First Annual Report on the Economic Impact of the Federal Historic Tax Credit

THE HISTORIC TAX CREDIT COALITION

MARCH 2010

Carpenter Center for the Performing Arts, Richmond, Virginia

National Trust
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EXECUTIVE SYNTHESIS

This study examines the background and evolution of the federal historic tax credit (HTC) in the United States; presents quantitative and qualitative information regarding the economic and other benefits of the federal HTC (e.g., providing affordable housing and spurring downtown revitalization); and explores ways in which the current federal HTC—a strong program in its own right—can be more flexibly applied in the future so as to realize yet greater production and ensuing benefits.

As shall shortly be detailed, the federal HTC (technically, Internal Revenue Code [IRC] section 47) was initiated in the late 1970s and aimed to provide a financial lift to realize the rehabilitation of the nation's historic properties—a challenging goal. The program is administered by the National Park Service (NPS) working collaboratively with State Historic Preservation Officers (SHPOs). The federal HTC has minimum investment and numerous other threshold requirements. There is strict oversight to ensure that program goals are met and a multi-step application process is required encompassing "Part 1" (evaluation of the historic significance of the property), "Part 2" (description of the rehabilitation work), and "Part 3" (request for certification of completed work).

The analysis for this report was conducted by the Rutgers University Center for Urban Policy Research (CUPR[1]) under the guidance of Drs. David Listokin, Michael L. Lahr (and CUPR Research Associates Charles Heydt and David Stanek), and with the assistance of John Leith-Tetrault and Anna Klosterman of the National Trust Community Investment Corporation (NTCIC), the historic tax credit subsidiary of the National Trust for Historic Preservation. This study was commissioned by the Historic Tax Credit Coalition (HTCC), a public policy advocacy organization whose members represent historic tax credit industry participants including investors, syndicators, developers, preservation consultants, tax attorneys and accountants.

The historic Carpenter Theater (c. 1928) in Richmond, VA reopened in 2009 as the Carpenter Center for the Performing Arts, providing a home for the Richmond Symphony, Richmond Ballet and the Virginia Opera. The adjacent Dorothy Pauley Square (new construction) provides performance, educational and gallery spaces at affordable rates to Richmond's emerging arts groups. The $85 million project would never have been realized without over $20 million in equity and debt provided by the federal and state historic and New Markets Tax Credits.

[1]CUPR is a unit in the Edward J. Bloustein School of Planning and Public Policy at Rutgers, The State University of New Jersey.

HISTORY OF FEDERAL AND STATE TAX CREDIT INCENTIVES

The history of federal tax incentives for historic rehabilitation began with the 1976 Tax Act which included a 60-month accelerated depreciation of certain costs of rehabilitating certified historic properties and a tax deduction for preservation easements. However, the most significant step forward came with the Economic Recovery Tax Act (ERTA) of 1981 which included a 25% tax credit for income-producing certified historic rehab, a 15% credit for the rehabilitation of non-historic buildings at least 30 years old, and a 20% credit for renovation of existing commercial properties at least 40 years old.

ERTA quickly became a powerful driver of historic and non-historic rehabilitation activity as part of a broader economic stimulus package of the new Reagan Administration. In fiscal year (FY) 1985, NPS Part 2 approvals reached a peak of about $2.4 billion and approximately 6,200 applications respectively. (Unless otherwise indicated, dollar figures here and elsewhere are not adjusted for inflation.)

The last major structural changes to the IRC Section 47 rehab credits were made 24 years ago as part of the 1986 Tax Reform Act when the 25% certified historic rehab credit was reduced to 20% and the non-historic building rehab credit was collapsed into one 10% credit. Just as significant was the Act's new "passive loss" rules which placed limitations on individual investor use of the HTC to offset investment income. The HTC market, which had depended on a combination of individual developer/owner investments and large individual-investor syndication structures, plummeted as a result of this change.

The T.S. Martin & Co. Department store (c. 1898) in Sioux City, Iowa, now known as the Century Plaza Apartments, was converted into 17 units of affordable housing and 12,000 square feet of office/retail space in 1999. The project would not have been possible without the use of $374,081 in federal historic and $969,919 in Low Income Housing Tax Credit equity.

The decline continued through 1993 when only 538 projects recieved NPS Part 2 approval and total Part 2 approvals dropped to $468 million. In the wake of the 1986 passive loss rule changes, thousands of individual HTC investors were left with credits that they could not redeem.

