A. STAFF INTERVIEWS AND RECORDS / DOCUMENTS ASSESSMENT

This appendix summarizes:

1. Information in the form of comments and suggestions Aspen obtained via interviews with program staff and other individuals whose roles support the operations of New Jersey's Renewable-Energy Programs.
2. Information relative to the Process Evaluation gleaned from program records and documents; principally, the CORE Program Database, which functions as the program tracking system.

A.1 STAFF INTERVIEWS

Aspen's Co-Principal Investigators conducted in-person and telephone interviews with members of the program staff, consultants and subcontractors to the program, members of the Clean Energy Council, staff of the Economic Development Authority, and a representative of the National Alliance of Clean Energy Business Incubators. This section summarizes the information obtained during these interviews, and the statements recorded do not necessarily reflect Aspen's views. Section A.3 contains a listing of the persons who were interviewed.

The individuals who generously contributed their time to the interviews did so knowing that their comments would be used for the evaluation; however, at the request of some and out of respect for the willingness to speak candidly of others, we have not identified the sources of specific remarks.

The comments are grouped by program and by topic areas relevant to the programs.

A.1.1 CORE Program

Program Administrative Activities

- The present staff is very dedicated and hard-working, but it must simultaneously 1) handle a large and ever-increasing volume of paperwork, and 2) deal with issues ranging from responding to numerous telephone and e-mail requests for basic information about program procedures to reaching decisions on major policy matters that entail changes to program rules. In addition, Program staff must at times participate in meetings that involve developing or modifying other NJCEP renewable-energy programs. Also, as is noted below in Section A.1.3, Program staff members are also expected to extract data summaries from the Program Database (i.e., the tracking system) each month and each calendar quarter. These data are input to monthly and quarterly status reports. However, these data-summaries must be prepared manually because a series of simple database queries have not been written. Because the data-extraction requires several hours of effort and other tasks are judged to be more urgent, the data-extraction is not being done, which means the reports are also not being prepared.
- In general, Program staff must jump from one activity to another, tending to what is judged to be most urgent at a particular moment, and seldom has time to actually

properly finish a task. ***Basically, the current level of staffing is inadequate to meet all Program needs***. (This was a recurring theme that came up repeatedly.)

- The program inspector works about 16 hours per week assisting with program administration. He has hired part-time clerical staff under his subcontract to assist the regular program staff with data-entry and other clerical work.
- Applications do not get logged into the CORE Program Database until the application is approved or disapproved because of inadequate staffing levels. This situation, combined with the lack of pre-set queries to quickly and effortlessly produce status-related data summaries, means that the Program Administrator (PA) is not able to quickly report on the backlog of applications or the magnitude of the rebate dollars for which application has been made. This handicaps the ability of the PA and the BPU/OCE Director to manage the Program.
- The long-term solution to the staffing problem is for the BPU/OCE to contract "project management" to an external organization. In fact, the plan is to also contract-out management of the energy-efficiency programs that are now being managed by the electric and gas utilities. Preparation of RFPs (requests for proposals) has been underway since early in the year. Drafts are currently being reviewed by the New Jersey Treasury Department. Even after the RFPs are issued, the process of bidders preparing proposals, the BPU evaluating proposals and making selections, negotiating contracts, and contractor startup may take six months. It is not clear whether the intent will be for the program-manager contractor to handle all renewable energy programs or just the CORE Program.

Record-Keeping and Reporting

- The absence of accurate reporting of Program status (as noted above and in Section A.2) means that the aggregate amount of rebate dollars represented in the Approval Letters sent to applicants may exceed the amount provided in the Program budget (see Section A.2 below). Five factors make it impossible to accurately predict the amount and timing (i.e., which calendar quarter or calendar year) of future rebate obligations:
  - Small systems are required to complete an installation within 6 months. Larger systems can take up to 12 months to complete an installation. The BPU/OCE can and does issue time extensions, but some installers fail to request an extension. Also, some applicants drop out because of extended delays in completing installations.
  - Some installers are unable to obtain solar PV modules in a timely manner, and fail to request a time extension from the BPU/OCE. (The demand for modules exceeds manufacturing capability, and delivery delays are currently increasing.)
  - Some applicants change their mind or find they are unable to come up with the funds needed to pay for an installation.
  - Program rules require applicants to provide to the BPU/OCE, within 90 days of issuance of the Approval Letter, evidence of having a signed contract for

system installation. The BPU/OCE is supposed to notify applicants who do not comply with this requirement that their rebate commitment has been cancelled. However, the BPU/OCE has not been doing this, and the CORE Database has no provision for recording cancelled rebate commitments.[1]

- The current rebate structure has a percentage-of-total-cost cap on rebate amount, where "cost" is net of other sources of funds. Several school districts believe they can get a grant from the School Construction Corporation for the portion of the installation cost that the rebate does not cover, and a large number of schools have already submitted applications. (One person interviewed said there 60 such applications.) The schools argue that this does not violate Program rules. The BPU/OCE is reviewing the issue and has taken no action to either accept or reject these applications.

Applications and Rebate Processing

- The CORE Program is receiving 40 to 50 applications per month without doing much marketing. New Jersey's renewable portfolio standards (RPS) are helping to grow the Program by creating a market for Solar Renewable Energy Certificates (SRECs). Revenue from the sale of these certificates by Program participants is expected to significantly reduce the payback period and make it easier for installers to close sales.
- Applicants should be able to submit their applications via the Internet from the program Website.
- Last year and earlier this year there were a large number of complaints from installers about the length of time it has taken to process rebates. However, the BPU/OCE believes it now has procedures in place to ensure that checks are issued in a timely manner. Unless they hear differently, the BPU/OCE considers that this issue has been resolved. Two key elements were: 1) arranging for Wachovia Bank to be a central depository for the funds collected by the utilities and to issue checks to participants and contractors when authorized by the BPU/OCE; and 2) getting a smoothly operating system in place to authorize payments. (The system requires that the Payment Authorization form be signed by the Outside Contract Manager and two individuals at BPU/OCE. Staff gives high priority to getting these signatures as quickly as possible—the forms are not allowed to pile up or get buried beneath other paperwork.)

Program Procedures

- The principal source of information about the Program is its Website; however, it is difficult and confusing to try and understand all of the requirements because they are not in one place—some are in the text on a page, some are on the Applications and Technical Worksheets, and some are missing. As a result, BPU/OCE staff is

[1] In mid-October, at the time when final revisions were being made to this report, we learned that the bPU/OCE had recently begun to enforce the 90-day contract rule.

constantly receiving phone calls and e-mails about the Program's procedures and requirements. This activity consumes the major portion of the staff's time.

- The Program would benefit from having a Program Manual (a.k.a. "Handbook") that would contain all the Program's requirements, procedures, and policies. This handbook should be available on the Website, and would be formally updated as needed. Adopting this suggestion would reduce inquiries and free-up staff time.

Interconnection with the Grid

- The BPU/OCE has proposed to use NARUC's interconnection model. The rules were recently changed to eliminate the requirement for an external disconnect switch.

Marketing and Outreach

- At the present, nearly all marketing for the CORE Program is by the installers. Their efforts are aided by publicity in the form of articles in local newspapers (usually with photographs) featuring the local installations.
- The State has about 90 installers.

Program Inspections

- The program inspector does not have a written guidelines document to guide his inspection. He uses the application form and the Technical Worksheet submitted for the project along with his experience. Certain application information (e.g., shading analysis) is verified with equipment designed for this purpose.
- Approximately 60% of the installations pass the program inspection the first time.
- The three most common reasons why installations fail the program inspection are:
  - Shading
  - Improper grounding
  - Electrical Code noncompliance due to sloppy workmanship.

Coordination with Other State Agencies

- Better coordination between the Renewable Energy Programs and other state agencies is required. The CORE Program pays a set percentage (which is a function of system type and capacity) of the cost of a renewable energy system net of grants or other financial assistance received from other sources. The New Jersey School Construction Corporation (SCC) also grants funding for these installations, and at least one school system has contracted for installation of a renewable energy system believing that the system would be fully funded. As was noted above, a large number of other schools have submitted applications, expecting that the same arrangement will apply.
- Installers have voiced concerns about local electrical inspectors' lack of knowledge of renewable-energy systems. In the past, the CORE Program has worked with the Education Unit of the New Jersey Department of Community Affairs, Bureau of

Code Services, to offer training courses on solar electric systems for local electrical inspectors. The program has discontinued this training.

Coordination with the Energy Efficiency Programs

- There needs to be more coordination with the energy-efficiency programs; however, not to the extent that installation of a renewable-energy system is contingent upon first installing energy-efficiency measures. It is difficult enough now to sell renewable-energy systems; if they were made contingent upon energy-efficiency upgrades, potential participants would say that it is too much hassle and stay away. This would have the further effect of keeping renewable-energy equipment manufacturers out of New Jersey and harm the State's goal of developing a strong renewable-energy business segment in New Jersey.

Rebates and Renewable Energy Pricing

- The BPU/OCE is fostering price competition by encouraging potential participants to talk with multiple installers and to get at least three price quotes.
- Increased demand is supposed to lead to reductions in price; however, the demand for PV systems is so great nationwide and internationally (especially exports to Germany), that suppliers cannot keep up with it and are raising their wholesale prices. This puts a "price squeeze" on installers and dealers, and causes them to resist reducing retail prices (or prices for turnkey installations).

Program Rule Modifications

- The program staff and other parties identify a perceived need for program modifications and pass them to the CEC's Renewable Energy Committee (CEC/REC) for a decision on whether to develop and implement modifications. Modifications include changes to the rules and changes to the rebate levels.
- The BPU/OCE has submitted a proposal to increase the ceiling on net metering to 2.0 MW.[2]
- Other issues being considered by the CEC/REC are:[3]
  - Self-installations, and installations for "parties with whom the installer shares an economic interest." Should there be a reduced rebate? (California imposes a 15% reduction in the case of self-installs.)
  - Itemization" of the installer's invoice. How much itemization can the BPU/OCE legitimately require? (Installers balk at disclosing details because of the concern that competitors will see these details.)
  - Sites with multiple meters and/or multiple systems. A few installers have "gamed the system" by having the customer request the utility to split his load among two or more meters, and then install a "small (under 10 kW) system to serve each meter's load, rather than to install a single larger

[2] The Board adopted this recommendation on September 13, 2004 (to become effective on October 4, 2004).

[3] As discussed in a three-page document that was discussed at the CEC/REC meeting held on 7/27/04.

system that would be given a smaller rebate. Another "gaming-the-system ploy is to install two small systems a year apart, treating each as a separate project. Should all residential installations be limited to one system, irrespective of number of meters or of time?

- Enforcement of the 90-day limit. The "official rules" require that applicants show evidence of executing a firm contract for installing a system within 90 days after BPU/OCE issues a "commitment letter" (which commits the rebate). The BPU/OCE has not been enforcing this rule, and this is one reason the Program appears to be over-budget. Some installers "game the system" by submitting applications for customers who are not committed to proceeding with an installation. As long as they don't need to submit a signed contract, their "commitment remains in force. (The second way this practice can be eliminated is discussed in the next bullet.)
- Easy granting of extensions. Program rules require that residential installations be completed in 6 months from the date when the "commitment letter" is issued. (Larger systems have 12 months.) It has not been uncommon for installers to have long waits to obtain PV panels, and to request a time extension. But (as noted above) some installers make a practice of having uncommitted customers submit applications. The installer then subsequently requests a time extension, to give himself and the customer more time to work out a deal. Should the BPU/OCE require the applicant to submit some evidence that the order was placed with the manufacturer or distributor in a timely manner, and the need for an extension is due solely to equipment-delivery schedules that are beyond the installer's control?
- Modifications to the rebate structure. Is now the time to re-examine the rebate values, and/or to eliminate the percentage caps?

A.1.2 REAP, REED, REDO, and FReEE Programs

Program Development Process

- BPU developed and initiated the REED and REDO programs. The REAP Program is the former Grid-Supply Program that was initiated by the electric utilities when they operated the Renewable Energy Program. New Jersey's Economic Development Administration (EDA) has now joined the BPU in administering these programs. Ten REED applications were funded in 2003, and five "Grid-Supply" applications had been approved in 2002, under BPU auspices. The current versions of the REED and REAP Programs represent a major redesign effort to largely replace grants with loans. Three applications for REED Program funding have been received. Two had inadequate business plans and were returned to the applicants. One application has been approved for funding.
- The REDO Program is "active" but currently is not receiving applications until the issue involving grants from SCC is resolved.

- The procedural details for the FReEE Program have not been developed yet, and the program has not been implemented.
- The BPU will disperse rebates and the EDA will disperse forms of financing that are repayable to the State. The REAP, REED, REDO, and FReEE programs will each disperse repayable funds. EDA has several forms of financing available to it, including low-interest loans and tax-exempt bonds, but all are types of revolving funds. They must be repaid.
- The types of financing for the REAP, REED, REDO, and FReEE programs have not been decided upon yet, nor has the type of guarantee or collateral required of the applicant that the money will be repaid. The State has requested a legal opinion on how REAP could offer tax-exempt bonds to REAP applicants. Otherwise, the present decision-making process is ad hoc. The approval procedure for the one REED project that both the BPU and EDA have approved was ad hoc.
- These programs are currently in the infancy stage. The BPU and EDU have a Memorandum of Understanding and are working out the details of a protocol for approving, monitoring, and paying for projects under the REED, REAP, REDO, and FReEE programs. For example, the BPU may review the applications for technical merit, then forward them to the EDA for evaluation of their financial merit. Both agencies need a protocol for communicating to the other the status of applications under their jurisdiction. EDA needs to describe its underwriting requirements to the BPU so that both understand and can publicize the type of business plan that applicants must submit to obtain financing. BPU needs to communicate to the EDA information that will let the EDA judge the economic viability of a business proposal involving renewable-energy technology. EDA is currently deciding what it technical information it needs to conduct a business evaluation.
- Some applications to the REED Program were received during 2004, but were returned for lack of an adequate business plan.
- The BPU and EDA will relaunch the REAP, REED, REDO, and FReEE programs at the end of October 2004 with fact sheets and other ways of better informing prospective applicants of the application requirements.

Program Procedures

- The principal sources of information about the individual programs are their Websites; however, it can be difficult and confusing to find them because all of home pages have a different look and two different home page addresses exist. As a result, the administrative staff is constantly receiving phone calls about the different programs' procedures and requirements, and then the staff has to find the place on the Website to get the answer.

Outreach and Marketing

- The State will announce the relaunch of the programs at a meeting with large state organizations that can assist in disseminating the information about how to apply. The State will request their assistance in creating awareness within the business and non-profit communities.

- The State will also launch a direct mail campaign to businesses with which EDA has worked.
- Beyond these two activities, the BPU and EDA are just beginning to develop a marketing strategy for the renewable-energy programs.
- The National Renewable Energy Laboratory (NREL) has established a network of business incubators that focus on helping new clean-energy businesses prepare business plans and other information needed to attract grants or venture funding. This network is called The National Alliance of Clean Energy Business Incubators. It may be of use to New Jersey. NREL can provide additional information through Mr. Marty Murphy at lawrence_murphy@nrel.gov. New Jersey has no members of this Alliance. Membership is required in the broader National Business Incubator Alliance in order to get a list of existing incubators in New Jersey with other business focuses that may be seed incubators for a clean energy incubator (www.nbia.org).[4]

Monitoring Progress

- It is EDA's practice to periodically conduct sample surveys of the companies to whom it provides financial assistance. EDA uses the results to estimate the impact of its economic assistance, including new job creation. It intends to do this for the firms it assists under NJCEP activities.

Staffing

- EDA has over one hundred people on staff working on its existing obligations. EDA will assign staff to support the renewable-energy programs when areas of responsibility and job functions have been decided.

A.1.3 All Clean Energy Programs

Program Goals

- Quantitative goals have not been established individually for any of the renewable-energy Programs.

Program Administration / IT Aspects

- Each of the program tracking systems is maintained on its own personal computer (PC). Other managers at other PCs may not access the systems because BPU regulations forbid networking between PCs for security reasons. Therefore, when the person who operates the tracking system PC is not available, delays may occur in accessing information needed for management. Moreover, the PC holding the master tracking system is an older model.
- The BPU also has regulations preventing the use of CD writers. None of the BPU PCs has such a writer. This makes it difficult to share large files between PCs "manually."

[4] Information obtained from Tom Siegwald, Director of Entrepreneurial Services, Center for Entrepreneurial Excellence, National Alliance of Clean Energy Incubators.

