LGBT-owned businesses, as well as economically disadvantaged and underserved communities, to participate in and benefit from commission programs.⁷¹² Goals include increasing: participation of diverse businesses in CEC funding opportunities, such as the Electric Program Investment Charge Program and Alternative and Renewable Fuel and Vehicle Technology Program; CEC program benefits in disadvantaged communities; and diversity of CEC workforce and procurement.⁷¹³ CEC has an internal diversity steering group, which served as the platform for each division to coordinate diversity efforts, share ideas and information, and establish metrics for tracking and measuring performance.⁷¹⁴
- Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). CEC's ARFVTP Investment plan notes targeted outreach activities to engage disadvantaged communities in funding opportunities. Under this program, CEC funds projects in broad categories such as ZEV infrastructure, advanced technology vehicle support (e.g., advanced freight and fleet technologies), alternative fuel production, natural gas vehicles and infrastructure, and workforce training and development. CEC has utilized technical support funding to develop outreach, education, and collaborative planning activities that will accelerate the adoption of alternative fuels and advanced technologies in California's Central Valley. The funding will also be used to address greenhouse gas emissions, air quality, and equity issues. The ARFVTP program includes a scoring preference for projects located in or benefitting disadvantaged communities. As of March 2019, about 35% of site-specific ARFVTP projects are located in or benefitting disadvantaged communities while another 6% benefit low-income and disadvantaged communities.⁷¹⁵ Almost \$45 million of funds in 2018 were invested in disadvantaged communities by the CEC.⁷¹⁶ Examples of funded projects in disadvantaged communities include:
 - replacement of diesel school buses with electric buses and infrastructure or natural gas buses (where route profiles are not suited for electric school buses);
 - rebates for installation of public EV chargers;
 - community college clean fuel career pilot programs for high schools (focusing on underserved communities, minority groups, and regions impacted by poor air quality);
 - o affordable ZEV ride-hailing services for rural students to reach Fresno City College; and

 ⁷¹² California Energy Commission. 2015. Resolution No: 15-0408-3 State of California State Energy Resources
 Conservation and Development Commission Resolution Regarding Diversity Policy Statement. Available at
 https://www.energy.ca.gov/commission/diversity/documents/pdfs/diversity_policy_resolution.pdf.
 ⁷¹³ California Energy Commission. 2019. Diversity Commitment. Available at

https://www.energy.ca.gov/commission/diversity/.

⁷¹⁴ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷¹⁵ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷¹⁶ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

- Installation or upgrade of natural gas fueling stations (51% of these projects are for stations in disadvantaged communities).^{717, 718, 719, 720}
- Pursuant to 2018 legislation (Senate Bill 1000), CEC, in consultation with CARB, is to assess whether EV charging infrastructure is disproportionately deployed (with respect to population density, geographical area, or income level). If so, CEC is to use ARFVTP funds to make corrections.⁷²¹ CEC staff are evaluating this issue as part of the 2019 Integrated Energy Policy Report.⁷²²
- Low Income Barriers Study and Electric Program Investment Charge CEC's 2016 Low-Income Barriers Study identified specific challenges unique to disadvantaged communities including, low home ownership rates, grid access for remote or underserved communities, and insufficient access to capital. The study's authors recommended that CEC's Electric Program Investment Charge Program target a minimum of 25% of technology demonstration and deployment funding for sites located in disadvantaged communities.⁷²³ In 2017, Assembly Bill 523 was enacted requiring a minimum of 25% of CEC Electric Program Investment Charge Program funds to projects with sites located in, and benefiting, disadvantaged communities. An additional 10% of these funds must be spent at sites located in, and benefiting, low-income communities. Further, the bill requires that CEC take into account adverse localized health impacts of proposed projects to the greatest extent possible, and give preference for funding to clean energy projects that benefit residents of low-income or disadvantaged communities.⁷²⁴ The Electric Program Investment Charge Program has funded more than \$25 million in investments for projects located in disadvantaged communities from 2014 to 2018.⁷²⁵ The program developed a software

⁷¹⁷ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/

⁷¹⁸ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷¹⁹ California Energy Commission. 2019. 2018 Diversity Update Ensuring Our Programs and Services Benefit All Californians. May 3, 2019 Disadvantaged Communities Advisory Group Meeting. Item 6: Presentation by the Energy Commission on its Diversity Commitment in Programs. Available at

 $https://www.energy.ca.gov/sb_{350}/\mathsf{DCAG}/documents/index.html.$

⁷²⁰ California Energy Commission. 2017. Advanced Transportation Technology and Energy (ATTE) Center at Cerritos College. Contract Request Form. https://www.energy.ca.gov/business_meetings/2017_packets/2017-05-10/ltem_11_600-16-005.pdf.

⁷²¹ California Senate Bill 1000, Chapter 368. 2018.

⁷²² Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷²³ California Energy Commission. 2016. Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities. Available at https://www.energy.ca.gov/sb350/barriers_report/. ⁷²⁴ California Assembly Bill 523, Chapter 551. 2017.

⁷²⁵ California Energy Commission. 2019. 2018 Diversity Update Ensuring Our Programs and Services Benefit All Californians. May 3, 2019 Disadvantaged Communities Advisory Group Meeting. Item 6: Presentation by the

platform (OhmConnect) that allows customers to participate in demand response programs by notifying them to reduce energy consumption for a specified portion of the day for which cash/prizes are awarded. The software platform directs specific outreach to representatives from disadvantaged communities.^{726,727} Another example is the Build It Green evaluation of several different low-income, multifamily projects that are incorporating electric water heaters and electric space heating with real-time displays on energy use and evaluating whether this is changing customer behavior.⁷²⁸

- Energy Equity Indicators The 2016 CEC study, Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities, has also led to several outcomes: the development of a set of energy equity indicators to identify opportunities to improve access to clean energy technologies for low-income customers and disadvantaged communities; increased clean energy investment in those communities; and improve community resilience to grid outages and extreme events. Example indicators that are included in an interactive mapping tool include:
 - low-income areas with highest August electric bill;
 - energy affordability;
 - high cost heating fuel use in low-income areas;
 - o areas with lowest investor owned utility investments;
 - o areas with low solar capacity per capita;
 - o areas with electric vehicles coincident with solar capacity;
 - o electric vehicle infrastructure investment by location;
 - o asthma emergency room visits incidence rates;
 - heat-related illness;
 - temperature projections.

These data can be used to help plan for investments and to target areas for resilience. CEC plans to update these indicators annually to track implementation progress and performance of state-

https://www.energy.ca.gov/sb350/DCAG/documents/index.html.

Energy Commission on its Diversity Commitment in Programs. Available at

⁷²⁶ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷²⁷ California Energy Commission. 2017. EPIC Annual Report. Available at

https://www.energy.ca.gov/2018publications/CEC-500-2018-011/CEC-500-2018-011-SUM.pdf.

⁷²⁸ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

administered clean energy programs in low-income and disadvantaged communities toward advancing the recommendations in the SB 350 Low-Income Barriers Study.^{729,730,731}

- Clean Energy in Low-Income Multifamily Building Action Plan In November 2018, CEC adopted the Clean Energy in Low-Income Multifamily Building (CLIMB) Action Plan, which focuses on improving opportunities for energy efficiency, renewable energy, demand response, energy storage, and electric vehicle infrastructure for multifamily housing, with attention to pilot programs for multifamily rental properties in low-income and disadvantaged communities which had been recommended in the 2016 CEC "Barriers" study, required under SB 350.^{732,733} Fortyseven percent of low-income residents in California live in multifamily housing, the majority of which predates modern energy. According to CEC staff, these communities lack access to distributed energy resources, renewable energy, and an electric vehicle infrastructure. A lack of coordination across the state's programs targeting these communities make it more difficult to get these distributed energy resources to low-income multifamily buildings. To address this inequity, the CLIMB Action Plan established five goals that are designed to increase access to clean energy resources for the owners and residents of multi-family buildings. CEC is in the implementation phase of this plan.⁷³⁴
- Low Income Barriers to Transportation In 2018, CARB issued its Senate Bill 350 study on lowincome barriers to clean transportation access. The study cited affordability, awareness, and a lack of permanent, long-term funding sources as barriers to increasing access to clean transportation and mobility options in underserved and disadvantaged communities. CEC noted in its 2019 investment plan for the ARFVTP that it will take these barriers and the recommendations to overcome them into account when developing future funding opportunities.^{735,736} In addition, CARB has created a *One-Stop Shop pilot program* to increase access for low-income consumers to apply and qualify for CARB's Low Carbon Transportation

⁷²⁹ California Energy Commission. 2018. Energy Equity Indicators Tracking Progress. Available at https://www.energy.ca.gov/renewables/tracking_progress/index.html#eei.

⁷³⁰ California Energy Commission. n.d. Energy Equity Indicators-Interactive Story Map. Last accessed June 1, 2019 available at

https://caenergy.maps.arcgis.com/apps/MapJournal/index.html?appid=do81a369aoo44d77ba8e8od2ff671c93.

⁷³¹ California Energy Commission. 2016. Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities. Available at https://www.energy.ca.gov/sb350/barriers_report/.

⁷³² California Energy Commission. 2018. Clean Energy in Low-Income Multifamily Building (CLIMB) Action Plan. Available at https://www.energy.ca.gov/sb350/barriers_report/.

⁷³³ ⁷³³ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷³⁴ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷³⁵ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷³⁶ California Air Resources Board. 2018. Low -Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low -Income Residents. Available at https://ww2.arb.ca.gov/sites/default/files/2018-08/sb350_final_guidance_document_022118.pdf.

Equity Projects (e.g., Clean Vehicle Rebate Project, Enhanced Fleet Modernization Program Plus-Up, Financing Assistance for Lower-Income Consumers, and Clean Mobility Options for Disadvantaged Communities). This solicitation also focuses on providing coordinated community-based outreach and education to maximize program participation and promoting advanced technology vehicle adoption in disadvantaged communities, low-income communities, and low-income households. In addition, the grantee selected will be required to evaluate and integrate other housing- and energy-related consumer-based incentives as a part of the One-Stop Shop's expansion, to the extent feasible.⁷³⁷ The One-Stop Shop pilot program is expected to be completed by August 2020.

- New Solar Homes Partnerships CEC staff conducted specific outreach to affordable housing project developers and solar installers to encourage their participation in the program. A total of \$16 million in 2018 was allocated to affordable housing projects with half of those projects in disadvantaged communities (who were offered additional incentives).⁷³⁸
- Energy Research and Development CEC is developing a new web-based platform to help connect underserved communities, researchers, technology developers, and investors.⁷³⁹
- Siting, Transmission and Environmental Protection CEC encourages public participation in CEQA reviews when it proposes new generation or changes to existing facilities and exemptions to CEC's process. As part of this process, they engage with tribal communities and identify disadvantaged communities, Environmental Justice communities, and linguistically isolated populations. CEC issues multilingual notices and make interpreters available at workshops.⁷⁴⁰

Internal Operations

The state Climate Action Team continues to facilitate overall visioning for interagency climate programs and an interagency AB 32 working group meets regarding implementation of AB 32. Some of the same participants from the Climate Action Team participate on the working group. There are more than 20 state agencies implementing 60 GGRF programs, and each agency is responsible for tracking its programs. The three-year Greenhouse Gas Reduction Fund investment plan is prepared by CARB staff in consultation with other agencies and according to the statutory allocations of percentages to certain agencies and programs along with discretionary funding recommendations. An annual budget appropriation consistent with the investment plan must be approved by the legislature. An interagency workgroup meets regularly to coordinate on programs, strategies, and implementation, including a coordinated workgroup for strategic outreach to priority populations.⁷⁴¹

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁷³⁷ California Air Resources Board. 2018. One-Stop-Shop Pilot Project. 2017-2018 Grant Solicitation. Available at https://www.arb.ca.gov/msprog/mailouts/msc1812/one_stop_shop_solicitation.pdf.

⁷³⁸ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷³⁹ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷⁴⁰ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷⁴¹ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

CPUC, as regulators of the state's electric and natural gas utilities, oversees how these utilities comply with CARB's greenhouse gas emissions requirements and decides how to use some of the proceeds generated from the program to benefit utility customers. CPUC also ensures that the cap-and-trade-related costs utilities include in electric and natural gas rates are fair and reasonable.⁷⁴²

CEC's investment plan notes the various categories of funding sources and where these complement or supplement funding from CARB.⁷⁴³ SB 350 requires the CEC to coordinate with CPUC and consult with a number of groups, including Environmental Justice groups, as well as consider workforce development and job training for residents in disadvantaged communities, including veterans, at-risk youth, and members of the state and local community conservation corps. The statute requires that the program promote greater penetration of specific energy efficiency programs in disadvantaged communities, considering a broad range of implementation approaches. Senate Bill 350 also requires the CPUC and CEC to take into account the use of distributed generation to the extent that it provides economic and environmental benefits in disadvantaged communities in furtherance of meeting the state's clean energy and pollution reduction objectives.⁷⁴⁴

External Stakeholder Engagement

Examples of state stakeholder engagement processes regarding California's climate and energy portfolio of programs are provided below:

- In 2001, California established the Low-Income Oversight Board to advise the California Public Utilities Commission on low-income electric and gas customer issues and to serve as liaison for the Commission to low-income ratepayers and representatives.⁷⁴⁵ In 2005, the Board's duties were expanded by the legislature to include low-income water customer issues.⁷⁴⁶
- CARB conducts stakeholder engagement to inform California Climate Investment priorities. In developing guidance for agencies and investment plans (statutorily mandated), CARB conducts many public workshops and outreach. Each agency also has public workshops and develops solicitation materials.
- Under AB₃₂, CARB was directed to convene an Environmental Justice Advisory Committee (EJAC) of representatives from communities in the state with the most significant exposure to air pollution, including, but not limited to, communities with minority populations or low -income populations, or both in developing the scoping plan required under AB₃₂.⁷⁴⁷ In addition, CARB was directed to conduct a series of public workshops to give interested parties an opportunity to comment on the AB₃₂ scoping plan and to conduct some of these workshops in regions of the

⁷⁴² California Public Utilities Commission. 2019. Greenhouse Gas Cap and Trade Program. Available at https://www.cpuc.ca.gov/General.aspx?id=5932.

⁷⁴³ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷⁴⁴ California Senate Bill 350, Chapter 547. 2015.

⁷⁴⁵ California Senate Bill 2, Chapter 2. 2001.

⁷⁴⁶ California Senate Bill 580, Chapter 662. 2005.

⁷⁴⁷ California Assembly Bill 32, Chapter 488. 2006.

state that have the most significant exposure to air pollutants, including, but not limited to, communities with minority populations, communities with low-income populations, or both.⁷⁴⁸ The EJAC was convened for the second update to the scoping plan; its final recommendations with respect to the themes of equity, partnership with the Environmental Justice community, coordination, economic opportunity, and long-term vision are included in the 2017 scoping plan.⁷⁴⁹

- California's Community Air Protection Blueprint, developed pursuant to Assembly Bill 617, requires community-focused and community-driven action to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants. The underpinning of Assembly Bill 617 is the understanding that community members must be active partners in envisioning, developing, and implementing actions to clean up the air in their communities. A central requirement in the law is for CARB and the air districts to work with local communities to identify what information is already available and what additional data needs to be collected to better understand air quality in their communities.⁷⁵⁰
- In early 2018, the CPUC and the CEC jointly approved members of the Disadvantaged Communities Advisory Group authorized pursuant to Senate Bill 350. Consisting of representatives of disadvantaged communities, the Group provides advice on state programs proposed to achieve clean energy and pollution reduction. In its first year, the Group's priorities included development and ongoing refinement of the Energy Equity Indicators, and making recommendations on the CPUC's Draft Environmental and Social Justice Action Plan, the implementation the Community Air Protection Program, and CPUC's proceedings on affordable energy options in San Joaquin Valley communities.⁷⁵¹ The Group developed a five-component equity framework to ensure that state climate programs reach residents, workers and businesses in disadvantaged communities, Tribal Lands, Census tracts with area median household income/state median income, less than 80%, and Households with median household income less than 80% of Area Median Income (AMI):
- Health and Safety Energy policies and programs should be observed through the lens of public health to consider the most vulnerable communities and advance health interventions by educating disadvantaged communities about disproportionate health impacts related to climate change and providing ways to value health benefits and impacts, build resiliency, mitigate climate-related illnesses, injury, and deaths, and reduce climate related health-care costs;
- Access and education Special outreach efforts contribute to disadvantaged communities benefiting from clean energy technologies, energy efficiency, and other environmental

⁷⁴⁸ California Assembly Bill 32, Chapter 488.2006.