The HTC market began to recover during the second half of the 1990s when corporations that had become regular investors in the Low-Income Housing Tax Credit (LIHTC) began looking for alternative investments when yields on the LIHTC began to fall. These companies had become familiar with the HTC through the combining, often termed "twinning," of the HTC with LIHTC credits when historic properties were adaptively reused for affordable housing.

In addition to leveraging other federal subsidies for housing and business development in low-income communities, the HTC has provided a model for the enactment of state historic tax credits (SHTC) in about 30 states. This number of tandem SHTCs compares favorably to the 16 states with state LIHTCs and eight states with New Markets Tax Credit (NMTC) programs. NPS statistical reports document that the states with the strongest SHTC statutes regularly lead the nation in the use of the federal HTC.[2]

The Need for Historic Tax Credit Modernization

Despite the documented success of the HTC program, on a dollar volume basis, it remains much smaller than the LIHTC and NMTC credit programs. Even as an uncapped credit, the NPS certified only $655 million[3] in HTC credits in FY 2008, its highest dollar volume in the program's history. This compares to the pre-recession $7 billion credit expenditure level for the LIHTC and the recent $5 billion Round 7 allocation of the NMTC program.

There are a variety of reasons for the relatively lower utilization rate of the federal HTC. Suggestions for removing some of these impediments are contained in a bill currently before both houses of Congress, HR 3715 and S 1743. The broad themes of this legislation include provisions that would facilitate greater use of the HTC on "Main Street-scale" rehabilitations in small towns and rural communities. Several provisions would provide a slightly deeper credit if the rehabilitation project achieves at least a 30% energy efficiency improvement over a baseline for similar buildings. Another "green" provision would allow the twinning of the HTC with Section 48 Renewable Energy Credits.

The Villagra Building in Santa Fe, New Mexico, which provides offices for the State Attorney General is comprised of the original historic structure built in 1934 and a new addition added in 2004. It is the first building in New Mexico to achieve LEED Gold level certification. One of it's green attributes is the application of a high-tech ceramic film called Huper Sech to the interior glass surface of the structure's original windows to improve their thermal properties.

By lowering minimum rehab levels to 50% of adjusted building basis, the bill allows for moderate rehabilitation. The bill would allow the use of the 10% non-historic building credit for housing and index the eligibility date for these properties to buildings 50 years or older. HR 3715 and S 1743 would promote nonprofit organization sponsorship of HTC transactions by rolling back three of the four "disqualified lease rules" that limit leasing to nonprofit or government tenants in HTC properties to 50% of leasable space. Finally the bill contains several provisions that would increase the value of state HTCs when used in tandem with the federal HTC.

[2]Source: Federal Tax Incentives for Rehabilitating Historic Buildings, Statistical Report and Analysis for Fiscal Year 2008, National Park Service, U.S. Department of the Interior, Technical Preservation Services.
[3]This is the amount of the HTC derived by applying the 20 percent credit to the Part 3 certified investment.

RESEARCH ASSUMPTIONS AND METHODOLOGY

From fiscal year (FY) 1978 through FY 2008, NPS "Part 2" pre-rehabilitation approvals amounted to about $102.8 billion (in inflation-adjusted 2008 dollars) slated for investment in about 45,000 federal HTC-associated projects. In FY 2008 alone, the Part 2 estimate in such projects was about $5.6 billion. However, the amount of Qualified Rehab Expenditures (QREs) for the tax credit reflected in "Part 3" certifications, made after completion, is significantly less: about $76.5 billion over FY 1978-2008 and $3.3 billion in FY 2008 (all inflation-adjusted 2008 dollars). (All the above figures are best estimates.) This report therefore uses the lower Part 3 QREs inflated by 10% to account for non-QRE expenditures to estimate the economic impacts of the federal HTC. Aggregate investment using this more conservative approach is estimated at $85.0 billion over the 31-year life of the federal HTC and $3.6 billion in 2008. More detailed program activity data are found in Summary Exhibit 1.