Status Reporting

- NJCEP policies and procedures call for submittal of monthly and quarterly reports to the BPU Commissioners, but the BPU/OCE has not been preparing these reports because other activities are judged to have higher priority. Queries (i.e., small computer programs) that would automatically extract the data needed for these reports from the CORE Program Database for these report have not been written, and therefore the extraction must be done manually, which would require a great deal of staff time.

Marketing

- The NJCEP has established a staff position with the responsibility to create and implement a general marking strategy for all of the energy-efficiency and renewable-energy programs. The objective of this strategy will to be increase public awareness of the programs and knowledge of the programs' benefits. It will not be designed to drive sales. The marketing campaign will focus principally on the programs with broad public appeal, i.e., the energy efficiency programs; however, it will also include the renewable-energy programs. The staff to create this strategy has recently joined the NJCEP and is working with (1) an advertising agency to develop a uniform visual image for the programs, and (2) a public relations firm to develop a long-term strategic communications plan. The latter plan will guide the State in allocating funding for paid media, marketing collateral, communications outreach, education grants, and selecting audiences to target.
- This strategy will coordinate with other program-specific marketing campaigns, e.g., the campaign for the Change-a-Light, Change-the-World Program. It will ensure that NJCEP marketing presents a uniform appearance and message. For example, a new brand and tag line will be introduced, and a uniform look will be developed for program Websites. The research for this development included focus groups and marketing research focus on opinion leaders sponsored by the Clean Energy States Alliance (CESA). The media campaign and future New Jersey research will focus on raising awareness in a broad audience.
- New Jersey has funded this effort at about $1 million per year. Some of this money will support marketing managers for the individual programs (e.g., an ENERGY STAR® products program); however, this will be a relatively small amount.
- The BPU/OCE will leave responsibility for marketing specific programs to each program's PA. In the long run, these will be the managers for the third-party implementation contractors selected by competitive RFP.
- New Jersey has issued a separate $300,000 solicitation for non-governmental organizations to create and implement outreach efforts to special audiences (e.g., religious institutions and schools). Four grants have been awarded.

Outside Auditing of Program Finances

- Whether the State should turn to an outside auditor to show accountability for program funds depends on what other State agencies do. It is probably not worth the cost.

Need for New Renewable Energy Initiatives

- New Jersey does not need new renewable energy initiatives at this time. Moreover, even if they could be shown to be worthwhile, the BPU/OCE doesn't have enough staff to manage additional programs.

A.2 RECORDS / DOCUMENTS ASSESSMENT

Three items were examined: 1) the CORE Program Database, 2) the NJCEP and BPU Websites, and 3) documents such as program descriptions, lists of trade allies, and forms that can be downloaded from the these Websites. Aspen was informed that there are no formal databases for the other programs. A list of contact individuals for the participants in the 2003 version of the REED Program was obtained and used to conduct the telephone survey interviews with Program Participants (see Appendix B).

CORE Program Database

Aspen's analysis of the database received on September 2nd, 2004, shows the following distribution of CORE Program projects for which Approval Letters were issued beginning in the second calendar quarter of 2003. (Three additional projects—one fuel cell and two biomass—for which letters were issued previously are also listed but are not included in the tabulations.)

System Type	Number of Approval Letters	Rated Capacity (kW)	Rebate Amount (Million $)
Solar PV	589	23,211	$95.00
Wind	5	276	$0.26
Biomass	2	1,385	$0.86
Fuel Cell	1	250	$0.86
Totals:	**597**	**25,122**	**$96.98**

System Type	Number of Systems Installed	Rated Capacity (kW)	Rebate Amount (Million $)
Solar PV	208	1,487	$7.56
Wind	1	10	$0.04
Biomass	0	0	- -
Fuel Cell	1	250	$0.86
Totals:	**210**	**1,747**	**$8.46**

System Type	Number of "Pipeline" Systems	Rated Capacity (kW)	Rebate Amount (Million $)
Solar PV	308	18,862	$76.39
Wind	1	250	$0.15
Biomass	1	1,000	$1.21
Fuel Cell	0	0	- -
Totals:	**310**	**20,112**	**$77.75**

* One biomass project is being reviewed by DEP

** Operational here means projects with status of "Inspected," "Check Request," or "Completed"

The distribution of all solar PV projects in terms of size (i.e., rated capacity) and rebate level are:

Capacity (kW)	Rebate ($/Watt)	Distribution
0 – 5.00	$5.50	34%
5.01 – 10.00	$5.50	45%
10.01 – 20.00	$4.00	4%
20.01 – 30.00	$4.00	1%
30.01 – 50.00	$4.00	1%
50.01 – 100.00	$4.00	3%
100.01 – 200.00	$3.75	5%
200.01 – 500.00	$3.75	5%
500.01 and larger	$0.30	2%

This table shows that:

- 79 % of the solar PV projects are in the "10.00-kW and Under Group"
- 5% are in the "10.01-kW to 30.00-kW Group"
- 4% are in the "30.01-kW to 100.00-kW Group"
- 10 % are in the "100.01-kW to 500.00-kW Group"
- 2% are in the "500.01-kW and larger Group"

The relatively small percentage of systems in the 10.01-kW to 100.00-kW range suggests that the large drop in rebate amount at 10 kW (from $5.50/Watt to $4:00/Watt) may be a contributor. The $4.00/Watt rebate applies over a very wide capacity range, from 10 kW to 100 kW. Economies-of-scale for installers, and benefits to the owner, may be such that the rebate should be higher (say, $4.50/Watt) in the lower portion of this range (say, from 10 kW to 30 kW), and then drop to $4.00/Watt. To compensate for the possible impact this may have on the Program budget, the rebate for systems in the 5.01-kW to 10.00-kW range could be reduced to $5.00/Watt.

Aspen's detailed examination of the CORE Program Database disclosed that:

1. The database is quite comprehensive. However, it is not currently being used to calculate any "process-performance" metrics (e.g., days between receipt of an application and the disposition of the application). Some fields that could be used to generate key performance metrics are not present in the Database (e.g., elapsed days between various key events).
2. There are no entries for many records in some important date fields.
3. There are at least two typographical errors (a 2005 date and a 2007 date for completed events).
4. The dates entered into some fields do not seem to be accurate: it appears that they may be a record of the date when the entry was made, and not the date when the event defined in the column heading occurred. For example, there are 104 occurrences where the date of the QC Inspection occurred before the date when the Final Application was received.
5. Some potentially useful and important dates are not tracked. For example, the date when evidence of a signed contract for system installation is submitted. Also, the date when a

Final Application are determined to be incomplete and the applicant is notified of the status.

6. The "Status" field does not have a "Reservation Cancelled" category. There should be a field to indicate the reason for the cancellation and another field to record the date when the status change from "Approved" to "Reservation Cancelled" was made. The three alternative reasons for canceling a rebate commitment are:
   - Evidence of an installation contract was not provided within 90 days
   - Installation was not completed within the specified 6- or 12-month period
   - Customer withdrew application.
7. The addition of the "Reservation" status category would mean that the "Approved" status would apply only for systems that have not been withdrawn and comply with program rules. It would be an easy matter to write a set of standard queries that would generate a report showing accurate data for systems "in the pipeline," including aggregate capacity and aggregate future rebate obligation.
8. The "Total System Rated Output" field has a large number of errors. We understand that the entries in this field are intended to be expressed as conventional alternating current (AC) kilowatts (kW), obtained by multiplying capacity in DC (direct current) units by Inverter Efficiency. The numerical values shown for some records reflect this multiplication, but many do not. The field heading should include the units ("AC kW"), to help to avoid confusion between DC and AC values. (Because inverter efficiencies are typically greater than 90 percent, the overall error in the total kW for a calendar quarter is not significant.)
9. The problem involving the "Total System Rated Output" field originates on the Technical Worksheet, where the entry in incorrectly labeled "DC Watts." It is at this location on this form where the applicant is supposed to multiply system capacity (expressed as DC Watts) by Inverter Efficiency to obtain AC Watts. (The purpose of the Inverter is to transform DC power produced in the solar module to conventional AC power, which is the power delivered to customers by the electric utilities.)
10. In a number of instances the percentage cap does not appear to have been applied when determining the rebate amount (see below).
11. We confirmed the suspicion voiced by a few trade allies that they suspected some dealers were pricing systems by multiplying system capacity by the applicable $/Watt rebate, and the dividing this product by the applicable percentage cap on the total rebate amount (see Appendix D and the next Chapter). In other words, the existence of percentage caps was keeping the selling price elevated in situations where the installer did not believe there would be price competition from another installer.

It should be noted that these observations do not mean that the staff is careless in maintaining the Database. Rather, we believe these shortcomings are further indications of the fact that the BPU/OCE is understaffed. We had planned to calculate some of the key performance metrics referred to in Item 1, but this was not done because of missing entries and uncertainty in the accuracy of the dates (Items 2–5).

As noted above, there are some apparent errors in the calculation of rebate amounts. Aspen reviewed the numerical values that appear in the "Rebate Amount" field of a copy of the CORE Program

Database provided by BPU/OCE for PV systems 10-kW and smaller. The rebate amount is supposed to be the lesser of the values calculated from applying: (1) the $/Watt algorithm to the "System Size (DC Watts)" value, and (2) the maximum percentage of the project cost that can be rebated to the "Installation Cost" value. We performed these calculations and found apparently incorrect Rebate Amount entries for at least 56 applications (12% of all PV applications for systems 10 kW or smaller).

When we discussed the apparent errors with program staff, we were told that the numerical values recorded for System Size and Installation Cost were initially obtained from the Pre-Installation Application. These values are supposed to be updated (changed) when the values shown on the Final Application are different. Evidently, this updating step had not been done. We were told that the Rebate Amount values are correct, and were based on the System Size and Installation Cost values shown on the Final Application. We also noted several instances in the case of solar PV systems rated 10 kW or smaller where "60%" or "40%" (instead of "70%") is incorrectly shown for the percentage rebate cap. We were told that the correct value was used in the calculation. (If a percentage that is too low is used, the rebate paid will be smaller than it should be. It is very likely that the system owner and installer expect the rebate will be a certain amount, and if it is a smaller amount they will quickly ask the BPU/OCE for an explanation.)

The scope of this project did not include performing an audit to verify that the Rebate Amounts shown in the Database are correct. Rather, it was to identify areas where program process improvements were needed. The addition of fields where the DC Watts and Total Installed Cost values that appear on the Final Application form can be recorded, and fields where the calculation of the two provisional rebate amounts is captured (as well as the final amount of Rebate Amount paid), would serve to:

1. Minimize the likelihood that an error is made in determining the rebate amount
2. Help to ensure that all important data appears accurately in the Database

A.3 PERSONS INTERVIEWED

BPU/OCE

Michael Winka, Director, BPU Office of Clean Energy

B. Scott Hunter, CORE Program Administrator, BPU Office of Clean Energy

Ronald Jackson, REEP Program Administrator, BPU Office of Clean Energy

Anne Marie McShea, Director, Education and Outreach Planning, BPU Office of Clean Energy.

Jeff Demme, Demme Mechanical Inspections, Contractor

Michael Ambrosio, M. Ambrosio and Associates, Contractor

BPU Clean Energy Council (CEC)

Steven Gabel, Member, Clean Energy Council, and Co-Chairman, CEC Renewable Energy Committee

Rev. Fletcher Harper, Member, Clean Energy Council, and Voluntary Committee Chairman, CEC Outreach and Education Committee

NJEDA

Rose Smith, Marketing Director, New Jersey Economic Development Authority.

APPENDIX B: SURVEYS OF ACTUAL PROGRAM PARTICIPANTS

As was indicated in Section 1.3, interviews with samples of participants in the BPU's renewable-energy programs were conducted to obtain information for the process evaluation. Four surveys, covering two programs, were conducted for the evaluation:

1. Telephone survey interviews with CORE Program residential participants whose system was inspected and approved after August 2003.
2. Telephone survey interviews with CORE Program nonresidential participants whose system was inspected and approved after August 2003
3. Onsite survey (in-person interview and system inspection) with CORE Program participants whose system was inspected prior to September 2003
4. Telephone survey interviews with REED Program participants.

Of theses four, the first survey is the most detailed because it involved: (a) the largest group of program participants, and (b) the program that requires the largest portion of the BPU's financial and human resources. At the time of this evaluation, no organizations was participating in either the REDO Program or the redesigned REAP Program.

The results and findings from these four surveys are summarized in this section.

B.1 METHODOLOGY

The survey activities consisted of four subtasks: 1) Sample Design, 2) Development of Survey Questionnaires, 3) Survey Activities, and 4) Data Tabulation and Analysis.

B.1.1 Sample Design

The BPU supplied participant lists for the two programs. These constituted the sample frames from which the contact lists for each survey were constructed. For the first and third surveys, a randomly selected sample was drawn. For the second and fourth surveys, interviews with all participants were attempted.

B.1.1.1 CORE Program

Telephone Surveys

At the time the CORE participant survey, system inspections had been completed under the BPU's auspices at: (a) 161 residences, (b) eight nonresidential facilities, and (c) at least two combinations of a residence and a business.[1] Of these 171 inspected systems, 21 (20 Residential and one

[1] The BPU usually classifies participants according to the tariff category assigned to the account by the utility, unless the participant is clearly identified in another way (e.g. a School). Program records indicate that in at least some instances utilities classify premises where both a residence and a business are served from a common electric or gas meter as "Residential Accounts."

Commercial; all PV) were inspected prior to September 2003 and therefore were included in the sample frame for this study's onsite inspections (see below).

The remaining150 participants (142 Residential, five School, and three Commercial) constituted the sample frame for the two participant telephone surveys.

The survey samples were randomly drawn from these participant lists.

Onsite Surveys

The RFP for the study requested that the scope include inspections of a sample of renewable energy systems that had been installed under the CORE Program and in operation for a year or longer. The sample frame for this survey therefore consisted of: (a) systems listed in the BPU/OCE's CORE Program database that were inspected prior to September 2003, and (b) systems listed in the program tracking database used by the utilities prior to April 2003. A sample of 25 installations (all with solar photovoltaic systems) were targeted for inspection.

B.1.1.2 REED Program

At the time of the REED participant survey, 10 organizations were participating in the REED Program. The survey sample frame consisted of all 10 organizations.

B.1.2 Development of Survey Questionnaires

The following topics pertaining to the Process Evaluation were included in the questionnaires:

Topic 1: Satisfaction with the application (selection) process	[CORE and REED]
Topic 2: Satisfaction with installer	[CORE]
Topic 3: Satisfaction with the financial information provided	[CORE]
Topic 4: Awareness of solar renewable energy certificates	[CORE]
Topic 5: Perceived barriers to participation	[CORE]
Topic 6: Overall Satisfaction with the Program	[CORE and REED]
Topic 7: Respondents' demographic/firmographic characteristics.	[CORE]
Topic 8: System Performance	[CORE w/Systems operating for at least one year]

B.1.3 Survey Activities

Telephone interviews were completed with:

- CORE Program: 30 Participant Homeowners
  5 Nonresidential Participants (plus one partial completion)
- REED Program: 6 Participant Businesses or Organizations

Each of the 37 participants surveyed had installed a solar photovoltaic system.

Onsite inspections and associated in-person interviews were completed at 25 sites where the solar PV system installed under the program had been in operation for at least one year. In most cases, a

copy of the owner's electric bill or other metering data was obtained and analyzed to supplement the visual inspection and further ascertain how well the system was performing.

The duration of the completed interviews and inspections varied from approximately 15 to 30 minutes. In several cases, the participant's enthusiasm for the program and willingness to talk about it extended the length of the interview.

B.1.4 DATA TABULATION AND ANALYSIS

Results from all surveys were entered into datafiles, which were then checked for validity and completeness. Analysis of the data consisted of computing response distributions. This section reports these distributions. The distributions are organized by the survey topics listed above. The question is repeated, followed by the distribution of responses as a percent of all responses. The percentages represent the percent of respondents giving the response except in the case of questions where respondents could give more than one answer. In these cases, the base of the percentage is noted with an asterisk in the "Percent" column and a table note.

B.2 SURVEY RESULTS

B.2.1 CORE Program – Participant Homeowners

Topic 1: Satisfaction with the Application Process

Question: Did you submit your "Pre-installation Application" and "Technical Worksheet" for a rebate for your system or did the installation contractor submit them? (n = 30)

Response	Value
Installer submitted both	77%
Participant submitted both	13%
Participant submitted one, the installer submitted one	10%

Question: How easy was it to apply for your system's approval? Please provide a score on a "0" to "10" scale, where "0" indicates the procedure is much too difficult, and "10" indicates the procedure is smooth and completely reasonable.
(Answered by those who submitted at least one part of their application: n = 7)

Score	Value
10	86%
7	14%
0 – 6, 8, 9	0%

Question: The respondent who gave a score less than "8" was asked to indicate what it was about the application process they found difficult. The response was: (n = 1)

Too technical! They should use layman's terms.