⁷⁴⁹ Environmental Justice Advisory Committee. 2017. AB 32 Environmental Justice Advisory Committee (EJAC) Recommendations. Appendix A of AB 32 Scoping Plan, California Air Resources Board. Available at https://www.arb.ca.gov/cc/scopingplan/2030sp_appa_ejac_final.pdf.

 ⁷⁵⁰ California Air Resources Board. 2018. Community Air Protection Blueprint. Available at https://ww2.arb.ca.gov/sites/default/files/2018-10/final_community_air_protection_blueprint_october_2018.pdf.
 ⁷⁵¹ California Energy Commission. 2019. Disadvantaged Communities Advisory Group 2018 Annual Report. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/Infrastructure/DC/DACAG%202018%20Annual%20Report%20FINAL%203-29-19.pdf.

investments by ensuring these interventions are applicable and represent communities' interests and ensuring communities receive culturally relevant to prepare for climate resilience;

- Investments State investments in clean energy technologies, energy efficiency, and other environmental investments should benefit disadvantaged communities providing financial benefits, incentives, and savings while considering affordability and rate impacts;
- Workforce development Climate policies and programs should invest in a clean energy workforce, including pathways to high-quality careers for low-income, disadvantaged, and underrepresented populations; and
- Consumer protection Climate policies and programs should have consumer protection measures, disclosures, and accountability measures to ensure financially vulnerable customers are not taken advantage of.⁷⁵²
 - The CPUC Equity and Social Justice Action Plan was developed through an open process with public input, including from the Disadvantaged Communities Advisory Group.⁷⁵³ Although there are commonalities, the definition of Equity and Social Justice Communities is not exactly the same as the definition of Disadvantaged Communities adopted by Disadvantaged Communities Advisory Group. The CPUC Action Plan definition of Equity and Social Justice communities includes disadvantaged communities (as identified by Cal EPA); all tribal lands; low-income households (incomes below 80% area median income), and low-income census tracts (aggregated household incomes less than 80% area or state median income). CPUC notes that use of the term "environmental and social justice" is not intended to create a new class of customers and that individual CPUC programs may focus on environmental and social justice communities in different ways given that many energy programs are mandated to focus on "Disadvantaged Communities," as defined by CalEPA.⁷⁵⁴ In 2018, the CPUC approved a tribal consultation policy and appointed a tribal liaison and increased its outreach to tribal communities.⁷⁵⁵
 - The CEC conducts outreach activities with specific diversity objectives: to inform the most qualified loan and grant applicants and contractors, including certified women, minority, disabled veterans, and LGBT businesses, and disadvantaged communities about workshops, trainings, and funding opportunities; to increase benefits to disadvantaged

⁷⁵² California Energy Commission. 2019. Disadvantaged Communities Advisory Group 2018 Annual Report. Available at

https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/Infrastructure/DC/DACAG%202018%20Annual%20Report%20FINAL%203-29-19.pdf.

⁷⁵³ California Public Utilities Commission. 2019. Environmental and Social Justice Action Plan. Available at. https://www.cpuc.ca.gov/CPUCNewsDetail.aspx?id=6442461331.

⁷⁵⁴ California Public Utilities Commission. 2019. Environmental and Social Justice Action Plan. Available at. https://www.cpuc.ca.gov/CPUCNewsDetail.aspx?id=6442461331.

⁷⁵⁵ California Public Utilities Commission. 2018. Adoption of Tribal Consultation Policy. Available at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M212/K861/212861685.PDF.

communities; and to recruit staff.^{756,757} Specific to disadvantaged and low-income communities, CEC outreach activities include community meetings, targeted stakeholder workshops, monthly communications such as an e-blast or newsletter, and interagency collaborations with other agencies such as the CPUC or CARB that focus on disadvantaged communities.^{758,759} CEC staff note incorporation of feedback from disadvantaged communities into solicitations as well as including preference points or set-asides, where a certain amount of funding would be set aside for projects in disadvantaged or low-income communities.⁷⁶⁰

- California's Regional Climate Collaborative Program, to be administered by the Strategic Growth Council is intended to build community-driven leadership, knowledge, skills, experience, and resources to identify and access public funding for climate change mitigation and adaptation projects within under resourced communities. The law establishing the program (Senate Bill 1072) directs the establishment of local community programs to:
 - conduct outreach and build awareness of competitive grant programs;
 - convene stakeholders to discuss community needs regarding potential climate change mitigation and adaptation projects eligible for statewide competitive grant programs with specific allocations for under resourced communities;
 - develop community and project plans, including climate action plans, demonstrating local needs and identifying multiple-benefit projects for implementation;
 - support the development of partnerships between stakeholders and potential public and private funding sources;
 - provide policy, program, and technical advice to stakeholders to align multibenefit projects with potential funding sources;
 - serve as an intermediary between community stakeholders and technical assistance programs within relevant agencies and coordinate scientific and technical support from outside experts;

⁷⁵⁶ California Energy Commission. 2019. Diversity Outreach Program. Available at https://www.energy.ca.gov/commission/diversity/outreach.html.

⁷⁵⁷ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷⁵⁸ Brecht, Patrick and Jacob Orenberg. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2018-005-LCF. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.

⁷⁵⁹ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

⁷⁶⁰ California Energy Commission. 2019. 2018 Diversity Update. Transcript of April 10, 2019 Business Meeting. Available at https://www.energy.ca.gov/business_meetings/.

- coordinate and implement assistance and training to stakeholders in grant application development, project management, implementation, and monitoring;
- assist in the development of local job training and anti-displacement programs and policies; and
- select a managing stakeholder that may include, but need not be limited to, a local government agency, community-based organization, foundation, small business, joint powers authority, tribal government, or other organization with a history of providing community-based outreach and technical assistance.⁷⁶¹

Monitoring and Measurement

- The CPUC is required to submit to the legislature an annual assessment of the success of the California Solar Initiative program.⁷⁶² The assessment is publicly available on the CPUC website. The California Solar Initiative General Market program exceeded its goal to install 1750 MW of rooftop solar on businesses and existing homes and, therefore, closed its direct incentive program in 2016.^{763,764}
- California Distributed Generation Statistics (CDGS) is the official public reporting site of the California Solar Initiative managed jointly by the Initiative program administrator, GRID Alternatives, the state's three Investor Owned Utilities, and the CPUC. The CDGS site currently includes data for all solar systems interconnected through the California utilities net energy metering tariffs. Data is not available for publicly owned utilities, however, the publicly owned utilities annually report their cumulative incentivized capacity to the California Energy Commission; these values are added into the "CA Leads the Nation" numbers on the homepage and are updated annually.⁷⁶⁵
- Under Senate Bill 350, the CEC is required to report on the status of the program to achieve greater energy savings in California's existing residential and nonresidential building stock in the integrated energy policy report. ⁷⁶⁶
- Pursuant to Assembly Bill 118, the CEC prepares and adopts an annual investment plan of projects proposed for the coming fiscal year developed through the Alternative and Renewable Fuel and Vehicle Technology Program established originally in 2007 with funds collected from vehicle and vessel registration, vehicle identification plates, and smog-abatement fees.⁷⁶⁷ As part of the evaluation, and included in the reporting, is quantification of the petroleum displacement, greenhouse gas emissions reductions, and air quality benefits of funded projects. In addition, the

⁷⁶¹ California Senate Bill 1072, Chapter 377. 2018.

⁷⁶² California Code, Public Utilities Code - PUC § 913.7.

⁷⁶³ California Public Utilities Commission. 2019. California Solar Initiative. Available at

https://www.cpuc.ca.gov/general.aspx?id=6043.

⁷⁶⁴ California Public Utilities Commission. 2019. CSI General Market Program. Available at https://www.cpuc.ca.gov/General.aspx?id=6058.

⁷⁶⁵ California Solar Initiative. 2019. California Distributed Generation. Available at

https://www.californiadgstats.ca.gov/faq/.

⁷⁶⁶ California Senate Bill 350, Chapter 547. 2015.

⁷⁶⁷ California Assembly Bill 118, Chapter 750. 2007.

annual investment plans note total spending and percentage of funding in disadvantaged communities; to date approximately 40% of all project funding has gone into disadvantaged communities as defined by CalEnviroScreen.⁷⁶⁸

- Assembly Bill 1532 requires CARB to annually submit a report to the legislature on the status of 0 projects funded through the Greenhouse Gas Reduction Fund.⁷⁶⁹ The report includes an accounting of funded projects, measurements of program effectiveness, leveraging from other funding sources, assessment of demands for investments, and program outcome data.⁷⁷⁰ The most recent report found that California Climate Investments reduce greenhouse gases at an average rate of \$75/MT CO₂e and that, since the first appropriation of funds in 2014, more than 57% of funds, equal to more than \$1.5 billion, have been implemented to date to benefit priority populations.⁷⁷¹ CalRecycle's Food Waste Prevention Program is an example of where job benefits for priority populations have been quantified - the program supports 78 full-time equivalent jobs with an average hourly wage of \$23; more than 8,000 project work hours have been performed by priority populations.⁷⁷² State agencies that administer Greenhouse Gas Reduction Fund monies are required to follow CARB's funding guidelines, including: facilitating emission reductions; meeting statutory requirements; maximizing benefits to disadvantaged communities; targeting investments to disadvantaged communities, low-income communities, and low-income households; providing accountability and transparency; and supporting consistency across programs.⁷⁷³ The guidelines also provide guidance on preparing an expenditure record, developing quidelines and solicitation materials, and reporting outcomes from funded projects. Agencies must:
 - include a description of how a proposed expenditure will contribute to achieving and maintaining GHG emission reductions;
 - seek to invest in projects that are located in and benefit priority populations;
 - meet community needs identified primarily through community engagement and outreach; and
 - maximize benefits to disadvantaged communities, wherever possible. Where applicable and to the extent feasible, investments must maximize economic, environmental, and

 ⁷⁶⁸ California Energy Commission. 2019. 2019-2020 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. Available at https://www.energy.ca.gov/altfuels/2018-ALT-01/documents/.
 ⁷⁶⁹ California Assembly Bill 1532, Chapter 807. 2012

⁷⁷⁰ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁷⁷¹ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁷⁷² California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁷⁷³California Air Resources Board. 2018. Funding Guidelines for Agencies that Administer California Climate Investments. Available at https://ww2.arb.ca.gov/resources/documents/cci-funding-guidelines-administering-agencies.

public health co-benefits to the state. Co-benefits include fostering job creation; improving air quality; providing opportunities for businesses, public agencies, nonprofits, and other community institutions to participate in and benefit from investments; and lessening the impacts and effects of climate change.

When designing programs, administering agencies must avoid projects that have the potential to result in substantial economic, environmental, and public health burdens. Examples of burdens that agencies consider include: physical or economic displacement of low-income and disadvantaged community residents and businesses, and/or increased exposure to toxics or other health risks in disadvantaged and low-income communities. Agencies also must provide accountability in program implementation and estimated project outcomes.⁷⁷⁴ CARB currently has 35 quantification methodologies with accompanying calculator tools available for agencies to use. Administering agencies must use and report benefits from a CARB quantification methodology to quantify GHG emission reductions if one exists for the project type.⁷⁷⁵ An initial set of standardized assessment methods for 10 co-benefits are available to agencies to quantify the benefits of their projects. These include jobs; air pollutant emissions; travel cost savings; vehicle miles traveled; energy and fuel cost savings; water savings; soil and health conservation; climate adaptation; community engagement; and heart and lung health.⁷⁷⁶

- Staff assessment reports are issued by CARB regarding the Volkswagen Settlement Investment Plans in terms of expenditures in the allowable investments under the ZEV settlement: ZEV infrastructure (including the development and maintenance of ZEV charging stations); public awareness; increasing ZEV access; and the establishment of a "green city" with emphasis on transportation electrification projects like car sharing and zero-emission freight vehicles.⁷⁷⁷
- CARB is required to update its scoping plan under Assembly Bill 32 every five years and assess the state's progress in meeting its greenhouse gas emissions limits, a status update on progress in scoping plan components, and its vision for meeting 2030 limits. The latest update was published in November 2017.⁷⁷⁸
- In 2018, Assembly Bill 2127 required an assessment by CEC, working with CARB and CPUC, of the electric vehicle charging infrastructure needed to support the levels of electric vehicle adoption required to meet state goals of at least five million zero-emission vehicles on California roads by 2030, and of reducing emissions of greenhouse gases to 40% below 1990 levels by 2030. This assessment is intended to expand on CEC's electric vehicle infrastructure projections to consider

⁷⁷⁸ California Air Resources Board. 2017. California's 2017 Climate Change Scoping Plan. Available at https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

⁷⁷⁴ California Air Resources Board. 2018. Funding Guidelines for Agencies that Administer California Climate Investments. Available at https://ww2.arb.ca.gov/resources/documents/cci-funding-guidelines-administering-agencies.

⁷⁷⁵ California Climate Investments. 2019. Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. Available at

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2019_cci_annual_report.pdf.

⁷⁷⁶ California Air Resources Board. 2019. CCI Co-Benefit Assessment Methodologies. Available at https://ww2.arb.ca.gov/resources/documents/cci-methodologies.

⁷⁷⁷ See California Air Resources Board. 2018. Volkswagen Settlement – California ZEV Investments. Available at https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/vw-zevinvest.htm for various assessment reports.

all necessary charging infrastructure, including, but not limited to, chargers, make-ready electrical equipment, and supporting hardware and software, all vehicle categories, road, highway, and off-road electrification, port and airport electrification, and other programs to accelerate the adoption of electric vehicles. The assessment shall be completed every two years and examine existing and future infrastructure needs throughout California, including in low-income communities.⁷⁷⁹

⁷⁷⁹ California Assembly Bill 2127, Chapter 365. 2018.

Appendix C-3: City of Columbus, Ohio

Background on Columbus Climate Change and Energy Programs

• Energy Programs: Renewables

The Columbus Division of Power is a publicly owned electrical utility that provides power to industry, business and residential customers through its own distribution system; profits are used to fund the city's street light system.⁷⁸⁰ The division purchases 20% of its energy from "renewable energy resources" or "advanced energy resources," and this percentage will increase to 50% by 2023.⁷⁸¹ Per the Ohio revised code, renewable energy resources include solar, hydroelectric, geothermal, fuel from solid wastes, biologically derived methane gas, wind (generated in Lake Erie), and other types of fuel; while advanced energy resources include cogeneration, methods to increase electricity without increasing carbon dioxide emissions, Generation III nuclear reactors or improvements to existing facilities, certain kinds of advanced solid waste and demolition debris conversion technologies, and other types of fuel (see Ohio Revised Code Title 37 Section 3706.25 for a full definition). The city also offers its residential and commercial customers the option to purchase renewable power through the EcoSmart Program.⁷⁸²

In 2019, the City of Columbus hired a renewable energy owner's representative to assist in procurement of on-site renewable energy installations to serve the city's electricity load in a manner consistent with the city's existing power supply commitments. The city requested the renewable energy owner's representative to develop a holistic plan for renewable energy procurement to meet its goal to reduce greenhouse gas emissions from municipal operations 40% by 2030 and outline a pathway to meet the aspirational goal of procuring 100% renewable energy to serve the city's electricity load.

Through an American Cities Climate Challenge grant via Bloomberg Philanthropies, the City of Columbus has a goal of accelerating its commercial PACE financing. By December 2020, the goal is for the regional Energy Special Improvement District (eSID) to finance 15 new energy efficiency projects and five new renewable energy projects. The city is working on ways to streamline its commercial PACE program and develop a residential PACE program that would serve as a new mechanism for individual homeowners to finance residential energy efficiency and renewable energy projects.