The federal cost of the HTC is equal to the credit percent (25 percent from 1978 through 1986 and 20 percent from 1987 onward) applied to the "Part 3" investment. That calculation yields the following estimates: the federal tax credit over the FY 1978-2008 period cost the US Treasury $16.6 billion (in inflation-adjusted 2008 dollars). Estimated total federal tax receipts generated by the HTC over the 31-year FY 1978-2008 span were $21 billion, indicating that the federal historic tax credit is a revenue raiser for the US Treasury. (See Summary Exhibit 1 for details and for FY 2008 results.)This study quantifies the construction-stage total economic effects (i.e., direct as well as multiplier or secondary economic consequences) of the above cited investments. These effects are studied via an input-output model developed by Rutgers University for the National Park Service called the Preservation Economic Impact Model (PEIM).

In the current analysis, the PEIM is applied to both cumulative (FY 1978 through 2008) federal tax credit-aided historic rehabilitation investment in the United States (about $85 billion in 2008 inflation-adjusted dollars) and to the one-year 2008 annual tax credit-aided rehabilitation investment (about $3.6 billion) throughout the nation. In applying the cumulative analysis, we consider the effects of the $85 billion rehabilitation investment as if effected in one year (2008), rather than retroactively backdating and applying the economic model for each of the 31 years encompassing the FY 1978-2008 study period.

The results of the PEIM model include many fields. The fields most relevent to this study are the total impacts of the following:

- **Jobs:** *Employment, both part- and full-time, by place of work, estimated using the typical job characteristics of each industry*.
- **Income:** *"Earned" or labor income, specifically wages, salaries, and proprietors' income*.
- **Wealth**: *Value added — the sub-national equivalent of gross domestic product (GDP).* At the state level, this is called gross state product (GSP).
- **Output**: *The value of shipments, which is reported in the Economic Census.*
- **Taxes**: *Tax revenues generated by the activity which include taxes to federal, state and local governments.*

HTC National Economic Impacts

The national total (direct and multiplier) economic impacts from the HTC-associated rehabilitation investment for the program to date (FY 1978-2008) and for the most current-year investment (FY 2008) are shown below and are also contained in Summary Exhibit 1. Detailed impacts are found in Summary Exhibits 2 through 4 and selected critical findings are further plotted in Summary Graph Sets 1 and 2 as well as Summary Maps 1 and 2.

Economic Impacts	Federal HTC-assisted rehabilitation	
	$85.0 billion cumulative (FY 1978-2008) historic rehabilitation expenditures results in:	$3.6 billion for FY 2008 historic rehabilitation expenditures results in:
National Total (Direct and Multiplier Impacts)		
Jobs (person-years; thousands)	1,815	58.8
Income ($ billion)	71.7	2.6
Output ($ billion)	197.6	6.9
GDP ($ billion)	97.6	3.5
Taxes ($ billion)	28.7	1.0
Federal ($ billion)	21.0	0.6
State ($ billion)	3.9	0.2
Local ($ billion)	3.8	0.2

The benefits that accrue from the investment in the federal tax credit-aided historic rehabilitation projects are extensive and almost all sectors of the nation's economy see their payrolls and production increased. Illustrative are the cumulative FY 1978-2008 federal HTC effects. Just under 30 percent of the national-based jobs from the cumulative $85 billion tax credit-aided rehabilitation investment (approximately 512,000 of 1,815,000 jobs) and national gross domestic product ($27.5 billion of $97.6 billion GDP) created by historic rehabilitation aided by the cumulative federal HTC accrue to the nation's construction industry; this is as one would expect, given the share of such projects that require the employment of building contractors. Other major economic sector beneficiaries are services (338,000 jobs, $12.9 billion in GDP) as well as manufacturing (368,000 jobs, $25.0 billion GDP) and the retail trade (281,000 jobs, $7.3 billion GDP) sectors. As a result of the interconnectedness of the national economy and because both direct and multiplier effects are considered, other sectors of the national economy not immediately associated with historic rehabilitation are affected as well, such as agriculture, mining and transportation and public utilities. (See Summary Exhibits 1 through 3, Summary Graph Sets 1 and 2, and Summary Maps 1 and 2.)