Respondents were next asked about their satisfaction with the length of time it took to process their pre-installation application. This inquiry consisted of three questions that were designed to provide an estimate of the average expected time that the participants' believed the approval process would take.

Question #1: As best you can remember, what was the length of time between when [you / your installer] submitted your "Pre-installation Application" and "Technical Worksheets" and you received the approval to go ahead? (n = 30)

Question #2: In your opinion, was this a shorter length of time than you expected, about what you expected, acceptable but you think it could have been sooner, or too long a period of time? (Answered by those who gave a response time other than "Don't know:" n = 22)

		Question #2 (Counts and column percent)				
Response	**Question #1 (Count / Column Percent)**	**Shorter than expected n=8**	**About what I expected n=8**	**OK, but could have been sooner n=1**	**Too long a period of time n=5**	**Don't know/no expectation n=0**
One week or less	1 3%	1 12%				
One to two weeks	6 20%	4 50%	2 25%			
Two to three weeks	5 17%	2 25%	3 38%			
Four to five weeks	2 7%		1 12%		1 20%	
Five to six weeks	1 3%		1 12%			
Six to eight weeks	3 10%	1 12%			2 40%	
Eight to ten weeks	1 3%		1 12%			
Ten to twenty weeks	1 3%				1 20%	
More than twenty weeks	2 7%			1 100%	1 20%	
Don't know	8 27%	Respondents who gave "Don't Know" as a response to Question #1 were not asked Question #2				

Question#3: How long did you expect it to take? (Answered by those who said it was shorter or longer than expected.

Responses	Expected approval time of those who said approval time was "Shorter than expected" (n=8)	Expected approval time of those who said approval time was "Too long" (n=5)
Two to three weeks	0%	40%
Three to four weeks	12%	0%
Four to five weeks	38%	40%
Five to six weeks	12%	0%
Eight to ten weeks	25%	0%
Ten to twenty weeks	0%	20%
More than twenty weeks	12%	0%

From these statements of the time participants expect approval of their application to take, we calculated the minimum, maximum, and weighted average. The weighted average expected time of this sample of participants was 7.5 weeks; the minimum expected time for processing the pre-installation application was two weeks, and the longest expected time was more than 20 weeks. The weighted average expected time was calculated by weighting the highest number of weeks in each range by the number of respondents expecting to receive their approval with the range and dividing by the total number respondents. The "more than twenty weeks" category was arbitrarily assigned a value of 25 weeks. The 22 respondents who knew the actual time in response to Question #1 were used in the analysis.

The pattern of three questions asked about the time it took to approve participants' pre-installation applications was repeated for the time from submission of the final application for rebate until the rebate was received. As before, this consisted of three questions. The first question asked the participants' to give their estimates of the length of time it took from submission of their final application to receipt of the rebate. The two follow-on questions were designed to measure what participants thought the time should have taken for this final step. The second question asked whether the time matched their expectation. The third question asked those who responded that the time was "shorter" or "longer" than expected what their expectation had been. As with the previous battery of questions, the purpose of these questions was to estimate the participants' average expected time to process their final applications. (The BPU might use this expected time as a target time for acting on final applications.)

Only 11 of the 22 respondents who knew how long it took to process their pre-installation applications could recall the time it took to receive the rebate after the final application. This suggests that the installers filed most of the final applications and did not inform the participants how long it took to receive the rebate.

Question #1: As best you can remember, what was the length of time between when [you / your installer] submitted your final application for your rebate and when you or your installer received the rebate? (n = 22)

Question #2: In your opinion, was this a shorter length of time than you expected, about what you expected, acceptable but you think it could have been sooner, or too long a period of time? (Answered by those who gave a response time other than "Don't know:" n = 11)

Responses	**Question #2 (Percents are column %)**					
Question #1	Shorter than expected n=2	About what I expected n=3	OK, but could have been sooner n=2	Too long a period of time n=3	Don't know/no expectation n=1	**Percent**
One week or less		1 33%				1 3%
One to two weeks	1 50%					1 3%
Two to three weeks					1 100%	1 3%
Three to four weeks			1 50%			1 3%
Four to five weeks		1 33%		1 33%		2 7%
Six to eight weeks	1 50%					1 3%
Ten to twenty weeks		1 33%	1 50%	2 67%		4 13%
Don't know	Respondents who gave "Don't Know" as a response to Question #1 were not asked Question $2.					19 63%

Question#3: How long did you expect it to take? (Answered by those who said it was shorter or longer than expected: n = 2 for shorter; n = 3 for longer)

Responses	**Expected approval time of those who said approval time was "Shorter than expected" (n=2)**	**Expected approval time of those who said approval time was "Too long" (n=3)**
Three to four weeks	0%	33%
Five to six weeks	50%	33%
Six to eight weeks	50%	0%
Eight to ten weeks	0%	33%

From these statements about the time participants expect approval of their final application to take, we can calculate the minimum, maximum, and weighted average expectation. The weighted average expected time of this sample of participants was 8.4 weeks; the minimum expected time for processing the pre-installation application was one week, and the longest expected time was 20 weeks.

Topic 2: Satisfaction with Installer

Question: Were there any delays while the system was being installed and before you applied for the rebate? (n = 30)

Response	Value
No	67%
Yes, the contractor or supplier was overworked	7%
Yes, the inspection process delayed when could apply for rebate	7%
Yes, it the zoning approval process delayed installation	7%
Yes, there were construction difficulties	3%
Yes, had a bad contractor and switched contractors	3%
Yes, had a weather delay	3%
Don't know	3%

Question: How would you rate your satisfaction with the contractor who installed your system? Please provide a score on a "0" to "10" scale, where "0" indicates the installer was difficult or incompetent, and "10" indicates that everything about the installation was smooth and trouble-free. (n = 30)

Score	Value
10	67%
9	20%
8	10%
7	3%
0 – 6	0%

Question: The respondent who gave a score less than "8" was asked to indicate what it was about the installer they found difficult. The response was: (n = 1)

Solar PV equipment failure

Topic 3: Satisfaction with the Financial Information Provided

Question: Did you use the Clean Power Estimator financial calculator on the Program's Website to calculate your savings? (n = 30)

Response	Value
Yes	30%
No	70%

Question: Did it help you make your decision to install a photovoltaic system? (Answered by those who said they had used the Estimator to calculate their savings: n = 9)

Response	Value
Yes	67%
No	33%

Question: How would you rate how easy it was to use the Clean Power Estimator? Please provide a score on a "0" to "10" scale, where "0" indicates the Estimator was entirely too difficult to use, and "10" indicates that it was very easy to use. (Answered by those who said they had used the Estimator to calculate their savings: n = 9)

Score	Value
10	44%
8	22%
7	11%
5	11%
4	11%
0 – 3, 6, 9	0%

Question: The respondent who gave a score less than "8" was asked to indicate what it was about using the Estimator they found difficult. The response was: (n = 1)

Too technical! They should use layman's terms.

Question: Did the contractor who installed your system also provide you with an estimate of your financial savings or payback period if you installed your system? (Answered by those who reported using the Clean Power Estimator: n = 9)

Response	Value
Yes	89%
No	11%

Question: How well did your installer's financial information agree with the Estimator's information? (Answered by those who used the Estimator and whose installation contractor also provided them with an estimate of the same type of financial information: n = 8)

Response	Value
Information was the same	50%
Information agreed well	12%
The contractor predicted less savings than the Estimator	12%
Don't recall	25%

Question: Is there any financial information that you would like to have received, but did not get, before you decided to install your system? (n = 30)

Response	Value
No additional information needed	83%
Information about energy certificates	7%
Better estimate of the cost per panel and per kW	7%
More accurate estimate of the final cost after the rebate and loans	3%

Topic 4: Awareness of Solar Renewable Energy Certificates

Question: *Are you aware of New Jersey's solar renewable energy certificates? (n = 30)*

Response	Value
Yes	73%
No	27%

Question: To the best of your knowledge, is your system eligible for solar renewable energy certificates yet? (Answered by those who were aware of the solar renewable energy certificates: n = 22)

Response	Value
Yes	86%
No	5%
Don't know	9%

Question: Have you registered to sell your renewable energy certificates? (Answered by those who were aware of the solar renewable energy certificates and either believed their systems were eligible for them or were not sure if their systems were eligible: n = 21)

Response	Value
Yes, they have been sold	14%
Yes, they have not been sold	38%
No	48%

Topic 5: Perceived Barriers to Participation

Question: What would it take to get your neighbors and friends to install a system like yours? (n = 30)

Response	Value*
Less money up front/lower price	27%
Education on reliability and performance to instill confidence and a better understanding	25%
More financial help	17%
There is lots of interest already	8%
Advertising	6%
Better/more reliable equipment	3%
Needs to look better (aesthetics)	3%
Other	6%

* Percent of responses. Respondents could provide more than one answer.

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **first in importance**: (n = 30)

Response	Value
Help the environment	60%
Save money	23%
Reduce impact of rising electricity prices	3%
Set example/be a community leader	3%
Self sufficiency	3%
Independence from fossil fuels	3%
Other	3%

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **second in importance**: (n = 30)

Response	Percent*
Help the environment	23%
Save money	17%
Independence from fossil fuels	10%
Investment/raise property values	7%
Reduce impact of rising electricity prices	7%
Self sufficiency	7%
Prefer new technology: solar power	3%
Like the way it looks	3%
Set example/be a community leader	3%
Rebate	3%
Ease of program	3%
Reprieve for utilities	3%
Other	7%
No answer	3%

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **third in importance**: (n = 30)

Response	Percent*
Save money	23%
Help the environment	13%
Investment/raise property value	10%
Rebate	7%
Prefer new technology: solar power	3%
Like the way it looks	3%
Business tax benefit	3%
Low interest loans	3%
Less money to global companies	3%
Other	7%
No answer	23%

Question: As best you can remember, how did you learn about the Customer Owned Renewable Energy (CORE) Program? (n = 30)

Response	Percent*
Internet research	23%
Word of mouth	20%
Direct mail	13%
Contractor	13%
Research, had been interested for years	10%
Radio/TV	7%
Heard of other incentive programs	3%
Magazine	3%
Don't know	7%

Question: In your opinion, how can the program be promoted more effectively to households in New Jersey? (n = 30)

Response	Percent*
Advertise	50%
Talk shows	7%
Flier in electric bill	7%
Public information forums	3%
Approach people with older solar water-heating systems	3%
Work with current participants: give them information to hand out	3%
Require in new home construction	3%
State-sponsored loan program	3%
Focus on patriotism / Independence from foreign countries	3%
Lower the cost	3%
Ensure customer satisfaction	3%
Don't know	10%

* Percent of responses. Respondents could provide more than one answer. Total percent is less than 100% due to rounding.

Topic 6: Overall Satisfaction with the Program

Question: How would you rate your overall experience as a participant in the CORE Progrm? Please provide a score on a "0" to "10" scale, where "0" indicates complete dissatisfaction and "10" indicates you were completely satisfied. (n = 30)

Score	Value
10	53%
9	10%
8	20%
7	13%
6	3%
0 – 5	0%

Question: The respondents who gave a score less than "8" were asked to indicate what it was about the program that caused them to express some dissatisfaction. The responses were: (n = 4)

Educate utilities. The utilities do not understand the program / Need better cooperation from the utilities. *[Two respondents]*

Explain how tax credits work.

Allow higher kW ranges/more panels for the 70% rebate.

Question: Do you have any specific recommendations for improving the Program that you would like to give the Board of Public Utilities? (n = 24)

Better customer service: the installer, program, and utilities need to have better cooperation. *[Three respondents]*

Advertise! *[Three respondents]*

Pay rebate faster. *[Two respondents]*

Allow higher kW ranges and more panels for the 70% rebate. *[Two respondents]*

Make energy certificates easier to use. *[Two respondents]*

Improve education about reliability and performance to instill confidence. *[Two respondents]*

Be consistent; have easy-to-understand rules. *[Two respondents]*

Give renewable energy installations a tax credit. *[Two respondents]*

Keep the rebate as high as it is. Otherwise, the program will lose most of its effectiveness.

Put more research into new technology.

Require less money up front.

Add geothermal rebates.

Add state-sponsored loan program.

Shorten the length and difficulty of the inspection process.

Topic 7: Household Characteristics

Question: Is the house where the system is installed occupied year round, just during the summer, just during the winter, or just during the spring or fall? (n = 30)

Response	Value
Year round	93%
Just during the summer	3%
Don't know / Refused	3%

Question: What is the approximate floorspace of this house, expressed in square feet, including finished basement and attic, but not including unfinished areas or your garage? (n = 30)

Response	Value
Less than 1,000 square feet	3%
1,000 to 1,499 square feet	3%
1,500 to 1,999 square feet	27%
2,000 to 2,999 square feet	23%
3,000 to 3,999 square feet	23%
4,000 to 4,999 square feet	3%
More than 5,000 square feet	7%
Don't know / Refused	10%

Question: What is the size of the property LOT this house is located on? (n = 30)

Response	Value
Less than ¼ acre	20%
¼ to less than ½ acre	10%
½ to less than ¾ acre	10%
¾ to less than 1 acre	3%
2 to less than 3 acres	20%
3 to less than 4 acres	3%
5 acres or more	27%
Don't know / Refused	7%
Total	100%

Question: How many persons live in this house, including any infants? (n = 30)

Response	Value
One	3%
Two	23%
Three	13%
Four	30%
Five	17%
Eight	3%
More than eight	3%
Don't know / Refused	7%

Question: What is the group that contains the age of the oldest person who is also a head of your household? (n = 30)

Response	Value
25 to 34	3%
35 to 54	57%
55 to 64	17%
65 and over	17%
Don't know / Refused	7%

Question: What is the highest education level of any head of household living in your house? (n = 30)

Response	Value
High school graduate	7%
Some college	26%
College bachelor's degree	17%
Graduate degree	40%
Don't know/refused	10%

Question: I am going to read several groups of household income. Please tell me when I read the group that contains the combined income of all persons living in your house.? (n = 30)

Response	Value
$20,000 to $29,999	3%
$40,000 to $54,999	13%
$55,000 to $74,999	3%
$75,000 to $99,999	10%
$100,000 or more	43%
Don't know/refused	27%

B.2.2 CORE Program – Participating Nonresidential Customers

The following results represent the findings from the six non-residential participants who completed the interview. The one non-residential participant who did not complete the interview terminated it after answering three questions. This participant expressed extreme dissatisfaction with the program. The responses provided by this participant are included in the summary of findings. The questions answered by this participant are indicated by "n=6" for the question sample-size.

Topic 1: Satisfaction with the Application Process

Question: *Did you submit your "Pre-installation Application" and "Technical Worksheet" for a rebate for your system or did the installation contractor submit them? (n = 6)*

Response	Value
Installer submitted both	67%
Participant submitted both	17%
Participant submitted one, the installer submitted one	0%
Don't know	17%

Question: Please grade how easy it was to apply for your system's approval on a scale of 0 to 10. Let 0 mean you felt the application process was very difficult and 10 mean you felt it was completely reasonable and have absolutely no complaints. (Answered by those who submitted at least one part of their application: n = 1)

Score	Value
10	100%
0 – 9	0%

Respondents were next asked about their satisfaction with the length of time it took to process their pre-installation application. This inquiry consisted of three questions that were designed to provide an estimate of the average expected time that the participants' believed the approval process would take. (The BPU might use this expected time as a target time for acting on applications.) The first question asked the participants to give their estimate of the length of time it took to have their pre-installation applications approved. The two follow-on questions were designed to measure what participants considered a reasonable time for this step. The second question asked whether the time it took was what they expected. The third question asked those who responded that it was "shorter" or "longer" than what they expected to tell us what their expected time had been. The responses to the third question are shown after the response to Questions #1 and #2.