• Payment Relief

Columbus provides low-income and senior power payment relief. 783,784

Energy Efficiency

https://www.columbus.gov/Templates/Detail.aspx?id=2147498067.

⁷⁸²City of Columbus. 2019. Public Utilities. EcoSmart Customer Choice. Available at

https://www.columbus.gov/Templates/Detail.aspx?id=2147498138.

⁷⁸³ City of Columbus. 2019. Low Income Power Payment Relief Program. Available at

⁷⁸⁴ City of Columbus. 2019. Senior Citizen Power Payment Relief Program. Available at https://www.columbus.gov/utilities/customers/Utility-Discount-Programs/.

 ⁷⁸⁰ City of Columbus. 2019. Public Utilities. Division of Power. Available here https://www.columbus.gov/utilities/about/The-Division-of-Power/.
 ⁷⁸¹ City of Columbus. 2019. Public Utilities. Renewable Energy. Available here

https://www.columbus.gov/utilities/customers/Utility-Discount-Programs/.

The Community Energy Savers (CES) program is designed to empower residents and businesses to reduce energy usage in their community by choosing from several opportunities offered by the local electric and gas utilities. Members of a neighborhood community earn points toward a set goal within a specified time by appliance recycling, home weatherization, energy efficiency evaluations or audits, and high efficiency appliance rebates. By participating in CES, community members are incentivized not only to save energy and money in their homes and businesses but help their community receive grants from AEP Ohio and Columbia Gas of Ohio (both utilities) that fund energy efficient projects within the community through a ratepayer societal benefits charge as part of their energy efficiency demand reduction program.⁷⁸⁵ The program collaborates with Sustainable Columbus.

Also as noted above, through an American Cities Climate Challenge grant via Bloomberg Philanthropies, the City of Columbus is hoping to finance 15 new commercial energy efficiency projects through commercial PACE financing and is considering ways to streamline its commercial PACE program and develop a residential PACE program that would serve as a new mechanism for individual homeowners to finance residential energy efficiency projects.

• Inventory of emissions

Greenhous gas emissions inventories are available for city operations and community-wide emissions. The most recent inventory is for 2017. ⁷⁸⁶

• Climate Change Policies and Programs

Columbus has a history of climate change policies and programs. In 2006, Mayor Coleman signed the U.S. Mayors' Climate Protection Agreement and released three iterations of the city's Green Community Plan.^{787 788} There are several climate-change-related goals outlined in the most recent five-year Green Community Plan, for the period from 2015 to 2020:

- Reduce greenhouse gas emissions from city operations by 30% and from the community by 20% over the next five years;
- Reduce energy consumption community-wide by 20% (as measured on a per capita basis) over the next five years;
- Increase mix of energy consumed from renewable sources to 10% over the next five years;
- Manage and reduce energy costs over the next five years;
- Reduce consumption of petroleum-based fuels from city operations by 33% and from the community by 5% over the next five years;
- Triple the amount of alternative fuel vehicles sold in Columbus to 22,000 over the next five years;

⁷⁸⁵ AEP Ohio. 2019. Community Energy Savers Program. Pilot Program Results. Available at http://communityenergysavers.com/content/pilot-program-results.

⁷⁸⁶ White, B. and J. D'Aversa. 2018. 2017 City of Columbus Greenhouse Gas Inventory. Available at https://www.columbus.gov/sustainable/.

⁷⁸⁷ City of Columbus. 2015. The Columbus Green Community Plan Green Memo III. Available at https://www.columbus.gov/Templates/Detail.aspx?id=2147506164.

⁷⁸⁸ Sustainable Columbus. 2019. Green Memos. Available at

https://www.columbus.gov/Templates/Detail.aspx?id=2147506164.

- Achieve Silver Level (or higher) Bicycle Friendly Community designation from the League of American Bicyclists over the next five years;
- Reduce vehicle–pedestrian crashes by 25% over the next five years;
- Reduce the amount of people driving alone to work to 70% over the next five years;
- Reduce food waste and yard waste sent to the landfill by diverting an additional 10% of each material (equal to 5,893 tons of food waste and 143,003 tons of yard waste) over the next five years;
- Divert an additional 10% (equal to 54,515 tons) of recyclable and reusable materials from the landfill over the next five years;
- Reduce construction and demolition waste by 20% over the next five years;
- Increase tree canopy a minimum of 1% annually over the next five years;
- Preserve an additional 1,374 acres of green space, for a total of 30,000 acres, over the next five years;
- Reduce gallons of treated water produced to 42,484 gallons per capita, a 3% reduction, over the next five years;
- Double the amount of LEED buildings within Columbus for a total of 550 over the next five years;
- Increase urban core density and attractiveness; aim to increase the population living in the downtown core to 10,000 over the next five years;
- Reduce environmental impacts of daily life by motivating behavior change through GreenSpot, increasing membership to 20,000 over the next five years. ⁷⁸⁹

The Green Community Plan outlines a series of actions to achieve these goals. Reports issued by the city summarize progress on its environmental goals. The last progress report was in 2017. ^{790,791}

The Green Columbus Fund is a grant program funded by the City of Columbus to provide financial incentives encouraging sustainable development and redevelopment. Private businesses and nonprofits can apply for reimbursement grants to assess and redevelop brownfield sites or to achieve LEED-certified, sustainable buildings.⁷⁹²

• Transportation/Mobility

Columbus has embarked on its Smart Columbus program "to accelerate human progress through open mobility." The program is funded by a \$40 million grant from the U.S. Department of Transportation's (USDOT) Smart City Challenge (grant period from August 2016 to May 2021) and \$10 million from the

⁷⁸⁹ City of Columbus. 2015. The Columbus Green Community Plan Green Memo III. Available at https://www.columbus.gov/Templates/Detail.aspx?id=2147506164.

⁷⁹⁰ City of Columbus. 2015. The Columbus Green Community Plan Green Memo III. Available at https://www.columbus.gov/Templates/Detail.aspx?id=2147506164.

⁷⁹¹ City of Columbus. 2019. Progress reports. Available at https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁷⁹² City of Columbus. 2019. Economic Development. Available at

https://www.columbus.gov/development/economic-development/Business-Assistance/.

Paul G. Allen Family Foundation (grant period from April 2017 to March 2020).⁷⁹³ Additional public and private resources have been leveraged into an Acceleration Fund (more below).⁷⁹⁴ Smart Columbus is a partnership among the City of Columbus, the Columbus Partnership, The Ohio State University, American Electric Power, the Mid-Ohio Region Planning Commission, Central Ohio Transit Authority, and others.⁷⁹⁵ Smart Columbus's goals are to: drive economic growth by attracting mobility research and development; improve quality of life by connecting people to employment and other opportunities such as access to health care, food, school, and job training; reducing greenhouse gas emissions through adoption of alternative fuel vehicles and less personal vehicle driving; improving safety through reduced human-error-induced collisions; reducing traffic congestion; and implementing more efficient and dynamic routing of emergency vehicles.⁷⁹⁶ The program notes three overarching "pillars:" building blocks for the future; demonstration projects; and shifting travel patterns.⁷⁹⁷

There are three "building blocks for the future:"

- Smart Columbus Operating System, which is envisioned as a web-based, dynamic datadelivery platform that will ingest and disseminate data while providing access to data services from multiple sources and tenants, including Smart Columbus technologies, traditional transportation data, and data from community partners such as food pantries and medical services;
- Connected Vehicle Environment, which will enhance safety and mobility throughout the city's transportation system using connected-vehicle technologies and applications emphasizing congested and high-crash intersections and corridors with installations targeted at light-duty vehicles, emergency vehicles, transit buses, and freight; and
- Supporting the acceleration of EV adoption with a goal of more than 900 new charging stations by the end of the grant period (March 2020).^{798,799,800}

There are four technology demonstration project areas:

- Autonomous vehicles connect the public on short trips where other modes are not presently available or convenient. This service will be similar to traditional transit service with predetermined routes and signage along passenger routes;⁸⁰¹
- Truck platooning reduces freight-induced congestion and queuing.⁸⁰² Truck platooning uses vehicle-to-vehicle communications and virtually connects two or more trucks together in a convoy, enabling all vehicles to communicate and to automatically accelerate together,

⁷⁹⁴ Smart Columbus. 2019. Smart Columbus Acceleration Fund. Available at

⁸⁰¹ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁷⁹³ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

https://smart.columbus.gov/projects/.

⁷⁹⁵ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁷⁹⁶ Smart Columbus. 2019. Frequently Asked Questions. Available at https://smart.columbus.gov/About/FAQ/.

⁷⁹⁷ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁷⁹⁸ Smart Columbus. 2019. Building a Road to the Future. Available at https://smart.columbus.gov/projects/.

⁷⁹⁹ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁸⁰⁰ Smart Columbus. 2019. Electric vehicle charging infrastructure. Available at

https://smart.columbus.gov/projects/electric-vehicle-charging-infrastructure.

⁸⁰² Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

brake together, and follow each other at a closer distance than unlinked trucks. Truck platooning improves safety (when automatic braking is used to enable trucks to react faster than humans) and increases energy efficiency (as the lead vehicle cuts the air flow and reduces aerodynamic drag on all platoon vehicles, using less fuel and reducing operating costs). Note: Smart Columbus is not advancing truck platooning at this time; ⁸⁰³

- Smart mobility hubs are select bus stops or transit centers on the bus rapid transit corridor where passengers can access the next leg of their trip. Public wi-fi on buses and at transit centers, real-time transit information, interactive kiosks, and a design to accommodate multiple modes of transportation such as bike-share, car-share, scooter-share, and park and ride will also be included; ^{804,805}
- A prenatal trip assistance program is being developed to provide reliable two-way transportation to medical offices, pharmacies, and food banks for expectant mothers using Medicaid-brokered services. This is an effort to lower the infant mortality rate.^{806,807}

There are four components to shifting travel patterns:

- A 1.8% increase in EV market adoption in Columbus and the seven-county region by the end of the three-year grant period. This is a 486% increase from the 2015 baseline of 0.37%; ⁸⁰⁸
- Multimodal trip planning and payment will allow travelers to view multiple trip itineraries and make reservations for shared-use options (e.g., bikeshare, transportation network companies, and carshare) and plan and pay for travel and parking through a common payment system. It will also provide incentives for increased user participation, ride-sharing options, and on-demand services for paratransit (through qualifying for federal subsidies);^{809,810}
- Trip assistance for individuals with cognitive disabilities provides more independence to traverse the city's bus system without caregivers or the paratransit system. An accessible smart-phone program provides multimedia prompts;^{811,812} and

⁸⁰³ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. 2018. Platooning Trucks to Cut Costs and Improve Efficiency. Available here. https://www.energy.gov/eere/articles/platooning-trucks-cut-cost-and-improve-efficiency.

 ⁸⁰⁴ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.
 ⁸⁰⁵ Smart Columbus. 2019. Smart Mobility Hubs. Available at https://smart.columbus.gov/projects/smart-mobility-hubs.

⁸⁰⁶ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁸⁰⁷ Smart Columbus. 2018. Prenatal Trip Assistance. Available at https://smart.columbus.gov/projects/prenatal-trip-assistance.

⁸⁰⁸ Smart Columbus. 2019. Consumer Electric Vehicle Adoption. Available at

https://smart.columbus.gov/projects/#project--consumer-electric-vehicle-adoption.

⁸⁰⁹ Smart Columbus. 2019. Multimodal Trip Planning-Common Payment System. Available at

https://smart.columbus.gov/playbook-assets/multimodal-trip-planning---common-payment-system/multimodal-trip-planning-application-minimum-viable-product-launches-using-blockchain.

⁸¹⁰ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁸¹¹ Smart Columbus. 2019. Available at Mobility Assistance for People with Cognitive Disabilities.

https://smart.columbus.gov/projects/mobility-assistance-for-people-with-cognitive-disabilities.

⁸¹² Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

• Expansion of the shared economy will enable residents to reach their destinations without the need to own or use a car, putting more job locations within reach, relieving congested roadways, and making streets safer.⁸¹³

The priorities of the Paul G. Allen Philanthropies center on five areas related to reducing greenhouse gas emissions under the umbrella of Smart Columbus:

- Pursuing decarbonization in partnership with power providers. Columbus will: install 905 MW of utility scale renewable energy capable of serving the Columbus region by 2030; procure a minimum of 1.2 MW of renewable energy for the city between 2017 and 2020; and save 480 GWh through energy efficiency and smart grid programs during the grant period (Note: Utilities will assist in achieving energy efficiency and renewable energy requirements but have indicated they will continue to participate even if the state legislation is relaxed);
- EV fleet adoption through working with public, private, and academic sectors to place 790 EVs in operation into fleets by end of the grant period (2017–20);
- Transit, autonomous, and multimodal mobility options;
- A 1.8% increase in consumer EV adoption in the seven-county region by the end of the three-year grant period, which is equivalent to a 486% increase from a 2015 baseline of 0.37%; and
- Installation of charging infrastructure to support the acceleration of EV adoption, with a goal of more than 900 new charging stations by the end of the grant period (2020).⁸¹⁴

City leaders have leveraged other investments. Private- and public-sector entities have made commitments to an Acceleration Fund that is reported to be more than \$500 million and has a goal of \$1 billion by 2020. The fund is used to complement and sustain Smart Columbus projects. About \$12 million of the fund is spent on Smart Columbus staffing and administration costs. Cited as complementary projects are:

- Investments in grid modernization and advanced EV adoption by the investor-owned utility AEP, which committed nearly \$200 million to upgrade central Ohio's grid by bringing smart meters online to more dynamically manage power loads, improve efficiency, and bring more utility scale solar;
- Autonomous vehicle testing by the Columbus Partnership and Ohio Dept of Transportation;
- City of Columbus funds to deploy smart streetlights and procure EVs;
- Central Ohio Transit Authority redesigned its network to provide more frequent service and better connections and is investing \$9 million to enable buses with Wi-Fi and transition to mobile fare payment;

⁸¹³ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

⁸¹⁴ Smart Columbus. 2019. We are Smart, Columbus. Available at https://smart.columbus.gov/about/.

- Smart Columbus Experience Center to provide residents the chance to try the new mobility technologies firsthand and test drive an EV;
- A Smart Mobility Corridor north of Columbus to include high-speed-data, fiber-optic line to connect Honda and the Ohio State Transportation Research Center and Ohio Super Computer Center funded by a separate US DOT award;
- a grant from Singularity University to sponsor a Smart City Accelerator in 2017 to drive innovation;
- Creation of the C-Pass system whereby eligible companies located in the downtown improvement district pay an extra fee per square foot in rent and those funds are used to offset transit costs for unlimited bus access for their employees. Additional funds for this program come from the Mid-Ohio Regional Planning Commission; program partners include the Central Ohio Transit Authority and Capital Crossroads Special Improvement District downtown property owners.
- A Mid-Ohio Regional Planning Commission feasibility study for potential routes supporting the Midwest Connect Hyperloop project connecting Columbus to Pittsburgh and Chicago and a study to advance intercity rapid-speed transportation service between Chicago, Columbus, and Pittsburgh. ^{815 816 817 818}

According to the Smart Columbus project timeline, parts of the project are in the stakeholder engagement and project procurement phases, with the Mobility Assistance project as the first deployment in 2019. Some demonstration projects have occurred, such as the first deployment of an autonomous vehicle pilot in Columbus in December 2018. Another is scheduled to begin in the Linden neighborhood in fall 2019.^{819,820}

The City of Columbus Division of Fleet Columbus continues to implement its portion of the Smart Columbus initiative, which includes the addition of 200 electric vehicles to its fleet by 2020, along with implementing the necessary charging infrastructure. Over 52% of Columbus's on-road fleet are some type of alternative fueled vehicle (electric, hybrid, flex fuel, CNG). City fleet vehicles reduced petroleum use by almost 27% from 2010 to 2018. The City of Columbus maintains its commitments to reduce overall greenhouse gas emissions and petroleum reductions by increasing green vehicle purchases (light- and

⁸¹⁶ Smart Columbus. 2019. Frequently Asked Questions. Available at https://smart.columbus.gov/About/FAQ/.