Question#1: As best you can remember, what was the length of time between when [you / your installer] submitted your "Pre-installation Application" and "Technical Worksheets" and you received the approval to go ahead? (n = 6)

Question#2: In your opinion, was this a shorter length of time than you expected, about what you expected, acceptable but you think it could have been sooner, or too long a

period of time? (Answered by those who gave a response time other than "Don't know:" n = 5)

Responses	**Question #2 (Counts and column percent)**					**Question #1 Count / Column Percent**
Question #1	Shorter than expected n=2	About what I expected n=3	OK, but could have been sooner n=0	Too long a period of time n=0	Don't know/no expectation n=0	
Two weeks	1 100%					1 17%
Three weeks			1 100%			1 17%
Four to six weeks		1 50%				1 17%
Six to eight weeks		1 50%				1 17%
Don't know	Respondents who gave "Don't Know" as a response to Question #1 were not asked Question $2.					2 33%

Question#3: How long did you expect it to take? (Answered by those who said it was shorter or longer than expected; n = 1 for shorter; n = 0 for longer)

Responses	Expected approval time of those who said approval time was shorter than expected n=1	Expected approval time of those who said approval time was too long n=0
Six weeks	1 100%	0 0%

From these statements of the time participants expect approval of their application to take, we calculated the minimum, maximum, and weighted average. The weighted average expected time of this sample of participants was 5.8 weeks; the minimum expected time for processing the pre-installation application was two weeks, and the longest expected time was eight weeks. The weighted average expected time was calculated by weighting the highest number of weeks in each range by the number of respondents expecting to receive their approval with the range and dividing by the total number respondents. The four respondents who knew the actual time in response to Question #1 were used in the analysis.

The pattern of three questions asked about the time it took to approve participants' pre-installation applications was repeated for the time from submission of the final application for rebate until the rebate was received. As before, this consisted of three questions. The first question asked the participants' to give their estimates of the length of time it took from submission of their final application to receipt of the rebate. The two follow-on questions were designed to measure what participants thought the time should have taken for this final step. The second question asked whether the time matched their expectation. The third question asked those who responded that the time was "shorter" or "longer" than expected what their expectation had been. As with the previous battery of questions, the purpose of these questions was to estimate the participants' average

expected time to process their final applications. (The BPU might use this expected time as a target time for acting on final applications.)

Only two of the five respondents could recall the time it took to receive the rebate after the final application. Both said the response time was acceptable; the three that did not know said that their installer filed the final applications.

Question#1: As best you can remember, what was the length of time between when [you / your installer] submitted your final application for your rebate and when you or your installer received the rebate? (n = 5)

Question#2: In your opinion, was this a shorter length of time than you expected, about what you expected, acceptable but you think it could have been sooner, or too long a period of time? (Answered by those who gave a response time other than "Don't know:" n = 0)

Responses	**Question #2 (Counts and column percent)**					
Question #1	Shorter than expected n=0	About what I expected n=0	OK, but could have been sooner n=2	Too long a period of time n=0	Don't know/no expectation n=3	**Question #1 Count / Column Percent**
Four to six weeks			1 50%			1 20%
Six to eight weeks			1 50%			1 20%
Don't know (Question #2)					3 100%	
Don't know (Question #1)	Respondents who gave "Don't Know" as a response to Question #1 were not asked Question $2.					3 60%

Question#3: How long did you expect it to take? (Answered by those who said it was shorter or longer than expected: n = 0)

Both of the non-residential participants who knew how long it took to receive their rebates felt that the process time was acceptable, if a little long

From these statements about the time participants expect approval of their final application to take, we can calculate the minimum, maximum, and weighted average expectation. The weighted average expected time of this sample of participants was 7.0 weeks; the minimum expected time for processing the pre-installation application was four weeks, and the longest expected time was eight weeks.

Topic 2: Satisfaction with Installer

Question: Were there any delays while the system was being installed and before you applied for the rebate? (n = 5)

Response	Value
No	60%
Yes, the panels were in stock, but the rails were delayed	20%
Yes, had a weather delay	20%

Question: Please grade your satisfaction with the contractor who installed your system on a scale of 0 to 10. Let 0 mean you felt the application process was very difficult and 10 mean you felt it was completely reasonable and have absolutely no complaints. (n = 5)

Score	Value
10	60%
9	20%
8	20%
0 – 7	0%

Topic 3: Satisfaction with the Financial Information Provided

Question: *Did you use the Clean Power Estimator financial calculator on the Program's Web site to calculate your savings? (n = 5)*

Response	Percent
Yes	20%
No	80%

Question: Did it help you make your decision to install a photovoltaic system? (Answered by those who said they had used the Estimator to calculate their savings: n = 1)

Response	Value
Yes	100%

Question: Please grade how easy it was to use the Clean Power Estimator on a scale of 0 to 10. Let 0 mean you felt the Estimator was entirely too difficult to use and 10 mean you felt it was very easy to use. (Answered by those who said they had used the Estimator to calculate their savings: n = 1)

Score	Value
10	100%
0 – 9	0%

***Question**:* Did the contractor who installed your system also provide you with an estimate of your financial savings or payback period if you installed your system? (Answered by those who reported using the Clean Power Estimator: n = 1)

Response	Value
Don't know	100%

Question: Is there any financial information that you would like to have received, but did not get, before you decided to install your system? (n = 5)

Response	Value
No additional information needed	100%

Topic 4: Solar Renewable Energy Certificates (SRECs)

Question: *Are you aware of New Jersey's solar renewable energy certificates? (n = 5)*

Response	Value
Yes	80%
No	20%

Question: To the best of your knowledge, is your system eligible for solar renewable energy certificates yet? (n = 5) (This question was asked only of those who were aware of the SRECs; however, all five are reported because the one respondent who said they were not aware of the SRECs also said that the installer owned them.)

Response	Value
Yes	60%
Don't know	20%
Don't know because installer owns them	20%
No	0%

Question: Have you registered to sell your renewable energy certificates? (n = 5)

Response	Value
Yes	0%
Don't know	0%
Don't know because installer owns them	20%
No	80%

Topic 5: Perceived Barriers to Participation

Question: What would it take to get other businesses or organizations to install a system like yours? (n = 5)

Response	Value *
Increase incentives to lower payback	13%
Lower system price	25%
Establishment of corporate environmental initiatives	13%
Government should take the lead and install the systems	13%
Need a tariff to incentivize PV installations	13%
Better awareness of the rebates available	13%
Other	13%

*Percent of responses. Respondents could provide more than one answer.

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **first in importance**: (n = 5)

Response	Value
Help the environment	40%
Save money	20%
Gold certified building (school)	20%
Consistent with corporate mission statement	20%

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **second in importance**: (n = 5)

Response	Value
Help the environment	40%
Ease of installation compared to wind	20%
Teaching tool	20%
Other	20%

Question: What were the three principal reasons why you decided to install your system, in the order of the weight they carried in your decision? Reason that was **third in importance**: (n = 5)

Response	Value
Save money	20%
Help the environment	20%
Vendor made the process easy	20%
Rebate	20%

No third reason given	20%

Question: As best you can remember, how did you learn about New Jersey's customer-owned renewable energy rebate program? (n = 5)

Response	Value
Vendor solicitation	20%
Employee found it on the Web and suggested it	20%
Directly involved with program	20%
Exhibit booth at a festival	20%
Word of mouth	20%

Question: In your opinion, how can the program be promoted more effectively to businesses and organizations in New Jersey? (n = 5)

Response	Value*
Emphasize environmental benefits	13%
Advertise SRECs	13%
Increase the return on investment	13%
Government take the lead and install systems	13%
Promote the program at conventions for schools and administrators	13%
New Jersey Association of School Business Officials (ASBO)	13%
Promote at local chambers of commerce	13%
Better marketing and advertising	13%

* Percent of responses. Respondents could provide more than one answer. Total percent is more than 100% due to rounding.

Topic 6: Overall Satisfaction with the Program

Question: *Please grade your level of satisfaction with your Program experience as a whole on a scale of 0 to 10. Let 0 mean your were completely dissatisfied with the overall experience and 10 mean you were completely satisfied.. (n = 6)*

Score	Value
10	50%
8	33%
1 – 7, 9	0%
0	17%

For the above question, we included the one very dissatisfied participant although the interview with this participant did not progress to this question. This individual expressed such extreme dissatisfaction that we believed including the participant in this question is warranted. This individual had both HVAC system upgrades and solar system installations at three non-residential buildings and claimed "that nothing works" and that the energy costs for the three buildings are higher than for several older buildings for which the individual is responsible. The individual refused

an offer of a phone number of someone at the BPU to talk to and stated that the matter would be turned over to attorneys.

Question: Do you have any specific recommendations for improving the Program for organizations like yours that you would like to give the Board of Public Utilities? (n = 5)

Response	Percent
More advertising/marketing in New Jersey	40%
No recommendations	60%

Topic 7: Business/Organization Characteristics

Question: *I just need to ask a couple of questions about your [business / organization]. What is the nature of the services or products produced or sold at your facility? (n = 5)*

Response	Value
Office building	40%
Supermarket	20%
School	20%
Veterinary clinic and home	20%

Question: *Is the [business / organization] where the system is installed operated year round, just during the summer, just during the winter, or just during the spring or fall? (n = 5)*

Response	Value
Year round	100%

Question: *Do you own or lease the space to which the photovoltaic system supplies electricity? (n = 5)*

Response	Value
Own	60%
Lease	20%
Government-owned	20%

Question: What is the approximate floor space of the [business/organization] to which the system supplies electricity, expressed in square feet,? (n = 5)

Response	Value
15,000 to 20,000 square feet	60%
40,000 to 50,000 square feet	20%
Don't know	20%

***Question**:* What is the size of the property LOT this [business/organization] is located on? (n = 5)

Response	Value
Three to four acres	20%
Five acres	20%
Ten to twelve acres	20%
Thirty to thirty-five acres	20%
Don't know	20%

B.2.3 CORE Program – Participants with System Operating For At Least One Year

Topic 6: Overall Satisfaction with the Program

All participants (100%) stated they were fully satisfied with the Program.

Topic 8: System Performance

All systems except one (24 of 25, or 96%) were found to be in good condition and operating well. Copies of recent electric bills or other metered data were obtained and examined. These records confirmed the visual findings. Several June or July bills showed only a $2 "customer charge," and that approximately all the customers usage was satisfied by the onsite system. (This may or may not be exactly the case because the customer may have had a net "kWh Out" balance from prior months.)

The one system that was not operating well was a large installation on a commercial building. The system owner is a large corporation with nearly 100 PV systems operating in various parts of the U.S. The major problem at this site is poor design of the panels and their electrical connectors, which has resulted in short circuits and broken connections. The firm is in the process of negotiating a resolution of the problem with the manufacturer of the solar panels. One of the firm's representatives who was interviewed reported that these panels were no longer being manufactured, and also expressed the opinion that these defects could not have been detected during inspections prior to startup. He noted that the firm's own inspections during construction and commissioning did not uncover them. A second problem was the failure of one of the four inverters. A replacement inverter would be installed in the near future.

B.2.4 REED Program

Topic 1: Satisfaction with the Selection Process

Several REED Program Participants commented negatively about the awardee-selection and contract-negotiation process. They indicated that it was obvious that the BPU/OCE had no experience with these activities. Both activities took entirely too long (eight months), there was little feedback or discussion, and the BPU couldn't make up its mind whether to try to have a single, common contract template, or "customized" contracts. (One awardee noted that his firm had incurred significant legal costs because of changes back-and-forth in the contract form.)

Topic 6: Overall Satisfaction with the Program

The awardee-selection and contract-negotiation process was the only complaint voiced by any participant. Participants were enthusiastic about the program, expressed satisfaction with it, and said they considered it to be a highly worthwhile initiative on the part of the BPU. They uniformly reported that BPU/OCE staff is providing diligent oversight without imposing onerous requirements. They specifically noted that their relationship with the Program Administrator is smooth and trouble-free. A couple of respondents mentioned that the Program Administrator diligently monitors progress and ensures that all monthly and quarterly reports are submitted on schedule.

Two or three of the six participants interviewed spontaneously mentioned that the Program was essential to their success as a business, and they expected the State would benefit through increased employment as a result of the funding provided to them.

APPENDIX C. SURVEYS OF POTENTIAL PROGRAM PARTICPANTS

The preceding appendix provided "feedback from customers" who participated in the NJCEP renewable-energy programs. This appendix provides feedback from customers who did not participate in any of these programs, but were eligible to do so.

C.1 METHODOLOGY

The same four subtasks as were involved in the surveys of actual program participants are also applicable to the surveys of potential program participants: 1) Sample Design, 2) Development of Survey Questionnaires, 3) Survey Activities, and 4) Data Tabulation and Analysis.

C.1.1 Sample Design

Five Potential Participant segments were surveyed: two for the CORE Program, two for the REDO Program, and one for the REAP and REED Programs (combined).

CORE Program

Residential Segment

As was noted in Appendix B, most participants in the CORE program are homeowners. Therefore, a relatively detailed survey was performed of this segment.

Because previous research has shown that household income is one of the key determinants of propensity to invest in renewable energy systems, Aspen considered two subsegments in the residential segment:

- Subsegment 1: Household income less than $75,000
- Subsegment 2: Household income $75,000 or more.

The survey completion target was a total sample of 120, 60 in each subsegment.

Sample frames containing 2,000 names were purchased from a commercial vender for each subsegment. We also requested that all of these potential survey respondents (a) live in single-family detached homes, and (b) be homeowners and not renters. Screening questions were asked at the beginning of each survey interview to verify that these criteria were satisfied. If they were not satisfied, the potential interviewee was thanked and the call terminated.

Nonresidential Segment

The survey completion target was a total sample of 20 business and institutional organizations. In this case, the sample frame was developed from business directories.

REDO Program

Because this program targets two distinct segments (schools and local governments), the Potential Participant survey-completion target was a total sample of 30, with 15 respondents in each segment. Appropriate sample frames were developed from various sources, including Websites and association directories.

REAP and REED Programs

It was extremely difficult to identify potential participants in these programs. Therefore, the survey completion target was a total sample of six firms that might potentially participate in either program (or both programs). The sample frame was firms known to be IPPs and/or small manufacturers of renewable-energy equipment or complete systems.

C.1.2 Development of Survey Questionnaires

The Potential Participant survey questionnaires for the five segments were similar, but had segment-specific wording where necessary for clarity. The following topics pertaining to the Process Evaluation were included in the questionnaires:

Topic 1: Renewable energy technology currently installed?

Topic 2: Familiarity with relevant renewable energy technologies

Topic 3: Familiarity with New Jersey's renewable energy programs

Topic 4 Attitude concerning installation of relevant renewable energy technologies
Positive attitudes explored to identify attributes that are most valued
Negative attitudes explored to identify barriers to participation

Topic 5: Potential interest in program(s)

Topic 6: Respondents' demographic/firmographic and property characteristics.

Not all topics were covered in all five Potential Participant segments, however. The following matrix shows the topics covered in each segment.

	Topic					
Segment	**1**	**2**	**3**	**4**	**5**	**6**
CORE (Homeowners)	X	X	X	X	X	X
CORE (Nonresidential)	X	X	X	X	X	X
REDO (Schools and Municipalities)	X	X	X	X	X	
REAP and REED			X		X	

C.1.3 Survey Activities

Telephone interviews were completed as follows:

- CORE Program: 120 homeowners (60 in each subsegment)
  21 businesses
- REED Program: 13 School Districts
  15 Municipalities
- REAP and REED Programs: 6 small-businesses that manufacture renewable energy products or systems, and/or are IPPs

C.1.4 Data Tabulation and Analysis

Results from all surveys were entered into data files, which were then checked for validity and completeness. Analysis of the data consisted of computing response distributions.

In the case of the CORE Program/Residential Segment, one of the questions concerned annual household income. The responses to this question showed the following:

- 15 Subsegment-1 respondents were misclassified (reported income was $75,000 or more)
- 10 Subsegment-2 respondents were misclassified (reported income was <75,000)

The subsegment assignments of these 25 respondents were changed in accordance with reported annual income. As a result of this reclassification, the Subsegment-1 sample contained 55 records and the Subsegment-2 sample contained 55 records.

C.2 SURVEY RESULTS

The survey results are presented in terms of the six topics listed in Subsection 4.1.2.

C.2.1 CORE Program – Residential Segment

Topic 1: Renewable Energy System Currently Installed?

Question: Do you have a renewable-energy system installed?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Yes	0%	0%	0%
No	100%	100%	100%

Topic 2: Familiarity with Relevant Renewable Energy Technologies

Question: Heard of *photovoltaic systems* before this interview?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Yes	16%	31%	24%
Not sure	2%	0%	1%
No	82%	69%	75%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding of what a photovoltaic system is. The ratings of these descriptions were as follows:

Response	Subsegment 1 (n = 9)	Subsegment 2 (n = 20)	Full Sample (n = 29)
Good understanding	44%	80%	69%
Partial understanding	56%	20%	31%
Don't know / Refused	0%	0%	0%

Question: Heard of *wind-powered generating systems* before this interview?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Yes	64%	77%	71%
Not sure	4%	8%	6%
No	33%	15%	23%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding of what a wind-powered generating system is. The ratings of these descriptions were as follows:

Response	Subsegment 1 (n = 37)	Subsegment 2 (n = 55)	Full Sample (n = 92)
Good understanding	41%	62%	53%
Partial understanding	49%	35%	40%
Don't know / Refused	11%	4%	7%

Topic 3: Familiarity with New Jersey's Renewable Energy Programs

Question: Heard of the *Customer Onsite Renewable Energy (CORE) Program* before this interview?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Yes	9%	5%	7%
Not sure	2%	3%	2%
No	89%	92%	91%

Question: Heard of *Renewable Energy Certificates* before this interview?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Yes	3%	5%	4%
Not sure	0%	0%	0%
No	97%	95%	96%

Question: Those who responded "Yes" to the question about RECs were then asked to briefly describe their understanding of what a "Renewable Energy Certificate" is. The ratings of these descriptions were as follows:

Response	Subsegment 1 (n = 2)	Subsegment 2 (n = 3)	Full Sample (n = 5)
Good understanding	0%	0%	0%
Partial understanding	50%	100%	80%
Don't know / Refused	50%	0%	20%

Topic 4: Attitude Concerning Installing PV and Wind Generation

A series of questions were asked to obtain detailed information concerning the respondent's attitudes about: 1) installing PV and wind-generating equipment on the respondent's own property, and 2) a neighbor installing such equipment. Reasons underlying the attitudes were explored in depth to identify most-valued attributes and barriers to participation.

Question: A typical photovoltaic system installation was briefly described. The respondent was then asked, "How do you feel about generating some of your own electricity from the sun by using *photovoltaic panels* mounted on your roof?"

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Don't want it / Don't like it	35%	29%	32%
Sounds O.K. / Sounds interesting	55%	57%	56%
Other	5%	5%	5%
Don't know	5%	9%	8%

The "Other" responses were rated as either "leaning negative" or "leaning positive" toward the idea of installing a photovoltaic system. The overall percentages of "negative" and "positive" responses were:

Response	Subsegment 1 (n = 52)	Subsegment 2 (n = 59)	Full Sample (n = 111)
"Negative"	40%	36%	38%
"Positive"	60%	64%	62%

Question: Respondents in each category were then asked to provide the reason(s) for their opinion. Multiple responses were encouraged. The 76 reasons stated by those in the "Negative" group were as follows:

Response	Subsegment 1 (n = 21)	Subsegment 2 (n = 21)	Full Sample (n = 42)
Roof is always in shade / Property is heavily shaded / Roof doesn't face the sun	6%	24%	16%
Don't have enough information	18%	14%	16%
Satisfied with present electric service	18%	7%	12%
The panels are unsightly	9%	12%	11%
Takes too long to recover investment / Too expensive	12%	7%	9%
Don't think they are a reliable source of electricity	6%	5%	5%
Our local Code won't allow it	6%	5%	5%
Other	26%	26%	26%

The "Other" category included a wide variety of reasons, as follows:

I'm planning to move. *[Two respondents]*
My neighbors might complain. *[Two respondents]*
The panels might damage the roof.
The panels might come off during a windstorm and harm someone or cause damage.
My roof will need replacing soon.
The panels will reduce the value of my property.
I'm too old to worry about it – 80 years old.
It's too new (experimental). I don't think they are ready for widespread use.
It would cost twice as much when you need a new roof installed.
I'm an old-fashioned guy!
I'm afraid repair work would be too difficult to manage.
Maybe in the future, but not now.
In general it's a good idea, but not for this particular area.
I don't want anything on my roof.

Similarly, the 124 reasons stated by those in the "Positive" group were:

Response	Subsegment 1 (n = 31)	Subsegment 2 (n = 38)	Full Sample (n = 69)
Reduces my electricity costs	37%	33%	35%
Reduces pollution / Improves the environment	25%	34%	30%
Saves energy	32%	23%	27%
Other	7%	9%	8%

It should be noted that for some respondents, "Save energy" probably actually means "Reduce electricity costs." Therefore, these two responses might be regarded as being equivalent.1

Comments made in the "Other" category were the following:

It sets a good example! *[Three respondents]*
I won't have to deal with the electric company! *[Two respondents]*
I want to have electricity during a power outage.
We get a lot of sun here

[1] Additional questions would need to be asked to be able to determine whether respondents give higher priority to saving energy or to reducing costs.

Question: How do you think you would feel if your neighbor installed photovoltaic panels on his or her roof?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Don't want it / Don't like it	7%	6%	7%
Sounds O.K. / Sounds interesting	85%	89%	88%
Other	4%	5%	4%
Don't know	4%	0%	2%

The "Other" responses were again rated as either "leaning negative" or "leaning positive" toward the idea of a neighbor installing a photovoltaic system. The overall percentages of "negative" and "positive" responses therefore were:

Response	Subsegment 1 (n = 53)	Subsegment 2 (n = 65)	Full Sample (n = 118)
"Negative"	9%	6%	8%
"Positive"	91%	94%	92%

Question: Respondents in each category were then asked to provide the reason(s) for their attitude toward a neighbor installing a PV system. Multiple responses were again encouraged. The 11 reasons stated by those in the "Negative" group were as follows:

Response	Subsegment 1 (n = 5)	Subsegment 2 (n = 4)	Full Sample (n = 9)
The panels are unsightly	50%	40%	45%
Roof is always in shade / Property is heavily shaded / Roof doesn't face the sun	17%	20%	18%
It would reduce property values	0%	40%	18%
Don't have enough information	33%	0%	18%

Similarly, the 174 reasons stated by those in the "Positive" group were:

Response	Subsegment 1 (n = 46)	Subsegment 2 (n = 60)	Full Sample (n = 106)
Don't have any objections	39%	36%	37%
Reduces pollution / Improve the environment	32%	39%	36%
Sets a good example	16%	8%	12%
My neighbor can do what he wants on his property	6%	6%	6%
Other	6%	11%	9%

The "Other" category included reasons such as:

We need new energy sources. *[Three respondents]*

It's good to save resources. *[Three respondents]*

If it saves the neighbor money, great! *[Two respondents]*

I can't see the south side of his roof.

As long as it's not an eyesore

As long as it's safe!

I'd be able to get the neighbor's opinion on how the system works

Question: A typical wind-powered-generator installation was briefly described. The respondent was then asked, "How do you feel about generating some of your own electricity from a *wind-powered generator* similar to this?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Don't want it / Don't like it	75%	77%	76%
Sounds O.K. / Sounds interesting	24%	18%	21%
Other	0%	2%	1%
Don't know	2%	3%	3%

The single "Other" response was rated as "leaning positive" toward the idea of installing a wind-powered generator. The overall percentages of "negative" and "positive" responses therefore were:

Response	Subsegment 1 (n = 52)	Subsegment 2 (n = 59)	Full Sample (n = 111)
"Negative"	76%	79%	78%
"Positive"	24%	21%	22%

Question: Respondents in each category were then asked to provide the reason(s) for their opinion. Multiple responses were encouraged. The 163 reasons stated by those in the "Negative" group were as follows:

Response	Subsegment 1 (n = 41)	Subsegment 2 (n = 50)	Full Sample (n = 90)
Believe they are unsightly	27%	31%	29%
Lot is too small	9%	20%	15%
Our local Code won't allow it	6%	7%	7%
Neighbors would complain	8%	6%	7%
Takes too long to recover investment / Too expensive	8%	5%	6%
Other	43%	31%	37%

The "Other" category included reasons such as:

We don't have enough wind to drive a generator. *[Eight respondents]*

The blades might come flying off and harm someone or cause damage. *[Eight respondents]*

They are too noisy. *[Seven respondents]*

I don't know enough about it. *[Seven respondents]*

I'm satisfied with my present electric service. *[Five respondents]*

I don't think it is a reliable source of electricity. *[Five respondents]*

It would reduce the value of my property. *[Five respondents]*
We have too many trees. *[Three respondents]*
I'm planning to move. *[Three respondents]*
I've read that they kill birds.
They are less efficient than a photovoltaic system.
Not efficient.
I don't want to depend on natural resources for my energy.
Aren't practical yet.
Too difficult to maintain.
It would be an issue when I want to sell my home.

Similarly, the 52 reasons stated by those in the "Positive" group were:

Response	Subsegment 1 (n = 13)	Subsegment 2 (n = 13)	Full Sample (n = 26)
Reduces my electricity costs	33%	36%	35%
Reduces pollution / Improves the environment	22%	28%	25%
Saves energy	26%	16%	21%
Other	19%	20%	19%

As was noted previously, some respondents regard "Save energy" as being equivalent to "Reduce electricity costs." The "Other" category included reasons such as:

I have a large property with plenty of space. *[Two respondents]*
Better than using fossil fuels. *[Two respondents]*
Sets a good example. *[Two respondents]*
Wind is free.
I want to have electricity during a power outage.
Safer!

Question: How do you think you would feel if your neighbor installed a wind-powered generator on his or her property?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Don't want it / Don't like it	36%	45%	41%
Sounds O.K. / Sounds interesting	56%	40%	48%
Other	7%	15%	12%

The "Other" responses were again rated as either "leaning negative" or "leaning positive" toward the idea of a neighbor installing a wind-powered generator. The overall percentages of "negative" and "positive" responses therefore were:

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
"Negative"	44%	54%	49%
"Positive"	56%	46%	51%

Question: Respondents in each category were then asked to provide the reason(s) for their attitude toward a neighbor installing a wind-powered generator. Multiple responses were again encouraged. The 73 reasons stated by those in the "Negative" group were as follows:

Response	Subsegment 1 (n = 24)	Subsegment 2 (n = 35)	Full Sample (n = 59)
Believe they are unsightly	48%	48%	48%
Neighbors don't have enough space on their property	7%	18%	14%
The blades might come flying off and harm someone or cause damage	10%	11%	11%
Will reduce the value of my property	7%	11%	10%
Other	28%	11%	18%

The "Other" category included reasons such as:

They are too noisy. *[Six respondents]*
I don't know enough about it. *[Two respondents]*
Our township won't allow it.
There are too many high trees in the area.
It would depend on how it looks.
There is not enough wind in this area.

Similarly, the 86 reasons stated by those in the "Positive" group were:

Response	Subsegment 1 (n = 31)	Subsegment 2 (n = 29)	Full Sample (n = 60)
Don't have any objections	44%	37%	41%
Reduces pollution / Improves the environment	28%	40%	34%
Sets a good example	12%	2%	7%
Other	16%	21%	19%

The "Other" category included reasons such as:

It's their property. *[Five respondents]*
Better than using fossil fuels.
Saves money and is a source of electricity.
As long as it doesn't make too much noise.
As long as they are not everywhere.
I can't see the south side of his roof.
As long as it's a good distance from my property.
It's good to save resources.
As long as it's safe!
The neighbor can let me know how efficient it is.

Topic 5: Potential Interest in Program(s) and in Installing a Renewable Energy Technology

Question: Respondents who expressed a "Positive" response concerning either type of renewable energy system were then asked: "Do you think you would be interested in installing one of the systems we've been talking about, during the next two years?"

Response	Subsegment 1 (n = 36)	Subsegment 2 (n = 44)	Full Sample (n = 80)
Yes – Photovoltaic System	19%	36%	29%
Yes – Wind-Powered Generator	8%	2%	5%
Yes – Either or Both Types	0%	2%	1%
Possibly / Need more information	31%	36%	34%
No	39%	20%	29%
Don't know	3%	2%	3%

Question: Respondent who stated "Possibly / Need more information" were then asked to indicate what additional information they would want, or what conditions would have to change, for them to become interested in installing a system.

Response	Subsegment 1 (n = 12)	Subsegment 2 (n = 17)	Full Sample (n = 29)
More information on performance	50%	29%	38%
Cost would need to be lower	25%	18%	21%
Other	25%	47%	38%
Don't know / No opinion	0%	6%	3%

The "Other" category included reasons such as the following:

Replace roof first.
The height of the tower.
Other financial responsibilities are taken care of first.
Financing and operating expenses.
If we decide not to move.

Would have to be cheap!
I'll wait until technology improves and becomes more cost-effective.
It blends into the environment, and installation is easy.
Savings must be greater than investment over time.
Need to consider reliability and amount of investment needed.

Topic 6: Respondent's Demographic and Property Characteristics

Question: Do you occupy this dwelling year around or just during the summer

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Year around	98%	100%	99%
Summer only	2%	0%	1%

Question: What is the approximate floorspace of your home, expressed in square feet, including a finished basement and attic, but not including unfinished areas or your garage?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Less than 1,000	2%	2%	2%
1,000 – 1,499	13%	6%	9%
1,500 – 1,999	16%	11%	13%
2,000 – 2,499	9%	18%	14%
2,500 – 2,999	2%	11%	7%
3,000 – 3,999	5%	18%	12%
4,000 – 4,999	5%	6%	6%
More than 4,999	0%	6%	3%
Don't know / Refused	47%	22%	33%

Question: What is the approximate size of your lot, expressed in acres?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
Less than 0.25	36%	29%	32%
0.25 – 0.49	16%	17%	17%
0.50 – 0.76	9%	12%	11%
0.75 – 0.99	0%	11%	6%
1.00 – 1.49	7%	15%	12%
1.50 – 1.99	2%	0%	1%
2.00 – 2.49	4%	3%	3%
2.50 – 3.00	0%	2%	1%
More than 3.00	0%	2%	1%
Don't know / Refused	25%	9%	17%

Question: What is the age of the oldest person who is also a head of your household?

Response	Subsegment 1 (n = 55)	Subsegment 2 (n = 65)	Full Sample (n = 120)
25 – 34	7%	5%	6%
35 – 54	27%	66%	48%
55 – 64	20%	18%	19%
65 and older	40%	9%	23%
Refused	5%	2%	3%

C.2.2 CORE Program – Nonresidential Segment

Topic 1: Renewable Energy System Currently Installed?

Question: Do you have a renewable-energy system installed? (n = 21)

Response	Value
Yes	0%
No	100%

Topic 2: Familiarity with Relevant Renewable Energy Technologies

Question: Heard of *photovoltaic systems* before this interview? (n = 21)

Response	Value
Yes	33%
No	67%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding of what a photovoltaic system is. The ratings of these descriptions were as follows: (n = 7)

Response	Value
Good understanding	57%
Partial understanding	43%

Question: Heard of *wind-powered generating systems* before this interview? (n = 21)

Response	Value
Yes	95%
No	5%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding
of what a wind-powered generating system is. The ratings of these descriptions were as follows: (n = 20)

Response	Value
Good understanding	70%
Partial understanding	15%
Don't know / Refused	15%

Topic 3: Familiarity with New Jersey's Renewable Energy Programs

Question: Heard of the *Customer Onsite Renewable Energy (CORE) Program* before this interview? (n = 21)

Response	Value
Yes	19%
No	81%

Question: Heard of the Renewable Energy Advanced Power (REAP) Program before this interview? (n = 21)

Response	Value
Yes	24%
No	76%

Question: Heard of the Renewable Energy Economic Development (REED) Program before this interview? (n = 21)

Response	Value
Yes	14%
No	86%

Question: Heard of *Renewable Energy Certificates* before this interview? (n = 21)

Response	Value
Yes	14%
No	86%

Topic 4: Attitude Concerning Installing PV and Wind Generation

A series of questions were asked to obtain detailed information concerning the respondent's attitudes concerning the installation of PV and wind-generating equipment on the respondent's own property. Reasons underlying the attitudes were explored in depth to identify most-valued attributes and barriers to participation.

Question: A typical photovoltaic system installation was briefly described. The respondent was then asked, "How do you feel about generating some of your own electricity from the sun by using *photovoltaic panels* mounted on your roof?" (n = 21)

Response	Value
Don't want it / Don't like it	29%
Sounds O.K. / Sounds interesting	71%

Question: Respondents in each category were then asked to provide the reason(s) for their opinion. Multiple responses were encouraged. The 11 reasons stated by those in the "Don't want it / Don't like it" group were as follows: (n = 6)

Response	Value
The panels are unsightly	18%
Takes too long to recover investment / Too expensive	18%
Roof is always in shade / Property is heavily shaded / Roof doesn't face the sun	9%
Don't have enough information	9%
Local Code / Zoning will not allow an installation	9%
Don't think this would be a reliable source of electricity	9%
Other	27%

Responses in the "Other" category were:

Would not be able to convince top management to do it.

We don't own whole business complex

Need more tax incentives.

Similarly, the 30 reasons stated by those in the "Sounds O.K. / Sounds interesting" group were: (n = 15)

Response	Value
Reduces my electricity costs	33%
Saves energy / Good energy policy	23%
Reduces pollution / Improves the environment	20%
Would still have electricity when there is a power outage	7%
Increases value of property	3%
Sets a good example / Creates a "Green" image	3%
Other	10%

Responses in the "Other" category were:

Need to have payback within five to six years.