⁸¹⁸ MidOhio Regional Planning Council. 2019. Downtown C-Pass Eligibility. Available at

⁸¹⁵ Smart Columbus. 2019. Smart Columbus Experience Center. Available at

https://smart.columbus.gov/projects/#project--expansion-of-the-sharing-economy

⁸¹⁷ MidOhio Regional Planning Council. 2019. Downtown C-Pass Ride With Us Available at

https://morpc.gohio.com/regional-programs/downtown-cpass/

https://docs.downtowncpass.com/wp-content/uploads/2019/04/Cpass-Eligibility-Map-4-19.pdf

⁸¹⁹ Smart Columbus. 2019. Mobility assistance for people with cognitive disabilities. Availability at

 $https://smart.columbus.gov/projects/mobility-assistance-for-people-with-cognitive-disabilities_$

⁸²⁰ Smart Columbus. 2019. Self-driving vehicles. Available at https://smart.columbus.gov/projects/self-driving-shuttles.

heavy-duty vehicles), reducing idling, and purchasing "green" off-road vehicles in its fourth Green Fleet Plan. ^{821,822}

Anti-idling technology has been installed on new police cruisers to reduce fuel consumption.⁸²³

CoGo Bikeshare is a City of Columbus project sponsored by Medical Mutual of Ohio. The project has expanded from 46 stations (reported in the 2017 sustainability progress report) to 72 stations.^{824 825}

Lead Agencies

Sustainable Columbus is an overall city initiative within the Public Utilities Department that coordinates with other city departments and stakeholders. Its focus is on four pillars that include: GreenSpot (an outreach and engagement program with a goal of 20,000 members by 2020 and described under the Stakeholder Engagement section); climate and energy (such as the Community Energy Saver Program); resource protection and conservation goals (400 parks by 2020); and waste reduction. Smart Columbus is a separate initiative that is a public-private partnership with the City of Columbus and the Columbus Partnership (a nonprofit of business leaders). Smart Columbus coordinates with the Division of Fleet and Sustainable Columbus.

Benefits Directed to Disadvantaged Communities and Consumers

• Electric Bill Payment

The Low Income Power Payment Relief Program emergency funding is available to eligible (household income must be less than 150% of the current U.S. Bureau of Census federal poverty level) City of Columbus residential power customers who are having difficulty paying their electric bills. This pilot program began in 2018 and was made possible by an EcoSmart grant (grants from the American Municipal Power, Inc.) in partnership with the Mid-Ohio Regional Planning Commission and the Local Government Energy Partnership.⁸²⁶ The City of Columbus Division of Power participates in AMP's EcoSmart Choice program, which is based on the purchase of renewable energy credits (RECs) and provides an option for the city to deliver renewable energy to more customers. The city is piloting this program to apply funds not used to purchase RECs to provide one-time emergency funding and has assisted nearly 300 families (3% of the residential base) between October 2018 and June 2019.

• Energy Efficiency

The previously mentioned Community Energy Savers program to incentivize energy saving is a partnership between electric and gas utilities, the City of Columbus, and Impact Community Action (a

⁸²¹ Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸²² City of Columbus. 2019. Green Fleet Action Plan 2019-2022. Division of Fleet Management.

⁸²³ Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at

https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸²⁴ Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸²⁵ COGO Bikeshare. 2018. About Us. Available at https://www.cogobikeshare.com/about.

⁸²⁶ City of Columbus. 2019. Low Income Power Payment Relief Program. Available at

https://www.columbus.gov/utilities/customers/Utility-Discount-Programs/.

local community action agency) that is focusing on six "opportunity neighborhoods" with support from Bloomberg Philanthropies American Cities Climate Challenge program to expand upon a pilot. These neighborhoods were identified based on a zip code level analysis conducted for the Mid-Ohio Regional Planning Commission (MORPC) of energy burden (average annual residential energy costs compared with median average income) to help identify opportunities for energy efficiency improvements.⁸²⁷ The highest energy cost burden tends to be in neighborhoods with comparatively low median incomes and are areas that have been historically disadvantaged.⁸²⁸ The MORPC study recommended development of educational and efficiency programs to target communities with the highest energy burdens.⁸²⁹ Employees of the City of Columbus, utilities, and Impact Community Action conduct intensive targeted outreach to residents of these neighborhoods to facilitate on-line and in-home energy audits with the goal of connecting residents to other offerings by the utilities to motivate residential energy efficiency. Impact Community Action will be employing several "community energy advocates" who are residents of these neighborhoods and who will receive training to become energy auditors as a pathway to longterm employment. Extrinsic motivation to participate comes from the reward that the community chooses if they meet a certain level of participation in the program over a four-month period. For example, in one neighborhood, five elementary schools will receive hot water heater upgrades. This program is part of a city goal of 30,000 home energy audits by 2020.

• Transportation/Mobility

A key aspect of Smart Columbus is to make mobility a great equalizer by providing multimodal transportation and making it as accessible and easy to use as possible. According to the Project Management Plan for Smart Columbus, "Columbus is experiencing challenges such as traffic congestion, crashes, infant mortality, poverty and unemployment; challenges not uncommon to urban cities, that are worth trying to solve. Columbus believes equitable access to transportation is an integral piece to solving these complex issues. The City of Columbus's guiding smart city principle is that mobility is the great equalizer of the twenty-first century. More specifically, equitable access to transportation is to use transportation, powered by holistic solutions and integrated, open-source data, to give its residents access to opportunities that empower them. This could be access to healthcare providers, jobs, school, job training or other destinations. Columbus is attempting to shift the paradigm on transportation to ensure all residents can traverse the city in a safe and efficient manner of their choice."⁸³⁰

Four deployment districts were strategically identified based on the unique problem-solving proving ground they offer, which creates a foundation of nationwide scalability; two of these districts are identified as important for addressing equity issues. One is the residential area of Linden, noted as a

⁸²⁸ Mid-Ohio Regional Planning Commission. 2018. Franklin County Energy Study. Available at

- http://www.morpc.org/wordpress/wp-content/uploads/2018/o6/2018-Franklin-County-Energy-Study.pdf.
- ⁸²⁹ Mid-Ohio Regional Planning Commission. 2018. Franklin County Energy Study. Available at

⁸²⁷ Mid-Ohio Regional Planning Commission. 2018. Franklin County Energy Study. Available at http://www.morpc.org/wordpress/wp-content/uploads/2018/06/2018-Franklin-County-Energy-Study.pdf

http://www.morpc.org/wordpress/wp -content/uploads/2018/06/2018-Franklin-County-Energy-Study.pdf ⁸³⁰ U.S. Department of Transportation.2018. Project Management Plan for the Smart Columbus Demonstration Program. Available at https://smart.columbus.gov/uploadedFiles/SCC-A-PMP-Final-

Program%20Management%20Plan_1-30-18.pdf.

high-opportunity neighborhood in need of economic improvement. It was chosen as the first neighborhood district for its numerous socio-economic challenges, including low household income, lack of major employers, and high infant mortality rates. These problems are compounded by the lack of access to transportation options. Despite proximity to the central core of the city, basic services such as healthcare, grocery stores and banking are scarce within its boundaries. Many residents are transit-reliant, yet planning and completing a trip to access employment and services can be challenging, particularly for parents with young children, seniors, and travelers with disabilities. There are also many first-mile/last-mile (FMLM) challenges in the district.

Easton was selected as a deployment district because it is a high-traffic retail destination and jobs center. It is a mixed-use environment consisting of retail, dining, commercial office space, warehousing, and residential units accessed primarily by light-duty vehicles and some bus service operating along the fringes of the area. While a major employment center, the jobs are typically low paying and have a high rate of turnover. Research has demonstrated that a major contributor to the instability in these types of jobs is the lack of reliable transportation as well as FMLM challenges related to safety and mobility. Meanwhile, current traffic volumes in the area, particularly during peak times, have caused roadway capacity concerns. Adding an additional freeway exit to support the present volume would be costly and could increase harmful emissions. There are opportunities to improve mobility and reduce emissions and emissions sources through a reduction in single occupancy vehicles and/or enhanced existing transit service.⁸³¹

The Prenatal Trip Assistance pilot project is intended to increase prenatal trips to the doctor for women living in certain zip codes where Franklin County infant mortality rates are persistently high. The goals are to provide better transit access for pregnant mothers with a goal of a 40% reduction in infant mortality by 2020 and a 50% decrease in racial disparity between African-American babies and white babies by 2020. This pilot is intended to provide the ability for pregnant women to schedule medical appointments and transportation to the appointments via a call center, app, or website and access services on-demand, including receiving driver notifications. Eligible mothers include those enrolled in a participating Medicaid managed care plan. For the pilot, mothers need to be able to speak and understand English.⁸³²

Both Linden and Easton are included in the autonomous vehicle deployment, which is a self-driving microtransit project to connect the public on short trips where other modes are not presently available or convenient; the program is similar to traditional transit service with predetermined routes and signage along passenger routes.⁸³³

As previously noted, another component of the Smart Columbus project is increasing EV adoption in Columbus and the seven-county region; a part of the grant is going toward the purchase of EVs by taxi

⁸³¹ U.S. Department of Transportation.2018. Project Management Plan for the Smart Columbus Demonstration Program. Available at https://smart.columbus.gov/uploadedFiles/SCC-A-PMP-Final-Program%20Management%20Plan_1-30-18.pdf.

⁸³² Smart Columbus. 2018. Prenatal Trip Assistance. Available at https://smart.columbus.gov/projects/prenataltrip-assistance.

⁸³³ Smart Columbus. 2019. Self-driving shuttles. Available at https://smart.columbus.gov/projects/self-driving-shuttles.

companies and transportation network (ride-hailing) drivers to provide for access to EVs by consumers who might not traditionally own a car and use these services.

Internal Operations

Each of the programs within the city government carry out their individual program mandates, such as Division of Fleet; Building and Zoning; Parks; Finance and Public Service; Public Health; Neighborhoods, etc. Sustainable Columbus is an initiative of the Mayor's Office within the Public Utilities program and helps coordinate the different initiatives with respect to the four pillars mentioned previously. Sustainable Columbus brings the different city programs together monthly to report on progress and provide for coordination opportunities. The Smart Columbus program is an initiative of the Mayor's Office and is co-located with The Columbus Partnership. The city leads the delivery of the work associated with the Smart City Challenge, Paul G. Allen Foundation, and American Climate Change Challenge and leverages resources and platforms with The Columbus Partnership.

External Stakeholder Engagement

Below are some examples of stakeholder engagement in the City of Columbus associated with its sustainability and climate-related programs:

- Sustainable Columbus focuses on optimizing internal city operations and working with external stakeholders to enhance and promote environmentally friendly policies throughout the community. Sustainable Columbus's key initiatives are GreenSpot, Climate & Energy, Resource Protection & Conservation, and Waste Reduction.
- The GreenSpot program educates, and recognizes households, businesses, and neighborhoods that adopt sustainable commitments and actions. Businesses, neighborhoods, and households have specific annual commitment levels; an electronic dashboard helps track their progress toward their commitments. Members receive public recognition, discounts from local businesses, and rebates for items such as compost bins or native trees. The program provides opportunities for peer-to-peer and business-to-business learning. More than 15,000 households and 1,200 businesses participate in GreenSpot; members engage in an annual awards ceremony with government leaders. GreenSpot programs include targeted engagement for children and schools as well as neighborhoods (engaging residents and businesses in the local sustainability plan development and implementation), including opportunity neighborhoods. GreenSpot members are helping to engage members of their community in the Community Energy Saving program previously mentioned. Additionally, the GreenSpot Advisory Board pitches ideas to the city on different avenues to promote the GreenSpot program. The current board consists of 30 members from government, business, utilities, nonprofits, and citizens. ⁸³⁴

⁸³⁴Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

Columbus sponsors many other public education and community events. It hosts the largest Earth Day weeklong service event, which has planted over 130,000 trees in the last 12 years and includes public education about electrification and mobility options.^{835,836}

• The Smart Columbus project engages stakeholders throughout the process. Public webinars have been held and, for various components of the project, a wide range of stakeholders are engaged to provide feedback. ⁸³⁷ Stakeholders from communities that point to equity considerations such as the Linden neighborhood were consulted, for example, in development of the AV demonstration project.⁸³⁸

Monitoring and Measurement

Annually since 2005, the City of Columbus releases a progress report summarizing environmental efforts; the last public report was issued in 2017 with a 2018 report in progress.⁸³⁹ The report provides progress related to: energy with respect to buildings, facilities, streetlights, and traffic signals; solid waste; water and wastewater facilities; renewable energy commitments; green buildings; waste reduction and recycling; and transportation (including anti-idling, walking infrastructure, and bicycling).⁸⁴⁰

AEP Ohio conducted an analysis of the first eight communities that participated in the Community Energy Savings pilot program and found that the communities achieved overall participation penetration rates of between 5% and 22%; each exceeded their goals and received financial reward and implemented energy efficiency or community projects supported with the financial awards.⁸⁴¹

The Smart Columbus Operating System is intended to be the source for performance metrics for program monitoring and evaluation.⁸⁴²

⁸³⁵ Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸³⁶Earth Day Columbus. 2019. Available at http://www.earthdaycolumbus.org/.

⁸³⁷ Smart Columbus. 2018. Connected Vehicle Environment Concept of Operations. Available at

https://smart.columbus.gov/uploadedFiles/Projects/180720_CV%20Environment%20ConOps%20Webinar_Final %20(2).pdf.

⁸³⁸ Smart Columbus. 2019. Self-driving Shuttles. Available at https://smart.columbus.gov/projects/self-driving-shuttles.

⁸³⁹ City of Columbus. 2017. Annual Sustainability Report 2017. Available at

https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸⁴⁰ Sustainable Columbus. 2017. City of Columbus Annual Sustainability Report. Available at

https://www.columbus.gov/Sustainable-Columbus/PROGRESS-REPORTS/.

⁸⁴¹ AEP Ohio. 2019. Community Energy Savers Program. Pilot Program Results. Available at http://communityenergysavers.com/content/pilot-program-results.

⁸⁴² Smart Columbus. 2019. Building a Road to the Future. Available at https://smart.columbus.gov/projects/

Appendix C-4: Illinois

Background on Illinois Climate Change and Energy Programs

- Illinois does not have a comprehensive climate change program; however, it has various energy efficiency and renewable energy programs that expressly address disadvantaged communities and consumers, most notably its Future Energy Jobs Act of 2016. The Future Energy Jobs Act (FEJA) of 2016 is a sweeping piece of energy-related legislation in Illinois that amends and expands key provisions of Illinois energy programs for renewables and energy efficiency; highlights of its major provisions include the following aspects:
 - Energy Efficiency. An expanded energy efficiency portfolio standard (EEPS) such that by 2030 utilities serving more than 3 million customers must cut electricity use by 21.5% and utilities serving less than 3 million retail customers but more than 500,000 must cut electricity use by 16%.⁸⁴³ The EEPS energy efficiency provision was originally established in 2007 and required the electric utilities Ameren Illinois and ComEd to offer energy efficiency programs funded by ratepayers; these programs began in June 2008.⁸⁴⁴ Energy efficiency plans are approved by the Illinois Commerce Commission. The Illinois Weatherization Program is described further in the section below on Benefits to Disadvantaged Communities and Consumers.
 - Renewable Portfolio Standard (RPS). FEJA updates the RPS and requires the Illinois Power Agency (IPA) to develop a long-term renewable resources procurement plan for utilities to meet a requirement of 25% renewable energy by 2025 with 75% of that amount to come from a combination of wind and solar. Other technologies eligible for renewable energy credits (RECS) under FEJA include biodiesel, anaerobic digestion, crops and untreated and unadulterated organic waste biomass, tree waste, and hydropower that does not involve new construction or significant expansion of hydropower dams, as well as landfill gas produced in Illinois. Facilities generating renewable energy seeking to sell renewable energy credits in Illinois must be located in Illinois or in states adjacent to Illinois to provide for public health, safety, and welfare benefits. The program is funded by regulated utilities. ^{845,846}
 - Adjustable Block Program and Community Solar The Adjustable Block Program (ABP) supports development of new photovoltaic distributed generation (e.g., rooftop solar) and community solar projects by offering a set price for purchase of RECs via 15-year contracts from qualifying projects. The price will be adjusted for successive volumetric blocks (hence the "adjustable block" name) based on market response. At least 50% of the new solar

⁸⁴³ Illinois Senate Bill 2814. 2016.