Sounds good, although we would be concerned about aesthetics.

I like the idea.

Question: A typical wind-powered-generator installation was briefly described. The respondent was then asked, "How do you feel about generating some of your own electricity from a *wind-powered generator* similar to this? (n = 21)

Response	Value
Don't want it / Don't like it	52%
Sounds O.K. / Sounds interesting	48%

Question: Respondents in each category were then asked to provide the reason(s) for their opinion. Multiple responses were encouraged. The 12 reasons stated by those in the "Don't want it / Don't like it" group were as follows: (n = 11)

Response	Value
Believe they are unsightly	42%
Our property is too small	25%
I'm satisfied with getting power from the utility	8%
Neighbors would complain	8%
Takes too long to recover investment / Too expensive	8%
Don't have enough information	8%
Other	17%

Response in the "Other" category was:

We don't own whole business complex.

Similarly, the 20 reasons stated by those in the "Sounds O.K. / Sounds interesting" group were: (n = 10)

Response	Value
Reduces my electricity costs	30%
Reduces pollution / Improves the environment	20%
Would still have electricity when there is a power outage	20%
Sets a good example / Creates a "Green" image	10%
Saves energy / Good energy policy	5%
Have a large property	5%
Other	10%

Responses in the "Other" category were:

Good idea, but the building's other tenants and the owner would have to agree.

I heard it's more efficient than solar panels.

C.2.3 REDO Program

Because the REDO Program is targets schools and municipalities, these were the segments targeted in the Potential Participant survey.

Topic 1: Renewable Energy System Currently Installed?

Question: Do you have a renewable-energy system installed?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	0%	0%	0%
No	100%	100%	100%

Topic 2: Familiarity with Relevant Renewable Energy Technologies

Question: Heard of *photovoltaic systems* before this interview?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	20%	60%	25%
Not sure	7%	0%	3%
No	73%	40%	71%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding of what a photovoltaic system is. The ratings of these descriptions were as follows:

Response	Municipalities (n = 4)	Schools (n = 9)	Full Sample (n = 30)
Good understanding	50%	88%	69%
Partial understanding	25%	0%	31%
Don't know / Refused	25%	11%	0%

Question: Heard of *wind-powered generating systems* before this interview?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	93%	100%	71%
Not sure	0%	0%	6%
No	7%	0%	23%

Question: Those who responded, "Yes" were then asked to briefly describe their understanding of what a wind-powered generating system is. The ratings of these descriptions were as follows:

Response	Municipalities (n = 14)	Schools (n = 15)	Full Sample (n = 30)
Good understanding	64%	93%	53%
Partial understanding	36%	7%	40%
Don't know / Refused	0%	0%	7%

Topic 3: Familiarity with New Jersey's Renewable Energy Programs

Question: Heard of the *Customer Onsite Renewable Energy (CORE) Program* before this interview?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	47%	5%	7%
Not sure	0%	3%	2%
No	53%	92%	91%

Question: How did you learn about it?

Response	Municipalities (n = 7)	Schools (n = 15)	Full Sample (n = 30)
Read about it	0%	5%	7%
Heard about it from a peer	29%	3%	2%
Contacted by a vendor / dealer / installer	29%	92%	91%
Other	29%	0%	0%
Don't remember / Refused	14%	0%	0%

Responses in the "Other" category included:

Customer inquiry

Attended Alternative Energy seminar

NJLM Event

Question: Heard of the *Reduced Energy Demand Options (REDO) Program* before this interview?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	13%	5%	4%
Not sure	13%	0%	0%
No	74%	95%	96%

Question: Heard of *Renewable Energy Certificates* before this interview?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Yes	7%	5%	4%
Not sure	0%	0%	0%
No	93%	95%	96%

The one respondent who had heard of *Renewable Energy Certificates* described them as a "Rebate program for solar energy."

Topic 4: Attitude Concerning Installing PV and Wind Generation

A series of questions were asked to obtain detailed information concerning the respondent's attitudes concerning the installation of PV and wind-generating equipment. Reasons underlying the attitudes were explored in depth to identify most-valued attributes and barriers to participation.

Question: How do you feel about generating some of your own electricity from the sun by using *photovoltaic panels*?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Don't want it / Don't like it	35%	29%	32%
Sounds O.K. / Sounds interesting	55%	57%	56%
Other	5%	5%	5%
Don't know	5%	9%	8%

The "Other" responses were rated as either "leaning negative" or "leaning positive" toward the idea of installing a photovoltaic system. The overall percentages of "negative" and "positive" responses therefore were:

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
"Negative"	40%	36%	38%
"Positive"	60%	64%	62%

Question: Respondents in each category were then asked to provide the reason(s) for their opinion. Multiple responses were encouraged. The 76 reasons stated by those in the "Negative" group were as follows:

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Roof is always in shade / Property is heavily shaded / Roof doesn't face the sun	6%	24%	16%
Don't have enough information	18%	14%	16%
Satisfied with present electric service	18%	7%	12%
The panels are unsightly	9%	12%	11%
Takes too long to recover investment / Too expensive	12%	7%	9%
Don't think they are a reliable source of electricity	6%	5%	5%
Our local Code won't allow it	6%	5%	5%
Other	26%	26%	26%

Question: What is your general reaction to generating some of your energy from the sun using a *wind-powered generator*?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Don't want it / Don't like it	35%	29%	32%
Sounds O.K. / Sounds interesting	55%	57%	56%
Other	5%	5%	5%
Don't know	5%	9%	8%

Note: Only respondents who answered "***Don't want it / Don't like it"*** answered the next question. Any who answered "***Sounds OK / Sounds interesting"*** were then asked the subsequent ("Positive response") question.

***Question*:** Why do you feel that way [Negative response]?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Uncertain of construction and maintenance impacts	6%	24%	16%
Don't have enough information	18%	14%	16%
Takes too long to recover investment / Too expensive	12%	7%	9%
Too complicated	26%	26%	26%

Question: Why do you feel that way [Positive response]?

Response	Municipalities (n = 15)	Schools (n = 15)	Full Sample (n = 30)
Reduces electric cost	26%	26%	26%
Saves energy / Helps nation's energy problems	6%	24%	16%
Reduces electric costs	18%	14%	16%
Reduces pollution / Helps the environment	12%	7%	9%
Sets good example / Green image	6%	6%	6%

Note: 75% of the respondents remarked that initial cost and payoff time would be a serious consideration.

C.2.4 REAP and REED Programs

Because it is possible that the same firm would consider participating in both the REAP and REED Programs, this final segment targeted Potential Participants in both programs. During the interviews, only one firm indicated that it is considered itself to be an "independent power producer" (IPP)

Topic 3: Familiarity with New Jersey's Renewable Energy Programs

Question: Familiar with the *Renewable Energy Economic Development (REED) Program* and the *Renewable Energy Advanced Power (REAP) Program* before this interview?

Response	REED Program	REAP Program	Both Programs
Yes	67%	50%	50%
No	33%	50%	50%

Question: Those who were familiar with the programs were asked to comment on their design, rules, and value. The responses heard were:

REED Program:

The program could be important for creating new renewable energy companies in New Jersey. *[Three respondents]*

Incentives are adequate and fair to create a startup company. [Two respondents]

The $500,000 grant is excellent to get a business going. However, rebates for solar thermal products will be needed for us to consider opening a plant in New Jersey.

A good program, but it would be better by making the incentive a 50% grant plus a 50% loan.

We are considering manufacturing our system in NJ.

One respondent who was not familiar with the program made the following comment:

Now that I've learned about the program, I'm going to investigate further.

REAP Program

The incentives are sufficient to encourage the construction of certain renewable energy power plants like wind and biomass. However, a solar project would be problematic. *[Two respondents]*

The program requires a technology set-aside and higher subsidies in order to attract a large-scale solar IPP. *[Two respondents]*

The program's 20% buydown grant is very good, and low-interest loans should finalize a project if the price of the landfill gas is reasonable.

This is a good plan to encourage the construction of a renewable energy power plant.

Excellent rules and procedures to obtain a grant. The RFP language is easily understood, and the application procedure seems to be very simple.

Topic 5: Potential Interest in Program(s)

Question: Do you think you might seriously consider participating in the *Renewable Energy Economic Development (REED) Program*, the *Renewable Energy Advanced Power (REAP) Program*, or both programs?

Response	REED Program	REAP Program	Both Programs
Yes	67%	33%	17%
Not sure	17%	17%	17%
No	17%	50%	67%

APPENDIX D. SURVEYS OF TRADE ALLIES

As was indicated in Section 1.3, Trade Allies are businesses and individuals who provide services and equipment to program participants. They are not a formal part of a renewable energy or energy efficiency program; rather, they have a synergistic relationship with such programs because their business volume increases as these programs grow. Therefore, they tend to be knowledgeable about such programs and how they function (i.e., the programs' process). They often help market these programs to potential participants. Therefore, interviews with representatives of various types of Trade Allies produce information for a process evaluation. Surveys were conducted with four types of Trade Allies:

- PV and wind-power system installers and distributors (CORE and REDO Programs)
- PV and wind-power system manufacturers (CORE, REDO, and REAP Programs)
- Builders and developers (CORE and REDO Programs)
- Architects and engineers (CORE and REDO Programs)

Because of the somewhat limited scope of this evaluation, we did not include Trade Allies who typically do not have the opportunity to influence program participation (e.g., contractors and electricians), or manufacturers of fuel cell and biomass equipment that is only infrequently incorporated into projects supported by the programs. Although builders/developers and architects/engineers have not had a large role in the programs thus far, their role may increase if more emphasis is placed on "Green Buildings."

D.1 METHODOLOGY

The same four subtasks as were involved in the surveys of actual and potential program participants are also applicable to each of the Trade Ally surveys: 1) Sample Design, 2) Development of Survey Questionnaires, 3) Survey Activities, and 4) Data Tabulation and Analysis.

D.1.1 Sample Design

D.1.1.1 Installers and Distributors

The NJCEP Website lists 64 installers and distributors of PV systems (a few of whom are also manufacturers of solar panels), plus four firms that are manufacturers only.

- 24 installers (many of whom also being distributors), two distributors who do not do installations, and one manufacturer are located in New Jersey. (Total of 27 organizations, some of which have only one person involved in PV-system activities.)
- 27 organizations (one of which is a manufacturer) are located in nearby states.
- 14 organizations (two of which are manufacturers) are located in more distant states.

The Website also lists 15 organizations who install, distribute, and/or manufacture wind-generator systems. Of these, 12 are also listed as installers or distributors of PV systems and were on the list described above. The other three are manufacturers and distributors of wind generators.

The 50 installers and/or distributors located in New Jersey or nearby states constituted the sample frame for this survey. Twenty telephone interview completions were targeted.

D.1.1.2 Manufacturers

The sample frame included representatives of manufacturers of PV systems for commercial and residential installations, and of small and large wind generators. In addition, a representative of a small vertical-axis turbine manufacturer and a representative of a system integrator were included.

D.1.1.3 Builders and Developers

The sample frame was a detailed list of approximately 3,000 New Jersey builders and developers.

D.1.1.4 Architects and Engineers

The sample frame was a detailed list of approximately 1,000 New Jersey architects and engineers.

D.1.2 Development of Survey Questionnaires

The Trade Ally survey questionnaires for the four segments were closely similar to the Potential Participant survey questionnaires. The following topics pertaining to the Process Evaluation were included in the questionnaires:

Topic 1: Familiarity with and opinions of New Jersey's renewable energy programs

Topic 2: Familiarity with relevant renewable energy technologies

Topic 3: Time required to complete various steps in the program's process

Topic 4 Attitude concerning installation of relevant renewable energy technologies
Positive attitudes explored to identify attributes that are most valued
Negative attitudes explored to identify barriers to participation

Topic 5: Attitude toward government efforts to promote energy-efficiency and renewable-energy installations

Topic 6: Marketing activities, priorities, and growth expectations

Topic 7: Respondent firm's firmographic characteristics.

However, not all topics were covered in all Trade Ally segments. The following matrix shows the topics covered in each of the four segments.

	Topic						
Segment	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Installers and Distributors	X		X			X	X
Manufacturers	X					X	
Builders and Developers	X	X		X	X		
Architects and Engineers	X	X		X	X		X

D.1.3 Survey Activities

Telephone survey interviews were completed with the following:

- Installers and Distributors of PV and wind-power equipment: 21
- Manufacturers of PV and wind-power equipment: 12[1]
- Builders and Developers: 14
- Architects and Engineers: 15

The duration of the completed interviews ranged from approximately 12 to 30 minutes. One installer provided supplementary information via e-mail.

D.1.4 Data Tabulation and Analysis

Results from all surveys were entered into data files, which were then checked for validity and completeness. Analysis of the data consisted of computing response distributions. Survey results are presented in terms of the topics identified in Subsection D.1.2.

D.2 SURVEY RESULTS

D.2.1 Installers and Distributors

Topic 1: Familiarity with and Opinions of New Jersey's Renewable Energy Programs

Question: Have you found any of the *CORE Program's* operations or procedures to be inconsistent with what you believe the rules require? (n = 21)

Response	Value
Yes	48%
No	38%
No response	14%

Those who answered "Yes" provided the following examples of inconsistencies or other problems they wanted to report:

> *No real inconsistencies with program. What is disastrous is getting zoning approvals from local agencies. Getting a variance for a wind turbine is absurd. Farms seem to be the only place they are acceptable. We spent more than a year getting approval for one project. The cost for getting a variance would have been $6,000 to $20,000.*
>
> *The Program is not very friendly to people who want to install the systems themselves.*
>
> *There are so many roadblocks to applying to be listed as an installer: have to have an office in NJ; have to be certified in NJ for commercial.*

1 Eleven renewable energy equipment manufacturers were included in the survey. Two different managers—one responsible for residential systems and the other for commercial systems—were interviewed at one of the large PV system manufacturers.

The BPU/OCE has changed some of the rules and its procedure for notifying contractors of changes is not very good.

The Program won't pay for personal installation of solar PV system in my own house. Another contractor, not my company, put in the system. In essence, that contractor won't get paid rebate and now I'm responsible for that cost. I'm very upset – I may get only get 50 percent of the rebate. I wouldn't have done it if known that.

Some installers are reserving millions of dollars of program money by applying for rebates for customers who have not signed a contract yet. Those dollars are getting locked up. Those customers are not necessarily proceeding with systems.

When you buy 10-kW system, you get a 70 percent rebate. If you buy 12- kW you get 60 percent. This means that sometimes we have to do two installations: a 10-kW one and then later a 5 kW array.

In general, administration of the Program by the BPU/OCE has been very good. The Program is becoming recognized as one of the best in the nation. The staffing changes that occurred over the past six months or so have caused some problems—the new people are just now getting up to speed. They are definitely moving rebate applications through. RECs make so much economic sense that there is a tremendous amount of enthusiasm, so I imagine there is an overabundance of applications.

Performance threshold guidelines have slowed the approval of some rebates. Program concerns about the viability of wind resources have essentially slowed down approval.

One installation contractor seems to be getting inside information from the OCE. The company registered as a bidder for a major school project a couple of weeks before the bid came out. This gave them an unfair advantage.

I have a self-installed system, but am having difficulty getting rebates for it. Wasn't happy with way I was treated. I think they make the rules up as they go. First they told me I would get full rebate, but then that wasn't done. Now, I'm holding back on future PV installations for awhile.

The Website's software to determine PV system sizing is very confusing. I believe it is probably less accurate than doing it manually.

Many projects in the state of NJ are public bid projects, but is seems that one contractor is getting the specifications written such that only the equipment he sells and installs is eligible.

The BPU/OCE has not been enforcing the rule that the 70 percent cap on the rebate is to apply to the net cost of the installation to the applicant after deducting any other grants received. This is now a problem because schools are able to tap into funds provided by the New Jersey Department of Education. They are able to get all the cost covered. If the rule is not enforced, there is nothing to stop schools from soaking up all the rebate money.

If you put in your own system then they will pay a percentage of the costs but a detailed cost breakdown has to be provided. But my itemized list of expenses is something that my competitors would love to get their hands on. There are no guarantees that this information will not somehow find its way to these competitors.

Question: How should the Program's procedures be changed?

The responses from nine installers were:

Don't change the rules midstream. *[Two respondents]*

Make it easier for "do-it-yourselfers" to qualify for rebates.

Don't discriminate against contractors who hire other contractors to install their own personal systems.

Shouldn't be showing favoritism—But I don't know how you enforce that.

I would determine the average price for system installation, and then pay rebates based on these average prices.

Don't let one bidder have an unfair advantage.