⁸⁴⁴ Illinois Energy Efficiency Stakeholder Advisory Group. N.d. SAG Background. Available at http://www.ilsag.info/background.html.

⁸⁴⁵ Illinois Senate Bill 2814. 2016.

⁸⁴⁶ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20(8-6-18).pdf.

photovoltaic (PV) projects (those energized after June 1, 2017) required under the FEJA must come through the ABP. The Illinois Power Agency has interpreted this requirement to apply to the goal of 2 million PV RECs by 2021–22.^{847 848} The program also expands the model to accommodate community solar so that homes and businesses that cannot place solar on their property can nonetheless participate in, and benefit from, direct access to renewable energy.⁸⁴⁹ Under the adjustable block, the payment for RECs is front loaded; all RECs are paid for on energization for systems up to 10 kW, and all payments for systems over 10 kW will be made within the first four years of energization.⁸⁵⁰

- While FEJA defines community renewable energy as including solar, wind, biomass, and other renewable sources, it creates an adjustable block program only for photovoltaic generation, directing the agency to "purchase renewable energy credits from subscribed shares" of community solar projects. By procuring their RECs, the agency is able to offer an additional financial incentive for customers choosing community solar.⁸⁵¹ IPA includes REC price adjustments ("adders") for community solar projects between 10 and 2,000 kW to create a diverse marketplace by not over-incentivizing large projects or under-incentivizing small projects. Additional REC price incentives or "adders" will be available for community solar projects with a higher level of small subscribers (residential and small commercial customers with subscriptions below 25 kW).⁸⁵² Illinois's APB is run by the Illinois Power Agency through its program administrator, InClime.^{853 854}
- Solar For All. Creation of the Illinois Solar for All Program (funded through the Illinois Power Agency Renewable Energy Resources Fund and also the greater of \$10 million or 5% of utilities renewables budget) includes incentives for low-income distributed generation and community solar projects beyond those offered in the adjustable block program. Funds are to be allocated as incentives for: low-income distributed generation; low-income community solar projects; nonprofits and public facilities; and low-income community solar

⁸⁴⁷ Illinois Power Agency. 2019. Adjustable Block Program. Available at http://illinoisabp.com/about/.

⁸⁴⁸ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at

https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resources%20Procurement%20Plan%20(8-6-18).pdf.

⁸⁴⁹ Illinois Power Agency. 2019. Adjustable Block Program. Available at http://illinoisabp.com/about/.

⁸⁵⁰ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20(8-6-18).pdf.

⁸⁵¹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20(8-6-18).pdf.

⁸⁵² Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20(8-6-18).pdf.

⁸⁵³ Illinois Power Agency. 2019. Adjustable Block Program. Available at http://illinoisabp.com/about/.

⁸⁵⁴ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Available at

https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resources%20Procurement%20Plan%20(8-6-18).pdf.

pilot projects to be implemented through contracts with third-party providers.⁸⁵⁵ More details on this program are provided under "Benefits to Disadvantaged Communities and Consumers."

- Job Training. A statewide solar installer job training pipeline requirement that is funded by ComED (the State of Illinois's largest utility).
- Zero Emission Standard. Establishment of a zero emission standard intended to support the environmental attributes of nuclear power generation: electric utilities that serve at least 100,000 retail customers must purchase ZECs equal to 16% of the actual amount of electricity delivered by the utility to retail customers during calendar year 2014 (the calculation is different for smaller facilities). ^{856,857}

• Other Energy Programs

Illinois Office of Energy invests in projects focusing on energy efficiency and new clean energy technologies with funds from the U.S. Department of Energy's State Energy Program and in partnership with the University of Illinois. Program areas include energy assessments and energy efficiency at publicly owned wastewater treatment plants and commercial and residential building energy conservation code training and technical support throughout Illinois pursuant to Section 25 of the Energy Efficient Building Act.⁸⁵⁸ ⁸⁵⁹ With funding from the U.S. Department of Energy and Illinois Department of Commerce and Economic Opportunity, Illinois Office of Energy administers the Illinois Clean Energy Innovation Fund, which directs investments in high-potential, early-stage, Illinois-based clean tech companies, including renewable energy, energy efficiency, energy storage, water resource management, next generation transportation, alternative fuels, and smart grid technologies.^{860,861} The Office of Energy also includes the Illinois EV Coordinator under the 2011 Electric Vehicle Act; the EV Coordinator acts as a point person for electric vehicle related policies and activities in Illinois.⁸⁶²

• Inventory of emissions

- ⁸⁵⁸ Illinois Environmental Protection Agency. 2019. Office of Energy. Available at
- https://www2.illinois.gov/epa/topics/energy/Pages/default.aspx.

⁸⁵⁹ (20 ILCS 3125/) Energy Efficient Building Act.

⁸⁶¹ Clean Energy Trust. n.d. Illinois Clean Energy Innovation Fund. Available at

⁸⁵⁵ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf

⁸⁵⁶ Illinois Senate Bill 2814. 2016.

⁸⁵⁷ See Illinois Power Agency. 2017. Zero Emission Standard Procurement Plan. Available at

https://www2.illinois.gov/sites/ipa/Documents/2018ProcurementPlan/Zero -Emission -Standard - Procurement-Plan-Approved.PDF.

⁸⁶⁰ Illinois Environmental Protection Agency. 2019. Office of Energy. Available at https://www2.illinois.gov/epa/topics/energy/Pages/default.aspx.

http://cleanenergytrust.org/programs/illinois-clean-energy-innovation-fund/

⁸⁶² (20 ILCS 627/) Electric Vehicle Act.

Illinois currently does not have a comprehensive inventory of greenhouse gas emissions that is published, but it is anticipated that as a recent member of the U.S. Climate Alliance they will be developing such an inventory.

• Comprehensive Climate Legislation and related programs.

Illinois does not have a comprehensive piece of climate legislation. In 2019, Illinois joined the U.S. Climate Alliance committing Illinois to the Paris Climate Agreement and noting that "Illinois has the opportunity to be on a path toward 100% clean and renewable energy and lead the transition to a clean energy economy." ⁸⁶³ Under the U.S. Climate Alliance, each member state commits to: implement policies that advance the goals of the Paris Agreement, aiming to reduce greenhouse gas emissions by at least 26-28% below 2005 levels by 2025; track and report progress to the global community in appropriate settings, including when the world convenes to take stock of the Paris Agreement; and accelerate new and existing policies to reduce carbon pollution and promote clean energy deployment at the state and federal level.⁸⁶⁴

• Mobile Sources and Transportation

The Illinois mobile source program to address the VW Settlement Funds is described below in the section on Disadvantaged Communities and Consumers. Under its Electric Vehicle (EV) Act, Illinois established an Illinois Electric Vehicle Advisory Council, chaired by an electric vehicle coordinator (as noted above), and issued a recommendations report in 2011 on strategies to promote the use of EVs.^{865 866}

Lead Agencies

The Illinois Power Agency is an independent agency subject to the oversight of the Executive Ethics Commission. It is the lead agency for implementing the provisions of the Future Energy Jobs Act related to renewables and the zero emission standards. Energy efficiency programs are administered by the utilities while renewable energy programs are administered through the IPA. The Illinois EPA is: the lead agency for administering funds allocated to Illinois from the Volkswagen Environmental Mitigation Trust; responsible for monitoring federal environmental policy under the governor's executive order joining the U.S. Climate Alliance; and includes the Illinois Office of Energy, which, as noted previously, oversees the EV Coordinating Council, Energy Code Training, the Clean Energy Innovation Fund, and Energy Efficiency at Wastewater Treatment Plants programs.

⁸⁶³ Executive Order 2019-06. Executive Order Joining the Us Climate Alliance and Committing to the Principles of the Paris Climate Agreement. Available at

https://www2.illinois.gov/Pages/government/execorders/2019_6.aspx.

⁸⁶⁴ U.S. Climate Alliance. 2019. Frequently Asked Questions. Available at

https://static1.squarespace.com/static/5a4cfbfe18b27d4da21c9361/t/5cdo6781e79c7011d1796256/1557161857458/USCA+FAQ+-+2019+MAY.pdf.

⁸⁶⁵ Illinois House Bill 2902. 2011.

⁸⁶⁶ Illinois Electric Vehicle Advisory Council. 2011. Final Report to Governor Pat Quinn and the Illinois General Assembly. Available at

https://www2.illinois.gov/dceo/aboutdceo/reportsrequired bystatute/20111230evacfinal report.pdf.

Benefits to Disadvantaged Communities and Consumers

• Energy Efficiency

As previously noted, under FEJA the two largest electric utilities in Illinois (Ameren Illinois and ComEd) must provide energy efficiency programs to its customers funded through ratepayers. Further, FEJA provided for minimum spends for energy efficiency programs targeted at low-income customers at or below 80% of the area median income served by these utilities (approximately \$8.35 million annually for Ameren and \$25 million annually for ComEd).⁸⁶⁷ FEJA states that implementation of energy efficiency measures and programs targeted at low-income households should be contracted, when it is practicable, to independent third parties that have demonstrated capabilities to serve such households, with a preference for not-for-profit entities and government agencies that have existing relationships with or experience serving low-income communities in the state. Each electric utility shall develop and implement reporting procedures that address and assist in determining the amount of energy savings that can be applied to the low-income procurement and expenditure requirements. The electric utilities shall also convene a low-income energy efficiency advisory committee to assist in the design and evaluation of the low-income energy efficiency programs.⁸⁶⁸

FEJA provides that no more than 6% of energy efficiency and demand-response program revenue may be allocated for research, development, or pilot deployment of new equipment or measures.⁸⁶⁹ In 2018, ComEd put forth a research, development, and pilot project solicitation to identify new ideas to benefit income eligible customers. As of April 2019, ComEd has launched 12 pilot/research projects representing a \$5.6 million investment in new technology or innovative program concepts focused on income eligible customers to: help income eligible customers save energy and reduce costs; address barriers to program participation as well as to improve delivery of energy efficiency programs; test program delivery, outreach, and recruitment; and increase understanding of the intersection of health issues and energy efficiency opportunities.⁸⁷⁰ One example of the health-based studies is a research project to evaluate three types of home ventilation systems and asthma outcome, including measurement of indoor air quality metrics, monitoring asthma symptoms, and measurement of energy impacts. Another example is a project to design and conduct joint health and energy assessments and upgrades in income eligible multifamily buildings focused on asthma triggers and energy efficiency opportunities at same time.⁸⁷¹

The Illinois EPA Office of Energy strives to achieve energy equity by investing in projects that focus on energy efficiency and new clean energy technologies to reduce the energy burden for Illinois consumers. As such, the office has an emphasis on providing equal opportunity for both energy savings and financial savings for municipalities in Illinois through improving wastewater treatment efficiency. The ultimate expectation is that this program will result in utility savings to all members of a community in that municipality regardless of race, class, and income. The program works in partnership with the University of Illinois to provide no-cost energy efficiency assessments at municipal treatment works that

⁸⁷¹ ComEd. 2019. Emerging Technologies. Available at

⁸⁶⁷ Illinois Senate Bill 2814. 2016.

⁸⁶⁸ Illinois Senate Bill 2814. 2016.

⁸⁶⁹ Illinois Senate Bill 2814. 2016.

⁸⁷⁰ ComEd. 2019. Emerging Technologies. Available at

http://www.comed.com/SmartEnergy/InnovationTechnology/Pages/EmergingTechnologies.aspx.

http://www.comed.com/SmartEnergy/InnovationTechnology/Pages/EmergingTechnologies.aspx.

identify opportunities for energy, cost, and emission savings as well as water-quality improvements. Illinois EPA operates a grant program opportunity for these municipalities to implement the assessment recommendations.⁸⁷²

• Energy: Solar For All Program

FEJA provided changes to the Illinois RPS planning framework to provide opportunities for low-income customers and communities. Specifically, the Illinois Solar for All Program creates a separate set of incentives designed to overcome the barriers to participation in renewable energy programs that lowincome customers have historically faced.⁸⁷³ The financial incentives of the adjustable block program (ABP) may not be sufficient for low-income consumers to overcome the substantial barriers to participate in the solar market; therefore, FEJA has several provisions with additional incentives to "grow the lowincome solar market." Such incentives include residential customers not having to pay up-front costs for on-site distributed generation or an up-front fee to subscribe to a community solar project. Up-front REC payment for the system will be made by IPA based on 15-year expected REC production once the system is connected to the grid.⁸⁷⁴ The incentives are payments for the RECs at rate higher than the ABP. Further, participation in the program should result in immediate, reliable reductions in energy costs for those residents or subscribers. This means that for projects financed or leased, any ongoing costs or fees will not exceed 50% of the value of the energy produced.⁸⁷⁵ For multifamily building with mastermetered utilities, the building owner/manager will need to commit to passing along at least 50% of the energy savings from net metering to the tenants through reduced (or not raised) rents, or by other means. 876

Funding for the Illinois Solar for All Program is intended to come from the Renewable Energy Resources Fund (RERF) and from systems benefits charges collected by utilities. RERF was originally established by alternative compliance payments as part of utilities' RPS obligation, but these funds are now paid directly to the utilities. RERF still exists, and although funds are lower due to budget transfers to the General Fund, the funds are by law to be paid back by August 1, 2021. IPA has identified a portion of RERF funds

⁸⁷² Illinois EPA. 2019. Office of Energy. Energy Efficiency at Wastewater Treatment Plants. Available at https://www2.illinois.gov/epa/topics/energy/eewwtp/Pages/default.aspx.