Make the software tool easier to follow; ensure that it is accurate.

We believe it is essential that there be strong and well-defined rules governing participation in the Program, and that these requirements should be rigorously enforced.

The requirement that a rebate reservation is to expire if an applicant has not entered into a signed contract within 90 days should be strictly enforced. The OCE should require submission of a copy of the signed contract within 90 days. If it is not received within this period, OCE should send a notice that reservation has expired.

Utility approval of the interconnection should occur early in the process; not at the end. Most inverters are fully compliant with utility requirements. Perhaps the OCE should do like they do in California: Publish a list of pre-approved inverters, and if the application cites one of these units, then the interconnection is automatically approved unless the utility files an objection within two weeks.

There should be a requirement for the utility to: 1) have any needed metering change-out completed and make the change a new participant's account record to show that he or she is on net-metering within ten days of the final QC Inspection, and 2) formally notify both the customer and the installer that this when the utility has changed the customer's account.

There needs to be a way to expeditiously resolve problems that arise, especially those caused by mistakes made by the utilities. My firm has had several occurrences where the utility did not actually change a customer's account to show he on net metering, and billed him for the sum of kWh "in" plus kWh "out." The customer is naturally upset at the large bill. In other cases the customer was told that everything was set-up and the PV could be energized. The utility's meter-reader came by a few weeks later, saw the meter running backward, didn't know about net metering, and threatened to immediately pull the meter and disconnect the customer. Things like this give the program a bad image. The needs to be a way to keep the utilities from slowing-down the process or not quickly correcting errors when they commit them.

Issues like, "Should self-installers get a reduced rebate?" and "What to do about facilities with multiple meters?" drag on and on without resolution for months and months. The OCE and the Renewable Energy Committee of the CEC don't give high enough priority to: 1) getting a consensus among interested parties, and 2) issuing a rule change. There should be a procedure to solicit input, review comments, and get to closure—all within a 5- or 6-week period.

The rebate structure should be modified to encourage more installations in the 10-kW to 50-kW range. The rebate drops from $4.00/W at 10.0 kW from $5.50/W at 9.9 kW. The economy-of-scale associated with doing a larger installation does not become significant

until you get above around 25 kW. Therefore, I believe the rebate in the 10-kW to 100-kW range should be $4.50/, not $4.00/W.

Question: Do you think the requirements to be listed on the NJCEP Website as an installer or dealer are too difficult or are they reasonable? (n = 20)

Response	Value
Too difficult	0%
Reasonable	85%
No opinion	15%

Four respondents offered the following comments:

Too easy—unreasonably easy! *[Two respondents]*

There are no criteria! Absurdly simple. I had some guy who worked for me last year. He was mediocre. The day he left my company he was listed on the site. He had never installed a system by himself--he even had trouble putting on a safety harness. There should be an experience criterion and a continuing education criterion. A requirement that you follow safety guidelines. We've had several newspaper pictures with installers with a rope tied around their waist. Someone is going to hurt himself and it will damage the industry. And once you get listed, you are on for life. They never ask if you are still in the business, or whether you still have insurance. No criteria for getting people off. One particular shyster I know of is still on the list.

Actually too easy, lots of disreputable people could get listed. Horror stories are starting to develop in the industry. If they are not properly trained, they give the industry a bad name.

Topic 3: Time Required to Complete Various Steps in the Program's Process

Question: Since April 2003, has the procedure to obtain pre-installation approval been as easy as you think it should be? Respondents were asked to provide a score on a "0" to "10" scale, where "0" indicates the procedure is much too complicated, and "10" indicates the procedure is smooth and completely reasonable. (n = 15)

Score	Value
10	7%
9	60%
8	13%
6	7%
5	7%
3	7%
0 – 2, 4, 7	0%

The mean score was 8.1.

***Question*:** Respondents who gave a score less than "9" were asked to indicate how the pre-installation approval process could be made easier. The responses were: (n = 5)

Time factor from first mailing for notification is very slow process. Even the rebate is slow. The whole process is slow.

Require a contract signed before commitment letter is sent. There have been situation where I was the winning bidder, but then I found that the OCE had already sent a commitment letter to one of my competitors. It is then a real hassle to straighten this out.

There is always some uncertainty as to whether the OCE has everything they need. I suggest that, upon receipt of an application, they send an e-mail back and state that it was received, and then review it promptly and advise the status in a second e-mail.

Question: Since April 2003, has the time taken by the OCE to process applications for pre-installation approval been reasonable? Respondents were asked to provide a score on a "0" to "10" scale, where "0" indicates the time was much too long, and "10" indicates the time was completely reasonable. (n = 16)

Score	Value
10	19%
9	38%
8	19%
5	13%
3	6%
2	6%
0, 1, 4, 6, 7	0%

The mean score was 7.7.

***Question*:** Respondents who gave a score less than "9" were asked to indicate the length of time to obtain pre-installation approval that they would regard as "reasonable." The responses were: (n = 7)

Weeks	Value
1	43%
2	43%
4	14%

The mean of the responses that provided a "reasonable" time duration to obtain pre-installation approval was 1.9 weeks.

***Question*:** Respondents were asked to indicate the length of time it has actually taken to obtain pre-installation approval. (n = 16)

The responses ranged from one week to one month, with a mean value of 2.8 weeks.

***Question*:** How satisfied are you with the post-installation inspection process? Respondents were asked to provide a score for either the overall process, or separately for the Program QC inspection and the local Electric Code inspection. Respondents were again asked to use a "0" to "10" scale, where for this question "0" indicates severe unhappiness, and "10" indicates the procedure is completely reasonable.

Scoring of	n	Score Range	Mean Value
Overall Process	3	7 to 9	8.0
Program QC	12	8 to 10	9.2
Electric Code	11	1 to 19	6.7

Several respondents offered unsolicited comments:

Program QC Inspections

The inspector is doing a great job! He is thoroughly knowledgeable, competent, helpful, and pleasant to deal with. *[Three respondents]*

From a process perspective, I think it's crazy he has to inspect every single site. It just takes time.

The program is pretty proactive in making sure requirements are in place before he is sent out to make the inspection.

Electric Code Inspections

The information they ask for before installation varies from nothing to gobs of useless information. From an inspection viewpoint, they do nothing. Essentially it's me showing them how a system works. They have had no training. They sit down and read the code--about four pages. They see if everything is grounded, and that is it.

All municipalities have their own requirements -- so hard to define. Pretty good, though.

Sort of a pain in a neck. He was not knowledgeable and initially voiced a lot of objections. Once he realized it did meet all Code requirements, everything was O.K.

Never had an issue--we get a lot of questions, but they are really trying to learn and we are happy to educate them.

***Question*:** What aspects of the inspection process do you think should be improved, and how?

Twelve respondents offered comments:

Local inspectors need to take some classes on solar PV systems. *[Six respondents]*

Better communication is needed, and faster scheduling. *[Two respondents]*

Shouldn't have to wait for local inspection until Program QC and the utility come out to inspect.

Should audit instead of conducting full inspections after you pass some sort of criteria (e.g., some number of installs.

Don't know if it really can be improved given the variability of local code, building needs, etc.

Reduce the paperwork burden.

***Question*:** In your opinion, what is a reasonable time to wait for (a) the Program QC inspections, and (b) the local Electric Code inspections, to occur after you've requested them?

Inspection	n	Range (Days)	Mean Value
Program QC	17	2 to 30	11 days
Electric Code	16	2 to 30	11 days

Two respondents provided comments:

Needs to be quick because a lot of us rely on the rebates.

It's not like a new home, where they have to inspect every room.

Question: Since April 2003, has the time taken by the utilities to process the Interconnection Agreement been reasonable? Respondents were asked to provide a score on a "0" to "10" scale, where "0" indicates the time was much too long, and "10" indicates the time was completely reasonable. (n = 15)

Score	Value
9	27%
8	20%
7	7%
5	20%
4	7%
3	7%
1	7%
0	7%
10, 6, 2	0%

The mean score was 6.0.

***Question*:** Respondents who gave a score less than "9" were asked to indicate the length of time to obtain Interconnection Agreement approval that they would regard as "reasonable." The responses were: (n = 4)

Days	Value
10	50%
14	50%

The mean of the responses that provided a "reasonable" time duration to obtain Interconnection Agreement approval was 12 days.

Question: Since April 2003, has the time taken by the BPU/OCE to process the Final Application an issue the rebate check been reasonable? Respondents were asked to provide a score on a "0" to "10" scale, where "0" indicates the time was much too long, and "10" indicates the time was completely reasonable. (n = 14)

Score	Value
10	7%
9	29%
7	14%
6	7%
5	14%
4	7%
3	14%
1	7%
8, 2, 0	0%

The mean score was 6.9. However, the respondent who gave the "10" rating noted that there has been a dramatic improvement within the past three months. Prior to this, he would have given a rating of "5." Because the various respondents are likely to be giving a score based on their experiences at different points in time, the scores may be meaningless.

Topic 6: Marketing Activities

Question: What marketing methods have you had success with for generating leads? Multiple responses were encouraged. (n = 20)

Response	Value
"Word-of-mouth"	28%
Advertising in journals	22%
Direct Mail	16%
Website	13%
Trade shows and meetings	9%
Yellow pages	3%
Don't market	6%

Question: What are the characteristics that make a good residential prospect? Multiple responses were encouraged. (n = 20)

Response	Value
High income	27%
Good location/ Lots of sun	27%
Educated / Innovative consumer	20%
Values environmental quality	9%
Long-term resident	9%
Don't market	3%

Several respondents offered comments:

Informed customer, good location, good orientation, shading not as issue.

[Four respondents]

No vents on the roof. People buying are very educated people with long-range goals. The more educated the person the more money they have.

Homeowner needs to be innovative type of person. They have to be willing to accept the aesthetic transformation of their house. They have to be willing to learn new technology. They have to have a certain amount of faith that whatever is going up on their house is going to work. Homeowners should be willing to spread the good news about solar energy so they can participate in marketing the technology.

Customers who plan to live in the house beyond the payback time.

Need open area to southern exposure. Need to construct the home with all EE technology to reduce load demand. Program should include solar water heating--a key missing ingredient. This system can preheat water for either electric or fossil-fuel systems, and wipe out much of the home's energy usage.

Customer with upper-middle-class income, who has southern facing roof with no trees and who has a do-it-yourself ethic.

People who like to feel they are doing something to cut energy production. People who would like to have the newest toy. People do things because they want to and then find a reason to justify it.

Someone who really has to do it, because there are quite a few obstacles.--Desire to get away from foreign oil.

Someone who realizes the value of the system and what it means in the long term; they can save themselves a fortune in the next 10-20 years.

Question: What are the characteristics that make a good nonresidential prospect? Multiple responses were encouraged. (n = 20)

Response	Value
Sees as investment opportunity	26%
Good location / Lots of sun	22%
Knowledgeable/Innovative/ interested in solar	19%
Values environmental quality	11%
Expensive electricity rates	7%
Willing to make medium- to long-term investment	7%

Several respondents offered comments:

Upper management must feel strongly about solar energy.

No shading. Also, municipal utilities are bad; they won't let customers sell back into grid. All utilities should be mandated to buy power back from PV systems.

Have to own the building and be willing to accept to a medium-term payback.

There is a perception we are fighting and promulgated by what one would think are reasonable professionals—let's say a guy owns a professional facility and has been working

with an HVAC professional --that guy poo-poos the whole solar energy thing--uneconomical decision, pie-in-the-sky, etc. It goes back to who the potential customer considers is the most-trusted advisor. The Program should reach out to Trade Allies—such as HVAC contractors and architects & engineers. Give them the working technical knowledge in simple terms—not to sell them systems, but to get them informed about current state of the art. Within New Jersey the Programs can help create paybacks within three or four years on a commercial basis—considering tax incentives, rebates, avoided savings. The other perception is that the energy from the system won't make a big difference in their energy usage. Just because we do not provide a significant portion of energy needs does not mean it's not a good investment.

Some people I meet with really want a system, but they have trouble pushing it through the bean counters.

My best prospects are facilities that are open seven days a week and have high utility bills. Businesses respond to the idea of saving money.

Question: What promotional activities would you recommend that the BPU/OCE to undertake? Multiple responses were encouraged. (n = 14)

Response	Value
Advertise	24%
Sponsor seminars	24%
Place flyers with utility bills	19%
Don't know	34%

Several respondents offered comments:

Provide financing.

More public information sessions. They used to do those, but seem to have pulled the plug on them now.

Don't need any more promotions—there are plenty of prospects.

Co-op funding if you go to a trade show—should be used for a variety of adverting funding.

Tough question. Right now the money is being funneled directly to the end-user and that is where I would want to keep it. I don't want them to spend a lot of money on advertising that may not be effective. Customers are not hard to find. I want to make sure the customers get a good return on a long-term basis, which has a lot to do with the rebate money from the Program.

Sending a mailing with every utility bill. Providing financing. They could make data and logos available so that people could co-opt them in their advertising. We are on the Website and would be nice if we could use their logos.

In all honesty, I wouldn't want more prospects unless they get the various issues fixed first.

Stories in local newspapers are very helpful.

People have to realize that this is going to be mainstream. People won't believe it unless municipalities put information out saying we need to go solar. They won't believe a salesman, but are more likely to believe their local government. The government needs to lend credibility to the industry.

Question: In your opinion, why haven't a larger number of homeowners and businesses signed up for the CORE Program? Multiple responses were encouraged. (n = 19)

Response	Value
Lack of information about renewable energy technologies	55%
High cost of installations	23%
Payback period is too long	9%
Consider technology too risky	5%
Building or site is not suitable	5%
Zoning restrictions	5%

Several respondents offered comments:

I've spoken to many people who say that the economics seem to make sense, but they haven't heard much about PV systems. The Program and the rebates are both new things to them. The BPU needs to get the word out.

If more people did take advantage, the Program would have a big problem. Although only a small fraction of the public are now aware of the Program, this is not necessarily a bad thing—the Program cannot handle more volume right now.

People think that electricity is still fairly cheap, and they don't want to spend the cash upfront for a system. Cash on hand can be more important than an analysis showing the benefits of system installation.

Zoning issues are my biggest barrier.

People have unreasonable expectations; they think they will get all the energy they need from the sun. I tell them they need to cut their energy usage down.

Some people don't buy into payback period. The people I see buying systems do so because they want to be ahead of the curve—" techy-geeky people."

Topic 7: Respondent Firm's Firmographic characteristics

Question: What services does your firm provide? (Multiple responses were solicited.) (n (n = 21)

Response	Value
Install Solar PV Systems	86%
Sell Solar PV Systems	86%
Install Wind-Turbine Systems	33%
Sell Wind-Turbine Systems	43%
Other	43%

The "Other" responses were:

Solar-thermal equipment (e.g., solar water heating) *[5 respondents]*
Fuel cells *[2 respondents]*
Geothermal heat pumps
Micro-hydroturbines

D.2.2 Manufacturers

Topic 1: Familiarity with and Opinions of New Jersey's Renewable Energy Programs

Question: Are you aware that New Jersey now offers four statewide programs that promote the installation of renewable-energy systems? (n = 12)

Response	Value
Yes	8%
No	17%
Knew of one to three programs	75%

Question: What feedback about any of the programs have you received, such as reports from your distributors or dealers?

CORE Program:

Distributors reported that they had issues getting rebate checks. Typical turn-around was 60 days. Untimely payments are hard on the distributor network. *[PV system manufacturer]*

Distributors reported that there were inconsistencies in status reports and technical information from CORE staff. *[PV system manufacturer]*

REAP Program:

Distributors reported 1.0-MW minimum makes the program good for non-PV installers, such as wind system installers and dealers, but difficult for PV. *[PV system manufacturer]*

REED Program:

(No comments)

REDO Program:

(No comments)

Question: What is your own opinion of the programs with which you are familiar?