⁸⁷³ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁷⁴ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁷⁵ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁷⁶ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

to pay for part of the Solar For All provisions.⁸⁷⁷ Utilities annual funding from the systems benefit charge will also be used to fund the Solar For All program.⁸⁷⁸

In addition to the four subprograms under Solar For All (described in the paragraphs that follow), the act has a provision that allows stakeholders to propose alternative programs or modifications to the program and will be approved if the Illinois Commerce Commission determines that the modification *more effectively maximizes the benefits to low-income customers...*^{*879} The four subprograms include:

- Low-income distributed generation for on-site solar projects. This provision provides incentives to low-income customers, either directly or through solar providers, for photovoltaic on-site distributed generation. Participating solar panel installers commit to hiring job trainees for a portion of their low-income installations. Further, a program goal is a minimum of 25% of the incentives be allocated to projects located within Environmental Justice (EJ) communities.⁸⁸⁰
- Low-income community solar projects for off-site solar projects are incentives, either directly or through developers, for low-income subscribers of community solar projects. A project developer must identify its partnership with community stakeholders regarding the location, development, and participation in the project; this provision does not preclude a project from including an anchor tenant who does not qualify as low-income. If the proposed project has an anchor tenant that does not qualify as low income, the Illinois Solar for All incentive will be reduced to account for the share of the system subscribed by that tenant not receiving a low-income incentive. If the anchor tenant is a not-for-profit organization or a public sector entity, then the incentive will not be reduced to account for the share subscribed by the anchor tenant. REC prices are increased for community solar projects that are 100% low-income subscriber owned, which includes low-income households, not-for-profit organizations, and affordable housing owners. It is a program goal that a minimum of 25% of the incentives be allocated to community photovoltaic projects in EJ communities.⁸⁸¹
- Incentives for nonprofits and public facilities for on-site generation. The incentive level for public and nonprofit facilities recognizes that these entities may not be able to capture the same tax

⁸⁷⁷ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁷⁸ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁷⁹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸⁰ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸¹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

benefits as a comparably sized project participating instead in the adjustable block program.⁸⁸² This adjusted incentive level can help overcome the financing barriers that nonprofits and public facilities may face compared to private entities. These incentives are designed to support on-site solar to serve the load associated with not-for-profit customers as well as to support the load associated with public sector customers at public buildings. The Illinois Power Agency has developed additional criteria for vendors under these provisions to ensure that the non-profits and public sector customers in some manner serve low-income communities: vendors must either demonstrate the projects have connection to and input from low-income community members or that the project is located at a facility owned by an organization that is a critical service provider for the community (e.g., youth centers, hospitals, schools, homeless shelters, senior centers, community centers, places of worship, affordable housing providers including public housing sites).^{883,884}

Low-Income Community Solar Pilot Projects with distinct rules and incentives. These pilot 0 projects will participate in the Illinois Solar for All Program in a manner that is different from projects that participate in the other portions of Solar For All. Unlike other programs, the Low-Income Community Solar Pilot Projects will be competitively bid by the IPA, which means that rather than applying to the Illinois Solar for All Program and receiving an administratively determined REC price, the incentive will be determined through a competitive bidding process. The procurement for Low-Income Community Solar Pilot Projects will be bid on a dollar-per-REC basis for contracts that will be for 15 years of delivery of all RECs from the project to the agency once the project is energized. The total funding over time for Low-Income Community Solar Pilot Projects cannot exceed \$50 million, and it cannot exceed \$20 million per project. Furthermore, projects are allowed to be larger than the 2,000 kW limit that otherwise applies for community renewable generation projects.⁸⁸⁵ Pilot projects must result in economic benefits for the members of the community in which the project will be located. The project must include a partnership with at least one community-based organization that is an existing nonprofit organization providing programs and services within the community where the proposed project will be located (see below for eligibility).⁸⁸⁶ Funding may not be distributed solely to a utility, and

⁸⁸² Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸³ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸⁴ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸⁵ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁸⁶ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.
at least some funds under this pilot program must include a project partnership that includes community ownership by the project subscribers.⁸⁸⁷

Eligibility definitions under Illinois Solar For All. For ease of reference, the following eligibility clarifications are provided:

- Low-income Household is defined as persons and families whose income does not exceed 80% of area median income, adjusted for family size and revised every five years.⁸⁸⁸
- Affordable Housing is defined by IPA as that meeting the definition in the Illinois Affordable Housing Act: "Affordable housing means residential housing that, so long as the same is occupied by low-income households or very low-income households, requires payment of monthly housing costs, including utilities other than telephone, of no more than 30% of the maximum allowable income as stated for such households as defined in this section."⁸⁸⁹
- Environmental Justice Community is to be defined by the IPA by statute to ensure ο compatibility with other agencies' definitions and definitions used by federal, state, or local governments may be referred to for guidance.⁸⁹⁰ The IPA recognizes the Illinois EPA EJ Start Tool as a demographic screening tool that identifies regions with high minority population and/or low-income population and the USE EPA's EJ SCREEN that evaluates individual environmental indicators but does not look at cumulative impacts. IPA has taken what they refer to as a "hybrid" approach to identifying Environmental Justice communities by incorporating methods from both the U.S. Environmental Protection Agency EJ Screen and California's EnviroScreen. More specifically, "The CalEnviroScreen approach is an attractive way to consider defining environmental justice communities but the Agency notes that the development of it was a multi-year, multi-million dollar undertaking. Therefore, the Agency will utilize a streamlined approach that takes the concept of CalEnviroScreen and simplifies it for use in Illinois through the use of readily available data from the U.S EPA's EJ SCREEN tool. CalEnviroScreen does not account for race in its calculations, but by using data from EJ SCREEN the Agency will be able to do so."891,892 Communities with scores in the top 25% are defined as Environmental Justice communities and have been used to target grassroots education funding and incentives for nonprofits and public facilities. A community that is not in the top 25% of scores can also request selfdesignation as an Environmental Justice community based on a consideration of

⁸⁸⁷ Illinois Senate Bill 2814. 2016.

⁸⁸⁸ Illinois Senate Bill 2814. 2016

⁸⁸⁹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹⁰ Illinois Senate Bill 2814. 2016.

⁸⁹¹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹² Greco, Vito. 2019. Designating Environmental Justice Communities Feedback Session. Illinois Power Agency and Elevate Energy. Available at https://www.illinoissfa.com/app/uploads/2019/04/ILSFA-EJ-Designation-Session_Final.pdf.

demonstrated quantitative environmental and/or socioeconomic factors that were not adequately captured in the screening defined above.⁸⁹³

IPA has noted it will consider requests for self-designation as an Environmental Justice community based on factors not adequately captured in the EJ screening process (e.g., communities may define themselves through geographic, cultural, and other factors that may not correspond to census block group boundaries). IPA also notes that, in accordance with EPA caution, data in the EJSCREEN tool is not always reliable at the block group level, and it may be necessary to aggregate up to larger geographic areas. Therefore, IPA notes it will also consider reasonable adjustments to the borders of the calculated Environmental Justice communities.⁸⁹⁴ In April 2019, IPA published a self-designation process, which notes that the Solar for All administrator, Elevate Energy, will convene an EJ Community Self-Designation Committee (including representatives from Elevate Energy, IPA, and two EJ experts) to evaluate self-designation proposals and make a decision on whether the community in question is designated as an Environmental Justice community.⁸⁹⁵ This approach also allows for addressing data errors that can arise from using data when employing a model and mapping information.

Eligible non-profit and public projects must meet certain standards related to projects having sufficient connection to, and input from, low-income community members. Vendors who apply for Solar For All must demonstrate this capacity by: submitting a narrative summary of efforts taken prior to the application to conduct community outreach, education, and recruitment; listing community-based organizations they have partnered with, including verification letters; describing ongoing plans and staffing for community outreach, education, and recruitment; describing plans for ensuring that tangible economic benefits flow to program participants; participating in training offered by the program administrator on guidelines for marketing, contracting, and standard disclosures for program participants; or demonstrating that the project is located at a facility owned by an organization that is a critical service provider for the community (e.g., youth centers, hospitals, schools, homeless shelters, senior centers, community centers, places of worship, affordable housing providers, including public housing sites).⁸⁹⁶

Eligible community-based organizations must meet the following criteria (based on the National Community-Based Organization Network [NCBON]):

• The majority of the governing body and staff consists of local residents;

⁸⁹³ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹⁴ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹⁵ Illinois Power Agency. 2019. Environmental Justice Community Self-Designation Process. April 22, 2019. https://www.illinoissfa.com/app/uploads/2019/05/042219EJ-Self-Designation-Process_Final.pdf.

⁸⁹⁶ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

- The main operating offices are in the community;
- Priority issue areas are identified and defined by residents;
- o Solutions to address priority issues are developed with residents; and
- Program design, implementation, and evaluation components have residents intimately involved in leadership positions.⁸⁹⁷

Job training provisions under Solar For All. As previously noted, FEJA creates a solar job training pipeline requirement for Illinois's largest utility. ComEd is to train installers for the solar projects under the Solar for All program and other RPS programs, and the training program is to be "designed to ensure that entities that offer training are located in, and trainees are recruited from, the same communities that the program aims to serve and that the program provides trainees with the opportunity to obtain real-world experience." ComEd has committed "to coordinate with the Illinois Power Agency or its administrator of Illinois Solar for All." Also noted, under the Low-income Distributed Generation Incentive, is that solar installers shall commit to hiring job trainees for "a portion" of their low-income installations, and further that "an administrator shall facilitate partnering the companies that install solar panels with entities that provide solar panel installation job training."

FEJA creates the solar training pipeline program but also creates a "craft apprenticeship program" and a set of six "multi-cultural jobs programs." IPA infers that graduates of those programs could reasonably be considered "job trainees" for the purposes of the Low-income Distributed Generation Incentive within Solar for All. IPA notes that to ensure that "a portion" of projects use job trainees, Illinois Solar for All approved vendors who participate in the Illinois Solar for All program should demonstrate that at least 33% of projects include the use of one or more job trainees from the solar training pipeline program, the craft apprenticeship program, or the multi-cultural jobs program. IPA also has identified an increasing percentage number of hours worked on projects by job trainees over time and that vendors document use of trainees. ⁸⁹⁸

Education and participant guidance provision under Solar For All includes that the IPA administrator of the program will be required to provide guidance and education to Illinois Solar for All approved vendors, community groups, local government agencies, and others on how to leverage other governmental policies to facilitate low-income solar projects and energy efficiency programs. Other relevant policies include affordable housing, economic development, public finance, and tax policies, at the federal, state, and local level. The administrator will act as liaison with other governmental agencies that administer such programs to facilitate their use on solar development. ⁸⁹⁹

⁸⁹⁷ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹⁸ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁸⁹⁹ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

IPA acknowledges one aspect that is not addressed by Solar for All is the additional costs required to make a specific project viable (e.g., costs associated with roof repairs or wiring upgrades). However, IPA notes that they and their program administrator will work with Illinois Solar for All approved vendors to facilitate informing and educating program participants about opportunities that may be available to them through utility-administered energy efficiency programs, weatherization assistance programs, lead abatement programs, and other forms of support.⁹⁰⁰

Up to 5% of the funds from the RERF are to be used for community-based groups to assist in grassroots education efforts related to the Illinois Solar for All Program; that funding will be prioritized towards EJ communities to help meet this goal.⁹⁰¹

Additional consumer protections under the Solar For All program has been incorporated beyond those provided in the FEJA. For example, for distributed generation projects, a roof inspection report is required to ensure that projects are being installed on roofs that will not need substantial repairs. If repairs are needed, the Illinois Solar for All approved vendor must identify the plan for the repairs and how they will be paid for, ensuring that such costs do not place an unsustainable financial burden on the participant. In another example, approved vendors must verify that for residential program participants there are no up-front payments for distributed generation projects, or up-front subscription fees for community solar projects, and provide documentation to both the program participant(s) and to the program administrator explaining how the project or community solar subscription will result in a cash-flow positive experience for the participant(s) (including an estimate of the monthly savings) – and, specifically, ensuring that the savings accruing to each participant, net of any ongoing participation fees, are at least 50% the value produced by the solar system through avoided usage or net metering credits.⁹⁰²

• Energy Assistance Program

The Illinois Low Income Home Energy Assistance Program (LIHEAP) is designed to assist eligible lowincome households pay for winter energy services. The amount of payment is determined by income, household size, fuel type, and geographic location. LIHEAP is funded by the U.S. Department of Health and Human Services and the state of Illinois. The program is administered by the Illinois Department of Commerce and Economic Opportunity (DCEO). Energy Assistance is provided by local community action agencies or not-for-profit agencies throughout the state. Annual eligibility levels are determined based on available funding and may not exceed 150% of the federal nonfarm poverty level.⁹⁰³

The Illinois Home Weatherization Assistance Program (IHWAP) helps low-income residents and households conserve fuel and reduce energy costs by making their homes and apartments more energy

⁹⁰⁰ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁹⁰¹ Illinois Senate Bill 2814. 2016.

⁹⁰² Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁹⁰³ Illinois Department of Commerce and Economic Development. 2019. Utility Bill Assistance.

https://www2.illinois.gov/dceo/communityservices/utilitybillassistance/pages/default.aspx

efficient. To be eligible to receive assistance, the household's combined income must be at or below 150% of the federal poverty level using state funds, and 200% of the federal poverty level using DOE and HHS funding.⁹⁰⁴

- Mobile Sources: VW Settlement for NOx and ZEVs The Illinois Environmental Protection Agency 0 (Illinois EPA) has been designated as the lead agency to administer funds allocated to Illinois from the Volkswagen Environmental Mitigation Trust (Trust), established pursuant to Appendix D of the VW Settlement (Settlement). The Trust was established to provide funding for mobile source projects that reduce emissions of nitrogen oxides as mitigation for the excess nitrogen oxides emitted from the VW vehicles with emission defeat software.⁹⁰⁵ Illinois's initial allocation of funds is approximately \$108 million to be used to fund mobile source diesel emission reduction projects that reduce NOx emissions in Illinois.⁹⁰⁶ Illinois will use the Trust funds to support projects that will: reduce NOx emissions in areas where the affected Volkswagen vehicles were registered while taking into consideration areas that bear a disproportionate share of the air pollution burden, including Environmental Justice areas; maximize emission reductions; and maximize and leverage funding.⁹⁰⁷ Illinois EPA defines "area of EJ concern" as a census block group or areas within one mile of a census block group with income below poverty and/or minority population greater than twice the statewide average. The Illinois EPA has developed a Geographic Information System (GIS) mapping tool call EJ START to identify census block groups and areas within one mile of census block groups meeting the EJ demographic screening criteria. EJ START is publicly available and can be found on the Illinois EPA's EJ webpage (http://www.epa.illinois.gov/topics/environmental-justice/index). The Illinois EPA's EJ public participation policy focuses on public outreach in the context of permitting transactions but may be applied to additional Illinois EPA matters.⁹⁰⁸
- ZEV under VW Settlement Appendix C of the Settlement requires Volkswagen to invest \$1.2 billion in zero emission vehicle (ZEV) charging infrastructure and in the promotion of ZEVs in areas of the country outside California.⁹⁰⁹ VW's subsidiary, Electrify America, is responsible for administering the settlement. Electrify America is focusing Cycle 1 funds on developing charging infrastructure in two areas: community charging and a long-distance highway network. With respect to community charging, Chicago has been selected as one of 11 metropolitan areas for

⁹⁰⁴ Illinois Department of Commerce and Economic Development. 2019. Home Weatherization. https://www2.illinois.gov/dceo/communityservices/homeweatherization/pages/default.aspx.

⁹⁰⁵ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

⁹⁰⁶ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

⁹⁰⁷ Illinois Environmental Protection Agency. 2018. Beneficiary Mitigation Plan. Volkswagen Environmental Mitigation Trust Agreement. Available at https://www2.illinois.gov/epa/Documents/iepa/air-quality/vw-settlement/Illinois%20Beneficiary%20Mitigation%20Plan.pdf.

⁹⁰⁸ Illinois EPA. 2018. Illinois EPA Environmental Justice Public Participation Policy April 20, 2018. Available at https://www2.illinois.gov/epa/topics/environmental-justice/Documents/public-participation-policy.pdf

⁹⁰⁹ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

Cycle 1 investment. With respect to the highway network, the Electrify America prioritized highways include many located in Illinois, including I-80, I-90, I-70, I-24, I-94, I-64, I-39, and I-55.⁹¹⁰

• Other EV Infrastructure - In 2019, House Bill 62 appropriated \$70 million for grants to transportation EV infrastructure projects, prioritizing investments in medium- and heavy-duty charging, and electrifying public transit, fleets, and school buses.⁹¹¹

Internal Operations

Illinois Power Agency oversees the FEJA Solar For All Program in concert with Elevate Energy. However, the EJ officer from the Illinois EPA will participate as a member of the EJ Community Self-Designation Committee. IPA also oversees the renewable energy programs for the State of Illinois. The Energy Efficiency plans are developed by regulated utilities but approved by the Illinois Commerce Commission. Illinois EPA also oversees the Volkswagen settlement, and the Office of Energy, which is anticipated to implement the \$70 million appropriation for EV infrastructure and which, as already noted, addresses programs on wastewater energy efficiency, building energy code training and technical assistance, and clean energy technology investments.

External Stakeholder Engagement

The Illinois Energy Efficiency Stakeholder Advisory Group (SAG) was created in 2008 at the direction of the Illinois Commerce Commission (ICC) and is open to all interested participants, unless a topic presents a financial conflict of interest. SAG acts in an advisory capacity and addresses consensus on policy and technical issues, as needed. SAG also provides an opportunity to educate the Illinois stakeholder community on a variety of topics related to energy efficiency.⁹¹² Equity issues are discussed within SAG. Separate from SAG, the Income Qualified Energy Efficiency Advisory Committee (previously named the Economically Disadvantaged Clean Energy Stakeholder Advisory Committee) was created to assist in the design and evaluation of income gualified energy efficiency programs, pursuant to the Future Energy Jobs Act.⁹¹³ There are two groups: The Income Qualified North Advisory Committee (covering the northern third of Illinois) and the Income Qualified South Advisory Committee (covering central and southern Illinois). Both groups convene and receive input from community-based organizations, implementation contractors, utilities administering income gualified energy efficiency programs in Illinois, and other interested stakeholders on pressing energy needs facing income-gualified customers, and develop energy efficiency programs that help address these needs. ⁹¹⁴ The Income Qualified Committees statutorily mandated under FEJA are convened by the utilities and have a focus on topics related to the utilities' energy efficiency programs, marketing to increase trust and program participation, and workforce development. SAG is independently facilitated and has a technical and policy focus.

⁹¹⁰ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

⁹¹¹ Illinois House Bill 62. 2019.

⁹¹² Illinois Energy Efficiency Stakeholder Advisory Group. N.d. SAG Background. Available here http://www.ilsag.info/background.html.

⁹¹³ Illinois Energy Efficiency Stakeholder Advisory Group. N.d. Income Qualified Advisory Committee. Available at http://www.ilsag.info/economically-disadvantaged-advisory-committee.html.

⁹¹⁴ Illinois Energy Efficiency Stakeholder Advisory Group. N.d. Income Qualified EE Committee. Available at https://iqadvisorycommittee.com/.

Stakeholders were engaged throughout development of the FEJA Long-term Renewable Resources Procurement Plan and, as specified in the plan, are to be engaged going forward in changes to specific program areas.⁹¹⁵ Under the FEJA Low-income Community Solar Project Initiative project, developers are required to identify their partnerships with community stakeholders regarding the location, development, and participation in the project.⁹¹⁶ Stakeholders are also to be consulted if the incentives for low-income distributed generation; low-income community solar projects; nonprofits and public facilities; and low-income community solar pilot projects are undersubscribed and re-allocations for these programs are under consideration.⁹¹⁷ Participants and organizations in Environmental Justice and historically underserved communities are to be included in the development of criteria for evaluating the Solar for All Program.⁹¹⁸

Pursuant to the Energy Assistance Act, there is a Low-Income Energy Assistance Policy Advisory Committee to monitor the statute's administration and provide advice, opinion, and assistance on matters related to the act to the Department of Commerce and Economic Opportunity, which includes the LIHEAP and Low-Income Weatherization Assistance Programs.⁹¹⁹

Stakeholder perspectives were valuable to the development of the draft Beneficiary Mitigation Plan (BMP) for use of Illinois Environmental Mitigation Trust funds under the VW Settlement.⁹²⁰ After extensive public outreach, including public meetings, speaking events, surveys, and a public comment period, survey responses agreed with the goals of draft BMP that Illinois EPA should focus on maximizing emission reductions and focusing money on areas disproportionately impacted by air pollution.⁹²¹

Monitoring and Measurement

There are various monitoring and metric requirements in Illinois Climate and Energy Programs. Some examples follow below.

The no-cost municipal energy efficiency assessments conducted pursuant to the Illinois EPA program previously mentioned provide a series of measured outcomes in terms of energy and cost savings, incentives available, and payback years.⁹²²

The utility-based energy efficiency programs required to meet Illinois's Energy Efficiency Portfolio Standard are statutorily required to be evaluated independently; the resources dedicated to evaluation

⁹¹⁵ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁹¹⁶ Illinois Senate Bill 2814. 2016.

⁹¹⁷ Illinois Senate Bill 2814. 2016.

⁹¹⁸ Illinois Senate Bill 2814. 2016.

⁹¹⁹ Illinois Energy Assistance Act. 305 ILCS 20.

⁹²⁰ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

⁹²¹ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

⁹²² Illinois Environmental Protection Agency. 2019. Illinois EPA Wastewater Treatment Plant Energy Assessment Program.Wastewater Treatment Plant Brochure. Available at: https://smartenergy.illinois.edu/wastewater.

shall not exceed 3% of portfolio resources in any given year.⁹²³ Reports include detailed metrics for energy efficiency programs, including metrics on energy savings, specific to income qualified customers.⁹²⁴

Illinois Power Agency must have an independent evaluator review the Solar for All Program every two years based on objective criteria that includes feedback from stakeholders.⁹²⁵ As part of the evaluation of the Illinois Solar for All Program (see Section 8.17) the agency will review the impact of the program on the energy costs of participants to assess how the benefits created by the program reduces their energy burden. This evaluation will be used to inform any future modifications to the setting of incentive levels designed to create tangible economic benefits at a reasonable level for participants.⁹²⁶

EJ communities identified pursuant to Illinois EPA definition and its tool, EJ Start, were one of several metrics used for establishing Illinois EPA funding priorities for Illinois's Beneficiary Mitigation Plan under the VW settlement.⁹²⁷

⁹²³ Illinois Senate Bill 2814. 2016.

⁹²⁴ Illinois Energy Efficiency Stakeholder Advisory Group. N.d. Evalution Documents. Available at: http://www.ilsag.info/evaluation-documents.html.

⁹²⁵ Illinois Senate Bill 2814. 2016.

⁹²⁶ Illinois Power Agency. 2018. Long-Term Renewable Resources Procurement Plan. Final Plan. Available at https://www2.illinois.gov/sites/ipa/Documents/2019ProcurementPlan/Long%20Term%20Renewable%20Resourc es%20Procurement%20Plan%20%288-6-18%29.pdf.

⁹²⁷ Illinois Environmental Protection Agency. 2019. VW Settlement. https://www2.illinois.gov/epa/topics/airquality/driving-a-cleaner-illinois/vw-settlement/Pages/default.aspx#overview.

Appendix D – Summary of Recently Enacted Laws in Five States

Appendix D provides a brief summary of climate change related laws enacted in four RGGI states and New Jersey from April to July 2019. It also provides an overview of the rapid pace of state climate program development and, where present, a focus on provisions to direct program benefits to disadvantaged communities and communities.

Appendix D-1: Overview of Provisions of the 2019 Maine Act to Promote Clean Energy Jobs and Establish the Maine Climate Council⁹²⁸

This appendix provides a high-level overview of provisions of the June 26, 2019, Maine Act to Promote Clean Energy Jobs and Establish the Maine Climate Council (LD 1679) with a focus on provisions relevant to disadvantaged communities and consumers. Note that, at the time of enactment of the Act to Promote Clean Energy Jobs and Establish the Maine Climate Council, the state also enacted An Act to Reform Maine's Renewable Portfolio Standard (LD 1494), and an Act to Promote Solar Energy Projects and Distributed Generation Resources in Maine (LD 1711). Provisions in the latter require that at least 10% of the total capacity of a shared distributed generation resource must be subscribed by households with low or moderate income or by organizations serving households with low or moderate income if the subscriptions serve to directly reduce the electricity costs for households with low or moderate income. Alternatively, the law requires that, if a municipality accounts for more than 50% of the subscriptions to a shared distributed generation resource, 5% of the total capacity of the shared distributed generation resource must be subscribed by households with low or moderate income or by organizations serving households with low or moderate income if the subscriptions serve to directly reduce the electricity costs for households with low or moderate income. "Household with low or moderate income" means a household that provides proof of participation in a utility, municipal, state, or federal income-based assistance program or a household that provides proof of household income up to 80% of the median income for the county or metropolitan area where the household is located."929

Statewide limits:

The law sets a statewide limit of having statewide emissions be 80% below 1990 levels by 2050 with a 2030 interim target of having statewide emissions be at least 45% below 1990 levels.

Councils, working groups, panels established by the law:

The law establishes the Maine Climate Council, which is charged with advising the governor and legislature on ways to mitigate the causes of, prepare for, and adapt to the consequences of climate change. The council includes 39 members, including two members of the state Senate and House of Representatives; the Director of the Maine Efficiency Trust; the Governor's Offices of Energy, Policy and Management; the Commissioners of Administrative and Financial Services; Agriculture, Conservation and Forestry; Economic and Community Development; Environmental Protection; Inland Fisheries and Wildlife; Labor; Marine Resources; Transportation; Defense, Veterans and Emergency Management; Health and Human Services; and 20 public members, including representation of marine fisheries, agriculture, municipal governments, forestry, energy, Indian tribes, building trades, manufacturing, organized labor, environmental nonprofit organizations, and experts in climate change science, resilience and adaptation, emergency management, and a youth representative.

Directives included in the law:

⁹²⁸ An Act to Promote Clean Energy Jobs and Establish the Maine Climate Council. Availabel at: 13, 2019.

http://legislature.maine.gov/bills/display_ps.asp?PID=1456&snum=129&paper=SP0550

⁹²⁹ Act Act to Promote Solar Energy Projects and Distributed Generation Resources in Maine. Available at: http://legislature.maine.gov/bills/display_ps.asp?PID=1456&snum=129&paper=SP0565

The law requires the Department of Environmental Protection to:

• Adopt regulations to track and report on annual greenhouse gas emissions.

The Strategic Energy Investment Advisory Board is directed to

- Adopt rules to ensure compliance with the statewide greenhouse gas emissions levels which must:
 - Be consistent with the state Climate Action Plan;
 - Set as a priority reduction from major sources of emissions;
 - Be fair and equitable and account for and give significant weight to emissions reductions already achieved by various sectors;
 - Establish mechanisms for crediting voluntary measures that quantifiably and reliably sequester carbon in forests, farms, and coastal land.

The Department of Transportation is authorized to:

• Adopt regulations to ensure compliance with the statewide greenhouse gas emissions limits

The newly established Maine Climate Council is directed to:

- Establish a Science and Technical Working Group that is directed to support the work of the council and its working groups by monitoring and studying relevant data, findings, and recommendations related to climate change in the state. The Science and Technical Working Group shall: report on how direct and indirect effects of climate change affect communities and public health, marine environments and species, agriculture, forestry and ecosystems of the state; establish science-based sea level rise projections by the state and produce maps showing areas of the state most affected by storm surges, ocean and river flooding, and extreme weather events; and analyzes options for quantifying carbon sequestration associated with biomass and marine environment management.
- Establish additional working groups as needed, including the following formal working groups: Transportation; Coastal and Marine; Buildings, Infrastructure and Housing; Working Lands; and Energy. The working groups are charged with a set of tasks including but not limited to:
 - Advising the council on the development of the state's updated climate action plan, including recommendations for legislation to support its implementation and seeking public input in development of the plan;
 - Ensuring that the state's transition to a clean energy economy benefits all residents of the state fairly and equitably, with particular consideration given to sources of employment, income levels, and historical experience;
 - Developing mitigation and adaptation strategies that consider how low-income residents of the state and residents who are members of vulnerable communities will be affected by climate change and by a transition to a clean energy economy and how programs to address such effects can be designed to be accessible to all residents of the state regardless of income level, age, race, or geographic location;
 - Assessing the impacts that climate change may have on the state's economy, revenues, and investment decisions;

- Assessing the need for utilities and other public and private service providers throughout the state to adjust their operating practices and investment strategies to increase their resiliency to climate change impacts;
- Advising on how the state can optimize infrastructure, energy, and new technologies for mitigation and adaptation options to create jobs in the state,
- Assessing the impacts that climate change may have on agriculture, fishing, forestry, and other natural-resource-based industries in the state;
- Recommending short-term and long-term strategies to mitigate the causes of and prepare for and adapt to the consequences of climate change;
- Developing a plan to encourage and prepare for transitions in transportation, including both low-carbon and no-carbon technologies;
- Recommending strategies to address and prepare for coastal and coastal watershed hazards, including, but not limited to, ocean and coastal acidification, increased storm surges, extreme precipitation and other extreme weather events, projected sea level rise and increased river flooding and storm water runoff;
- Developing new and supporting existing programs, codes, and incentives that encourage increased energy efficiency and lower carbon emissions; and
- Assisting local governments and other constituents in supporting regional and communityscale climate vulnerability assessments and the development of specific strategies and integration of specific strategies into local plans and ordinances.
- Update the statewide Climate Action Plan and do so every four years thereafter.
 - Development of the plan will include input from stakeholders and adhere to the following objectives:
 - Cost-effective, technologically feasible, and equitable greenhouse gas emissions reduction pathways and science-informed adaptation and preparedness strategies;
 - Minimization of deleterious effects, including those on persons of low- and moderate-income and on public health and the environment;
 - Support for economic sectors that face the biggest barriers to emissions reductions and creating, when feasible, additional employment and economic growth in the state, especially in rural and economically distressed regions of the state;
 - Ensuring equity for all sectors and regions of the state and that the broadest group of residents benefit from the achievement of the greenhouse gas emissions reduction levels, including consideration of economic, quality-of-life, and public health benefits;
 - Encouraging the use of natural solutions to reduce net annual greenhouse gas emissions and increase resiliency;
 - Maximizing involvement in interstate and regional initiatives and programs designed to reduce regional greenhouse gas emissions;
 - Supporting industries, technology, and training that will allow workers and companies in the state to benefit from carbon reduction solutions through jobs and economic activity; and

- Planning for adaptation and resilience strategies that will prepare the state's communities, infrastructure, and industries for current and anticipated effects of climate change.
- The plan will include the following elements:
 - Evaluation of mitigation strategies to reduce annual greenhouse gas emissions to meet the statewide limits, including reporting on technical feasibility and cost-effectiveness of each mitigation strategy;
 - Identification of actions to enhance climate change adaptation and resilience in the state including implementation guidelines that:
 - Prioritize the welfare of the state's citizens and visitors and recognize and foster the value of the state's natural resources and natural-resource-based industries;
 - Encourage diversity, inclusion and equity;
 - Provide education and training opportunities when appropriate;
 - Build upon existing global, national, and state plans and partnerships for addressing climate adaptation, emergency preparedness, and disaster risk reduction;
 - Encourage investments that prevent and proactively mitigate risk;
 - Encourage, foster, and utilize the most recent scientific and technical information available; and
 - Incorporate means for measuring progress.
- The plan will include a Clean Energy Economic Transition Plan that includes input from entities with expertise in education, training, apprenticeships, workforce, and labor. The Clean Energy Economic Transition Plan must:
 - Address barriers to advance the state's clean energy economy;
 - Highlight strategies for the state's rural communities, workers, and businesses as the state transitions to a low-carbon future that are designed to encourage good paying jobs and long-term employment;
 - Identify policy recommendations; opportunities for public-private partnerships; workforce development and educational opportunities, including opportunities for training and retraining workers and the development of apprenticeship programs; and
 - Identify other strategies necessary to create clean energy jobs and a robust clean energy economy.

Appendix D-2: Overview of Provisions of the 2019 Maryland Clean Energy Jobs Act ^{930,931}

This appendix provides a high-level overview of provisions of the April 8, 2019, Maryland Clean Energy Jobs Act with a focus on provisions relevant to disadvantaged communities and consumers.

Definitions to note:

The law defines low-income residents of the state as having an annual household income that is at or below 175% of the federal poverty level.

Statewide limits:

The law enhances provisions of the state's Renewable Portfolio Standard, including directing that 50% of the state's power come from renewable sources by 2030, with 14.5% of that coming from solar energy and at least 1,200 megawatts coming from offshore wind. It requires that a plan be developed to further enhance the Renewable Portfolio Standard to reach a goal of 100% of the state's energy coming from renewable sources by 2040.

Directives included in the law:

The law authorizes use of monies from the Strategic Energy Investment Fund to benefit small, minority, women-owned, and veteran-owned businesses engaged in clean energy industry in the state. It allocates \$7 million for such programs.

The law also stipulates that alternative compliance payments under the Renewable Portfolio Standard that are used to support the creation of new solar energy sources in the state must directly benefit low-income residents.

The law requires the Department of Labor to annually submit a report on the status of the funds received from the Strategic Energy Investment Fund for small, minority, women-owned, and veteran-owned clean energy businesses.

The law establishes a Clean Energy Workforce Account that establishes clean energy training programs. It requires that the training programs be based on national best practices to prepare workers for careers in clean energy industries and must have strategies for increasing apprenticeship opportunities for unemployed and underemployed individuals. Apprenticeship providers that receive grants must agree to use or supply American manufactured goods and enter into a project labor agreement. The law allocates \$8 million to programs that provide grants to support workforce development programs, including:

• Pre-apprenticeship job training to prepare individuals to participate in apprenticeship programs registered in Maryland;

⁹³⁰ Note: under Maryland law, a bill that passes both houses of the legislature at the end of the legislative session and is not signed by the governor within 30 days automatically becomes law; this law was enacted without the governor's signature with the governor indicating that the law was not sufficiently aggressive on issues related to clean energy and clean jobs.