CORE Program:

Extremely positive program. *[PV system manufacturer]*
Straightforward and user-friendly program. *[PV System manufacturer]*
Best program in the country! *[PV system manufacturer]*
It is more flexible than NYSERDA's programs. *[PV system manufacturer]*

The NJ program has the strongest pro-renewable leadership of any program in the country. We appreciate that. *[Wind system manufacturer]*

REAP Program:

Program is well run. *[Wind system manufacturer]*

REED Program:

(No comments)

REDO Program:

(No Comments)

Question: What is your opinion of the level of financial incentives (rebates) offered under these program(s)

CORE Program:

Maximum rebates for wind are less than the maximum rebate for PV. *[Wind system manufacturer]*

Very good incentive values and very valuable. *[PV system manufacturer]*

Very good incentives but they favor smaller installations. Increasing the incentive level for systems over 10 kW would make it easier to work with the commercial and institutional markets. *[PV system manufacturer]*

Rebates are excellent and stable prospects for funding are very important. to maintaining market. Incentives should be reduced in a few years to help transition the dealer/installer network into an open market. *[PV system manufacturer]*

Incentives are better than most states, happy if they remain the same or grow. *[PV system manufacturer]*

We are hopeful they will improve the incentives for wind systems above 10 kW, -up to about 100 kW. *[Wind system manufacturer]*

The BPU should increase the rebate for small wind power to 70 percent. They should also provide a guaranteed rebate on permitting costs even if the permit is denied and no systems is installed. The cost of permitting can run to $4-5 thousand dollars, and this a big risk for the installer to bear. If the program rebated 70 percent of that cost, this impediment would be reduced. *[Wind system manufacturer]*

Funding values are very attractive but the level will need to increase over the years to encourage the commercial market. *[PV system manufacturer]*

REAP Program:

(No comments)

REED Program:

Incentive values are very adequate to organize a start-up renewable energy company. *[PV system manufacturer]*

REDO Program:

(No comments)

Question: What is your opinion of the programs' rules and procedures?

CORE Program:

CORE procedures for assessing wind resources slow-down projects. *[Wind system manufacturer]*

Streamlined and very easy to work with. *[PV system manufacturer]*

Straight forward and easy to explain to dealer networks *[PV system manufacturer]*

Relatively straight forward. *[PV system manufacturer]*

REAP Program:

(No comments)

REED Program:

Rules are fine *[PV system manufacturer]*

REDO Program:

(No comments)

Question: What is your opinion of the way the programs are being run?

CORE Program:

There has been some friction between CORE Program staff and my staff, but I believe the issues were more with my staff than with the CORE Program people. *[Wind system manufacturer]*

Very positive, but we believe the program is understaffed. *[PV system manufacturer]*

Staff turnover limits the ability of dealers and distributors to develop relationships. *[PV system manufacturer]*

Wide variations in the speed payments are made. *[PV system manufacturer]*

Program stability helps maintain a stable dealer/installer network. *[PV system manufacturer]*

Good program but concerned staffs do not always follow through. *[PV system manufacturer]*

Time to payback is to long, which affects installers and customers. *[PV system manufacturer]*

We are concerned about program staffing and backlog. It takes too long to confirm reservations, which in our experience is 3 to 6 months. Also, it takes CORE Program staff up to a week to find a file, and takes 6 to 8 months to get some customers inspected. *[PV system manufacturer]*

Programs are well run but we would like to see improved responsiveness from the staff. We believe program staffing is not sufficient. *[PV system manufacturer]*

We wonder whether the BPU is adhering to the legislative guidance that limits any one technology to a certain percentage of the rebate money. *[Wind System manufacturer]*

REAP Program:

(No comments)

REED Program:

Run very well. *[PV system manufacturer]*

REDO Program:

(No comments)

Question: What suggestions do you have for improvements to any of the programs? (n = 12)

CORE Program:

A performance-based incentive (per kWh instead of per kW of capacity) would help ensure that systems are installed in the most efficient manager. This would also help to self-police the industry. *[PV system manufacturer]*

Increase program transparency. *[PV system manufacturer]*

Increase staff to more appropriate levels. *[PV system manufacturer]*

Police reservations according to policy to ensure reserved funds are being used for viable projects. *[PV system manufacturer]*

We are looking forward better or improved NJ wind mapping tools, I understand will be on the Internet. *[Wind system manufacturer]*

REAP Program:

Refunding the permitting costs of wind systems if the project does not move forward would help facilitate wind projects. *[Wind system manufacturer]*

Trading of Renewable Energy Certificates should be done in collaboration with neighboring state agencies, such as NYSERDA. This is particularly important in the case of offshore wind projects. *[Wind system manufacturer]*

REED Program:

Fine the way it is! *[PV system manufacturer]*

REDO Program:

(No comments)

Topic 5: Marketing Activities, Priorities, and Growth Expectations

Question: How do you expect sales of your systems in New Jersey to increase in the future, as a result of the BPU's programs? (n = 12)

Response	Value
Large Increase	50%
Small Increase	50%
No Change	0%
Decrease	0%
No Opinion	0%

Question: Where does New Jersey rank in terms of your priority markets? (n = 12)

Response	Value
High Priority	66%
Medium Priority	33%
Low Priority	0%

Two of the wind-system manufacturers offered comments:

I just learned about the incentives during this interview. Now I'm motivated to make New Jersey a priority market.

We are just establishing our U.S. dealer/installer network. We will be moving into states with incentives for residential wind installations.

Question: Why is New Jersey ranked as it is in terms of your priority markets?

Very interested in the Northeast and New Jersey, but we don't have any current projects in New Jersey. *[Wind system manufacturer]*

Incentives from the CORE and REAP programs, and high residential utility rates, make New Jersey a highly attractive market. *[Wind system manufacturer]*

Best program design and incentives in the nation. *[PV system manufacturer]*

Good public awareness of renewable-energy issues, easy to use program, good conferences, and good rebates. *[PV system manufacturer]*

Strong and stable market growth. *[PV system manufacturer]*

It is a relatively small program but the funding is stable. We expect our New Jersey sales to grow to become 30 to 40% of our domestic market. *[PV system manufacturer]*

Next U.S. target market, particularly with residential incentive. *Wind-system manufacturer]*

New Jersey has a lower priority than California or New York because public awareness is lower. *[PV system manufacturer]*

One of the highest priorities for offshore wind development, but a moderate priority for land-based wind develop due to wind resources and land availability. *[Wind system manufacturer]*

High electric and gas utility rates and good incentive levels. [System integrator]

Combination of good PV incentives paid directly to customers, high electricity prices, good population size, good net metering law, and good political commitment and leadership. [PV system manufacturer]

Question: What domestic state or geographic area has the highest priority for marketing efforts? (n = 12)

Response*	Value
California	66%
Midwest	17%
New England	8%
Arizona	8%

Most interviewees ranked California as the highest priority, with New Jersey or New York as the second priority.

Question: Is the current dealer and installer network adequate to support an increased rate of installations of your systems in New Jersey? (n = 12)

Response	Value
Yes	50%
No	50%

Three PV system manufacturers made the following comments:

The ability to satisfy the growing PV demand is dependent on maintaining a stable dealer network.

The pool of qualified installers in New Jersey is not adequate.

My firm partners with ESCOs and HVAC contractors.

Question: What plans do you have for marketing activities in New Jersey?

We will hold open houses for potential residential and agricultural customers [Wind system manufacturer]

Now that we know more about the New Jersey renewable energy programs will begin searching for dealers [Wind system manufacturer]

We will be advertising in print, telephone, and at trade shows. [PV system manufacturer]

We will attend the Mid-Atlantic Sustainability Conference and conducting some installer training sessions. [PV system manufacturer]

No immediate plans as raw materials and production capacity are currently highly constrained. [PV system manufacturer]

We are conducting direct mail campaigns and radio advertisements. [PV system manufacturer]

We plan on attending conferences, such as the Mid Atlantic Sustainability Conference, and conducting outreach directly to communities. *[Wind system manufacturer]*

We are about to start radio advertising. *[PV system manufacturer]*

We have a cooperative marketing program with partners. *[PV system manufacturer]*

We provide education and advertising via public-access television stations. *[PV system manufacturer]*

We have opened a Field office in Hoboken. *[System integrator]*

Question: Is the current dealer and installer network adequate to support an increased rate of installations of your systems in New Jersey? (n = 12)

Response	Value
Yes	50%
No	50%

Three PV system manufacturers made the following comments:

The ability to satisfy the growing PV demand is dependent on maintaining a stable dealer network.

The pool of qualified installers in New Jersey is not adequate.

My firm partners with ESCOs and HVAC contractors.

***Question*:** Is your firm preparing to introduce any new products or models the next two years? If so, please describe them.

We will introduce two new size ranges of wind turbine product. *[Wind system manufacturer]*

We are continuing to improve our existing 50-kW unit. *[Wind system manufacturer]*

We expect to introduce several new PV products and a financial product. *[PV system manufacturer]*

We are adding a 1.5-kW and a 150-Watt model along with a power controller that can handle input from wind, PV and generator sets. *[Wind system manufacturer]*

Working with mounting equipment suppliers to develop a non-roof-penetrating system that is Code compliant. *[PV system manufacturer]*

Will be introducing a new generation of wind turbines with capacities between 2.3 and 2.7 MW. *[Wind system manufacturer]*

Continuing development of a 3.6-MW offshore design.[Wind system manufacturer]

We are developing Building-integrated PV panels and a packaged PV panel/inverter system. *[PV system manufacturer]*

We are pursuing further development of microgrids featuring multiple distributed-generation resources. *[System integrator]*

Other Noteworthy Manufacturer Comments:

New Jersey should consider a performance-based incentive (i.e., $ per kWh) instead of basing the incentive capacity ($/kW). This would help to ensure that dealers install systems in the most efficient and highest-quality manner.
[Comment by multiple PV system manufacturers]

New Jersey should prepare and place on its Web site a database showing monthly and cumulative generation by systems installed under the program. This would allow future participants to compare installers. *[PV system manufacturer]*

I'm very concerned about the stability of the company's dealer networks. It is of utmost importance to have a program with stable rebate levels, efficient processes, and quick payment of financial incentive. *[PV system manufacturer]*

Industrial installations are an excellent opportunity to compete with traditional gensets. *[Wind system manufacturer]*

Large offshore wind-turbine arrays would help to ease congestion on the transmission grid caused by the current need to import power from Pennsylvania and points further West. Incentives offered should reflect this advantage.
[Wind system manufacturer]

New Jersey should invest in better assessments of the state's wind resources.
[Wind system manufacturer]

We would like to see something similar to RECs for small wind systems. They are very valuable. *[Wind system manufacturer]*

We are training our dealers to be sure they get above treetops. In most cases they should trim the top branches. We encourage them to hire a tree-trimming experts when several large trees are involved. *[Wind system manufacturer]*

5.2.3 Builders and Developers

Topic 1: Familiarity with and Opinions of New Jersey's Renewable Energy Programs

Question: Are you aware that New Jersey now offers programs that promote the installation of solar-electric equipment in homes, schools and other buildings? (n = 14)

Response	Sample
Yes	21%
No	79%

Question: Have you participated in or are you now participating in these programs? (n = 14)

Response	Sample
Yes	14%
No	86%

Topic 2: Familiarity With Relevant renewable energy Technologies

Question: How familiar would you say you are with solar-energy systems that produce electricity for buildings? (n = 14)

Response	Sample
Very familiar	0%
Somewhat familiar	14%
A little familiar	21%
Not familiar	64%

Topic 4: Attitude Concerning Installation of Relevant Renewable-Energy Technologies

Question: In your opinion, what would be the benefits of installing a solar system to generate electricity for buildings and homes? [Multiple answers accepted, Total = 18]

Response	Sample
Saves on utility costs	61%
Creates a "Green" image	17%
Occupants will always have power	11%
Reduces long-term operational costs	6%
Can't think of any	6%

Question: What do you think would be the negatives or disadvantages associated with installing these systems? [Multiple answers accepted, Total = 21]

Response	Sample
Expensive	33%
People lack familiarity with the technology	19%
Unsightly	10%
Will never pay for itself	10%
Might not satisfy local building code	5%
The sun is not a reliable source	5%
None / Can't think of any	19%

Question: Would you be willing to install photovoltaic systems in the buildings or homes that you build? (n = 14)

Response	Sample
Yes	7%
We might, but need more information	64%
No	29%

The following comments were made by some of those who said. "We might …":

I certainly would on a house I built for myself, but I would need to better understand everything to build homes with such systems for my customers.

Hard to say, I don't make those decisions, but if there are good incentives and it makes economic sense for us to do it, then maybe.

Depends on whether the numbers add up.

I would need to know more about it, and to better understand the economic issues.

Topic 5: Attitude Toward Governmental Efforts To Promote Energy-Efficiency and Renewable-Energy Installations

Question: How do you feel about efforts by federal and state government agencies to promote the installation of energy efficient lighting, heating, and cooling equipment, and solar- and wind-energy systems, by providing economic incentives? (n = 14)

Response	Sample
Favor the policy	86%
Oppose the policy	0%
No opinion / Not sure	14%

Question: How do you feel about efforts by federal and state government agencies to require builders to install energy-efficient equipment or solar systems? (n = 14)

Response	Sample
Favor the policy	7%
Oppose the policy	79%
No opinion	7%
Other (see below)	7%

The "Other" response was:

It would depend upon the region of the country. If done on a region-by-region basis, then maybe. But in general, more regulation is not a good thing.

5.2.4 Architects and Engineers

Topic 1: Familiarity with and opinions of New Jersey's Renewable-Energy Programs

Question: Are you aware that New Jersey now offers programs that promote the installation of solar-electric equipment in homes, schools and other buildings?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Yes	60%	60%	60%
No	40%	40%	40%

Question: Have you participated in or are you now participating in these programs?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Yes	20%	60%	33%
No	80%	40%	67%

Topic 2: Familiarity With Relevant Renewable-Energy Technologies

Question: How familiar would you say you are with solar-energy systems that produce electricity for buildings?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Very familiar	10%	20%	13%
Somewhat familiar	90%	60%	80%
A little familiar	0	20%	7%
Not familiar	0	0	0

Topic 4: Attitude Concerning Installation of Relevant Renewable-Energy Technologies

Question: Would you be willing to recommend the installation of photovoltaic systems in the buildings or homes that you design?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Yes	90%	60%	80%
No	0	20%	7%
Not sure / Would need to learn more	10%	20%	13%

Question: In your opinion, what would be the benefits of installing a solar system to generate electricity for buildings and homes? [Multiple answers accepted, Total = 27]

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Saves on utility costs	28%	44%	33%
Helps the environment / Saves oil and gas	39%	11%	30%
Occupants will always have power	11%	22%	15%
Doesn't pollute	17%	0%	11%
Creates a “Green” image	0	11%	4%
Has no benefits	0	11%	4%
Reduces long-term operational costs	6%	0%	4%

Question: What do you think would be the negatives or disadvantages associated with installing these systems? [Multiple answers accepted, Total = 25]

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Expensive	50%	43%	48%
May be unreliable	17%	14%	16%
People lack familiarity with the technology	17%	0%	12%
Unsightly	6%	0%	4%
Might not satisfy local building code	6%	0%	4%
Will never pay for itself	0%	14%	4%
They are not very efficient	0%	14%	4%
Placement of the solar panels to provide optimum efficiency is difficult	6%	0%	4%
None / Can't think of any	0	14%	4%

Topic 5: Attitude Toward Government Efforts To Promote Energy-Efficiency and Renewable-Energy Installations

Question: How do you feel about efforts by federal and state government agencies to promote the installation of energy efficient lighting, heating, and cooling equipment, and solar- and wind-energy systems, by providing economic incentives?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Favor the policy	90%	60%	80%
Oppose the policy	10%	40%	20%

Additional comments made by respondents included:

The government is wasting our money! *[Two respondents]*

More needs to be done.

The programs are too complicated.

Question: How do you feel about efforts by federal and state government agencies to change building codes such that the installation of energy-efficient equipment or solar systems is required?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
Favor the policy	30%	60%	40%
Oppose the policy	70%	40%	60%

Additional comments made by respondents included:

They should offer more incentives instead of making it mandatory. *[Three respondents]*

The government is wasting our money! *[Two respondents]*

More needs to be done.

Topic 7: Respondent Firm's Firmographic Characteristics

Question: What percent your firm's business is residential? (n = 15)

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
None	0	20%	7%
10% or less	30%	0	20%
11 to 25%	40%	0	27%
26 to 50%	10%	40%	20%
51 to 75%	10%	0	7%
76 to 100%	10%	40%	20%

Question: What percent your firm's business is commercial?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
None	0	0	0
10% or less	0	20%	7%
11 to 25%	30%	40%	33%
26 to 50%	40%	40%	40%
51 to 75%	10%	0	7%
76 to 100%	20%	0	13%

Question: What percentage your firm's business is institutional?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
None	30%	20%	27%
10% or less	20%	60%	33%
11 to 25%	10%	20%	13%
26 to 50%	30%	0	20%
51 to 75%	10%	0	7%
76 to 100%	0	0	0

Question: What percentage your firm's business is industrial?

Response	Architects (n = 10)	Engineers (n = 5)	Full Sample (n = 15)
None	70%	40%	60%
10% or less	10%	40%	20%
11 to 25%	10%	20%	13%
26 to 50%	10%	0	7%
51 to 75%	0	0	0
76 to 100%	0	0	0