⁹³¹ Maryland Clean Energy Jobs Act (SB516). Ch. 757 2019 LAWS OF MARYLAND.

- Youth apprenticeship job training preparing participants for jobs in solar and wind energies;
- Registered apprenticeship job training.

The law directs the Maryland Public Service Commission to:

- Make its approval of offshore wind projects contingent on establishing agreements with applicants to use contractors and subcontracts that are minority businesses and to executive agreements with applicants that promote increased opportunities for local businesses and small, minority, women-owned, and veteran-owned businesses in the clean energy sector, require use of prevailing wage, and promote career training for women, minorities, and veterans.
- Prepare annual reports on efforts to expand opportunities for minority, women-owned, and veteran-owned businesses in the state's offshore wind industry.
- Assess whether any in-state industries and/or communities that rely on those industries may be displaced or negatively affected by a 100% renewable energy portfolio standard and recommendations on how to provide and fund a just comparable transition for workers.

Appendix D-3: Overview of Provisions of the 2019 New Jersey Act Concerning the Reduction of Greenhouse Gases⁹³²

This appendix provides a high-level overview of provisions of the July 24, 2019, New Jersey Act Concerning the Reduction of Greenhouse Gases.

The new law amends the state's 2007 Global Warming Response Act⁹³³ to establish new timeframes for implementation of certain requirements, including adopting rules and regulations to achieve the statewide greenhouse gas emissions limits. The new law recognizes the previous act's establishment of statewide greenhouse gas limits of emissions levels equal to 1990 levels by 2020 and emissions reductions of 80% less than 2006 levels by 2050.

The new law directs the state Department of Environmental Protection to adopt rules and regulations to:

- Establish a greenhouse gas emissions monitoring and reporting program for all significant sources of emissions including short-lived climate pollutants;
- Establish interim benchmarks necessary to achieve the 2050 limit;
- Establish measures necessary to achieve the 2050 limit and the established interim benchmarks.
- Develop a plan to achieve the 2050 and interim benchmark statewide limits, including specific recommendations for legislative and regulatory action, including a comprehensive plan to address short-lived climate pollutants.

⁹³² An Act Concerning the Reduction of Greenhouse Gas Emissions. Note: this law is currently only available in bill form at: https://www.njleg.state.nj.us/2018/Bills/S3500/3207_R2.PDF
⁹³³ Global Warming Response Act. N.J.S.A 26:2C-37.

Appendix D-4: Overview of provisions of the 2019 New York Climate Leadership and Community Protection Act⁹³⁴

This appendix provides a high-level overview of provisions of the July 18, 2019, New York Climate Leadership and Community Protection Act with a focus on provisions relevant to disadvantaged communities and consumers.

Definitions to note:

- Disadvantaged communities communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate-income households. Disadvantaged communities shall be identified based on geographic, public health, environmental hazard, and socioeconomic criteria, which shall include but are not limited to: areas burdened by cumulative environmental pollution and other hazards that can lead to negative public health effects; areas with concentrations of people that are of low income, high unemployment, high rent burden, low levels of home ownership, low levels of educational attainment, or members of groups that have historically experienced discrimination on the basis of race or ethnicity; and areas vulnerable to the impacts of climate change such as flooding, storm surges, and urban heat island effects.
- Greenhouse gas emission offset projects includes: natural carbon sinks, reforestation, or wetlands restoration; greening infrastructure; restoration and sustainable management of natural and urban forests or working lands, grasslands, coastal wetlands, and subtidal habitats; efforts to reduce hydrofluorocarbon refrigerants, sulfur hexafluoride, and other ozone depleting substance releases; anaerobic digesters, where energy produced is directed toward localized use; carbon capture and sequestration; ecosystem restoration; and other types of projects recommended by the council in consultation with the climate justice working group that provide public health and environmental benefits and do not create burdens in disadvantaged communities.

Statewide limits

Requires reductions in statewide greenhouse gas emissions of 40% from 1990 levels by 2030 and 85% emissions reductions by 2050. To reach a net zero emissions level, the remaining 15% of emissions may be directly reduced or offset.

Enhances the state Clean Energy Standard to require:

- a minimum of 70% renewable energy by 2030;
- o 100% zero emissions electricity supply by 2040;
- 9,000 megawatts of offshore wind energy by 2035;
- 6,000 megawatts of solar generation by 2025;
- o 3,000 megawatts of statewide energy storage by 2030; and
- 185 trillion BTUs of end-use energy savings below the forecasted 2025 levels.

⁹³⁴ New York Climate Leadership and Community Protection Act of 2019. Last accessed July 13, 2019. https://www.nysenate.gov/legislation/bills/2019/s6599

Climate Action Council, working groups, panels established by the law:

The law establishes a 22-member New York State Climate Action Council consisting of heads of the following state agencies: transportation, health, economic development, agriculture, housing and community renewal, environmental conservation, labor, and the heads of the Public Service Commission, NYSERDA, New York Power Authority, Long Island Power Authority, the Secretary of State, and public members with expertise in issues relating to climate change mitigation and/or adaptation, such as environmental justice, labor, public health, and regulated industries. Co-chairs are the heads of NYSERDA and the New York Department of Environmental Conservation.

The law requires that the council establish a Just Transition Working Group to be chaired by the head of the state Department of Labor and the head of NYSERDA. The group will consistent of between 13 and 17 members including the heads of the Departments of Housing and Community Renewal and Public Service and public representatives of Environmental Justice communities, labor, clean energy developers, and energy intensive industries.

The law directs the Department of Conservation to establish a Climate Justice Working Group comprised of representatives from the Departments of Environmental Conservation, Health and Labor, and NYSERDA; representatives of Environmental Justice communities that include communities of color, low-income communities, and communities with disproportionate pollution and climate change burdens; representatives of community-based organizations with a history of advocating on Environmental Justice issues; and representatives from New York City, rural, and upstate urban communities.

The law also refers to the role of the state Environmental Justice Advisory Group, a permanent advisory body created by a different bill pending in the legislature (A1564/S2385).

Directives included in the law:

- The New York State Climate Action Council is charged with:
 - Within three years and every five years thereafter, preparing a scoping plan that outlines recommendations for attaining the statewide greenhouse gas emissions limits, including economy-wide net zero emissions. The council is directed to: advise the State Energy Planning Board's adoption of actions to implement the provisions of the scoping plan in the next State Energy Plan; consult with the Environmental Justice Advisory Group and the Climate Justice Working Group in development of the scoping plan; and provide meaningful opportunities for public comment on the draft plan, including segments of the population that will be affected by the plan including residents of disadvantaged communities. The scoping plan is intended to identify actions needed to attain the statewide greenhouse gas limits, including measures to:
 - Establish performance-based standards for sources of greenhouse gas emissions in the transportation, building, industrial, commercial, and agricultural sectors;
 - Reduce emissions from the electricity sector by displacing fossil-fuel-fired electricity with renewable electricity or energy efficiency;
 - Land-use and transportation planning measures;

- Achieve long-term carbon sequestration and/or promote best management practices in land use, agriculture and forestry;
- Achieve six gigawatts of distributed solar energy by 2025, nine gigawatts of offshore wind capacity by 2035, 185 trillion BTUs of energy reduction by 2025, and three gigawatts of statewide energy storage capacity by 2030;
- Promote beneficial electrification of personal and freight transport and other strategies to reduce greenhouse gas emissions from the transportation sector;
- Achieve reduction in energy use in existing residential and commercial buildings, including appliance standards, more stringent building codes, and mandatory building energy benchmarking;
- Disclose energy efficiency in home sales;
- Expand the ability of state facilities to utilize performance contracting;
- Aid in the transition of the state workforce during the rapid emergence of the clean energy industry;
- Achieve healthy forests that support clean air and water, biodiversity, and sequester carbon;
- Limit the use of chemicals, substances, or products that contribute to global climate change when released to the atmosphere;
- Limit emission leakage.
- Quantifying the potential costs and benefits of the scoping plan taking into account the economic and social benefits of greenhouse gas emissions reductions, including environmental and public health, reduction of co-pollutants, and diversification of energy sources; recommend a de minimis threshold of greenhouse gas emissions below which emission reduction requirements will not apply; and identify measures to maximize reductions of both greenhouse gas emissions and co-pollutants in disadvantaged communities.
- The Just Transition Working Group is charged with:
 - Advising the Climate Action Council on: issues associated with workforce development with a focus on opportunities for disadvantaged communities and populations underrepresented in the clean energy workforce; impacts that leakage may have on the state's industries and host communities; and any other workforce matters directed by the council.
 - Identifying impacts of energy intensive industries on the state's workforce and ways to maximize the state's workforce in the new energy economy;
 - Identifying generating facilities that may be closed due to a transition to a clean energy economy and opportunities for reuse of those sites;
 - Publishing a report on the number of jobs created to counter climate change, training needs, and workforce disruption due to transition to a low-carbon economy.
- The Climate Justice Working Group is charged with:
 - Establishing criteria to identify disadvantaged communities for purposes of co-pollution and greenhouse gas emissions reductions, regulatory impact statements, and allocation of program investments.

- Publishing draft criteria for identifying disadvantaged communities along with a draft list of specific communities identified.
- Ensuring that there are meaningful opportunities for public comment.
- The Department of Environmental Conservation is directed to:
 - Issue an annual report that inventories sources of greenhouse gas emissions in the state from all sources. The report is also required to estimate emissions from imported electricity and extraction and transmission of fossil fuels into the state. The department is also required to consider establishing a mandatory registry for reporting from individual sources.
 - In consultation with the Environmental Justice Advisory Group and the Climate Justice Working Group along with the public, promulgate regulations to ensure compliance with the statewide emissions reduction limits and to work with other state agencies to adopt regulations contributing to attainment of the statewide limits as well. The department's regulations are required to ensure that the statewide limits are not exceeded; reflect the findings of the scoping plan; ensure that actions are permanent, quantifiable, verifiable, and enforceable; do not increase co-pollutants in disadvantaged communities; prioritize measures that result in reductions in disadvantaged communities.
 - In consultation with the Climate Justice Working Group, develop a community air monitoring systems demonstration program in at least four communities that have potentially high exposures for air pollution. As part of the program, the department will publish the air quality data produced in the demonstration communities and, in consultation with the Climate Justice Working Group, develop a strategy to reduce emissions of toxic air contaminants and criteria air pollutions in disadvantaged communities. The strategy will include: an assessment of communities with high cumulative exposure burdens for air pollutants; a method for assessing contributing sources and their relative contributions to community burdens; and an assessment of available measures for reducing emissions. Following the demonstration program, the department may select additional locations to conduct community air monitoring programs and adopt regulations for the program.
 - Establish an alternative compliance mechanism in consultation with the Climate Action Council, the Environmental Justice Advisory Group, and the Climate Justice Working Group. The mechanism shall not result in disadvantaged communities having to bear a disproportional burden of environmental impacts and may only be applied when the source has demonstrated that compliance with the state limits is not technologically feasible. Waste-to-energy and biofuels projects may not be used for alternative compliance. Any offset project used as an alternative compliance mechanism must: not be required by another law and must provide a discernable benefit to the environment, be located in the same county and within 25 miles of the source, enhance the geographic area adversely affected, and substantially reduce generation or release of pollutants at the source. Priority offset alternative compliance projects are those that maximize public health and environmental benefits, especially local benefits in disadvantaged communities. The department will consider the potential that an alternative compliance mechanism may

have on direct, indirect, and cumulative emissions impacts in disadvantage communities, including co-pollutants.

- Establish a social cost of carbon for use by state agencies, expressed as dollars per ton of CO₂ equivalent, and be used as a monetary estimate of the value of not emitting a ton of greenhouse gas emissions.
- Publish a report, at least every four years and in consultation with the Climate Action Council, that summarizes whether the state is on track to meet the statewide greenhouse gas limits, including outlining:
 - Social benefits from the program, including reductions in greenhouse gas emissions and co-pollutants; diversification of energy sources; and economic, environmental, and public health benefits;
 - Compliance costs;
 - The extent to which the state's greenhouse gas measures are equitable, minimize costs, and maximize benefits to the state and whether activities undertaken to comply with state regulations disproportionately burden disadvantaged communities;
 - Local benefits including reductions in co-pollutants;
 - The extent to which disadvantaged communities access ownership of climate change and clean energy commodities;
 - Voluntary reductions and provision of early action credit.
- Promote climate change adaptation and resilience, including helping state agencies assess reasonably foreseeable risks of climate change on projects, and require major permits to demonstrate that future climate risk has been considered, including assessing adverse impacts on disadvantaged communities and natural resources near the project.
- Investment of revenue
 - The law stipulates that, in consultation with the Environmental Justice Working Group and the Climate Action Council, state agencies are charged with achieving the goal of having 40% of energy efficiency and clean energy program resources directed to disadvantaged communities, including investments in housing, workforce development, pollution reduction, low-income energy assistance, energy, transportation, and economic development. The law further stipulates that no less than 35% of overall program benefits will be directed to disadvantaged communities.
- The Public Service Commission is charged with:
 - As part of the directives to enhance the Clean Energy Standard, include mechanisms where at least 20% of investments in residential energy efficiency, including multi-family housing, benefits disadvantaged communities, including:
 - Designing programs to ensure that a minimum percentage of energy storage projects must deliver clean energy benefits to disadvantaged communities and that energy storage be deployed to reduce use of peaking facilities in disadvantaged communities;
 - Enhancing financial incentives for community solar and other distributed energy projects in disadvantaged communities;

- Developing community ownership models;
- Requiring utilities to report metrics for energy savings and clean energy market penetration in disadvantaged communities.

Appendix D-5: Overview of Provisions of the 2019 Vermont Act Relating to the Regulation of Hydrofluorocarbons⁹³⁵

This appendix provides a high-level overview of provisions of the May 21, 2019, Vermont Act Related to the Regulation of Hydrofluorocarbons.

Vermont's new law pertaining to reductions in hydrofluorocarbons (HFCs) is similar to laws in place in California and Washington. Other states in the RGGI region have or are taking similar action using existing statutory authorities.^{936,937,938,939} Addressing short-lived climate pollutants is a priority initiative of the U.S. Climate Alliance.⁹⁴⁰

The Vermont law requires the Secretary of Natural Resources to adopt regulations, within a year, to implement a schedule to phase down the use of hydrofluorocarbons to meet the goal of a 40% reduction from the 2013 level of use by 2030.

details/massachusetts-comprehensive-energy-plan-cep

⁹³⁵ An act relating to the regulation of hydrofluorocarbons. Act 65 (S30). 10 V.S.A. § 586. Available at: https://legislature.vermont.gov/bill/status/2020/S.30

⁹³⁶ Governor Cuomo Directs DEC to Phase Out use of hydrofluorocarbons in New York State. September 10, 2019. Available at: https://www.governor.ny.gov/news/governor-cuomo-directs-dec-phase-out-usebydrofluorocarbons new york state

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⁹³⁷ Maryland to phase out hydrofluorocarbons. September 11, 2019. Available at:

https://news.maryland.gov/mde/2018/09/11/maryland-to-phase-out-hydrofluorocarbons/

⁹³⁸ Gov. Malloy Joins Connecticut in Coalition Committed to Phase Out Coal Power in Favor of Clean Energy: Also Orders the Development of Regulations to Eliminate the Use of Certain Greenhouse Gases. September 13, 2018. Available at: https://www.ct.gov/deep/cwp/view.asp?Q=604906&A=4965

⁹³⁹ Massachusetts Comprehensive Energy Plan. Available at: https://www.mass.gov/service-

⁹⁴⁰ Short-Lived Climate Pollutants. U.S. Climate Alliance. Available at: https://www.usclimatealliance.org/slcp