HTC State Level Impacts

The economic impact from federal tax credit-aided historic rehabilitation is reflected at the state-level as well as the national economy. For example, in FY 2008, Missouri had about $419 million in federal HTC-supported rehabilitation. The national impacts of that investment included about 7,200 jobs generating an additional $796 million in output, $299 million in income, $396 million in GDP, and $94 million in taxes. At the state of Missouri level, the FY 2008 $419 million in historic rehabilitation spending translated to about 5,300 jobs generating $518 million in output, $225 million in labor income, $275 million in gross state product (GSP), and $85 million in taxes. The in-state wealth (GSP minus federal taxes) resulting from rehabilitation expenditures amounted to $210 million, indicating a high 76 percent retention rate. Similar high state-level retention rates of the economic benefits from the HTC characterize other locations as well.

Comparison of the HTC to the Economic Impacts of Non-Preservation Investments

How does tax credit-aided historic rehabilitation fare as an economic pump-primer vis-à-vis other non-preservation investments? The short answer is "quite well" as we cite Kansas as an example. A $1 million investment in historic rehabilitation in Kansas realizes a markedly better economic effect to Kansas with respect to employment, income, GSP, and state-local taxes compared to a similar increment of investment (i.e. $1 million) in an array of residential and nonresidential new construction (including building highways) in Kansas or a $1 million investment in an array of business activities important in Kansas, such as manufacturing (e.g., electrical machinery and automobile), agriculture (wheat farming), and services (telecommunication). It is not a question of historic rehabilitation as opposed to other pursuits, but rather historic rehabilitation joining in a holistic fashion the many activities of the broader economy in Kansas so as to realize the commendable strong economic "bang for the buck" offered by that rehabilitation.

The Harmony Mills National Historic Landmark in Cohoes, New York (c. 1866-1872) encompasses a complex of four mill buildings that was once the largest textile mill in North America.

The rehabilitation of Mill no. 3 into 96 loft apartments in 2006 was made feasible by $2,619,621 in federal historic tax credit equity.

HTC Impacts on Housing and Downtown Revitalization

Case study analysis of federal HTC implementation points to many additional quantitative and qualitative benefits of the federal tax credit, including providing affordable housing, fostering downtown economic development and encouraging adaptive reuse. The historic preservation, affordable housing, economic development and other benefits of the federal HTC are augmented by combining the federal HTC with other tax credits. In an exemplary case of creative federalism, about 30 states have state-level HTCs of their own; they typically "piggyback" the federal HTC. The federal (and state) HTCs have further been "twinned" with the federal Low-Income Housing Tax Credit (LIHTC) and the federal New Markets Tax Credits (NMTC).

In 2009, with the help of $3,798,586 in federal historic tax credit equity, The American Brewery Building (c. 1877) in east Baltimore, MD became the headquarters of Humanim, a nonprofit human services group that provides employment training and other support to physically and mentally challenged individuals living in poverty.

An NTCIC study of the first 4 Rounds of the NMTC program has shown that about one in 10 transactions and approximately 20% of all Qualified Equity Investments involve the twinning of historic and New Markets Tax Credits. NPS statistics show that two-thirds of all approved HTC projects since 2002 have been located in NMTC-eligible Low-Income Census Tracts. No similar studies or statistics exist for the twinning of LIHTC and federal HTCs, but anecdotal evidence suggests that as much as 15% of all LIHTC affordable housing projects are adaptive reuses of historic properties that also generate HTCs.

These various tax credit combinations have produced powerful results. For example, from the inception of federal historic preservation tax incentives to date (FY 2008), 405,385 housing units have been completed. Of that total, 216,993 or 54 percent, were existing housing units that were rehabilitated, and 188,392 or 46 percent were "newly" created housing units (e.g., housing resulting from the adaptive reuse of once-commercial space). Of the 405,385 total housing units completed under federal historic preservation tax incentive auspices since the late 1970s, 101,860, or 25 percent, were affordable to low- and/or moderate-income (LMI) families (This was often accomplished by combining the federal HTC with the LIHTC.) That averages to about 3,300 LMI units per year. In FY 2008, 5,220 LMI units were produced under the federal HTC. The federal HTC is largely invisible in the housing "radar", yet it deserves much greater attention, given its total and LMI housing unit production. Further, the LMI share of HTC housing units is growing. From FY 2000 through FY 2008, 37 percent, on average, of all federal HTC housing has been at LMI levels. In FY 1998, the LMI share of all HTC units reached a high of 48 percent.

Summary of Cumulative HTC Impacts

In short, the federal HTC is a "good" investment for the nation, states, and local communities. We illustrate some facets of this by considering the cumulative (FY 1978-2008) program to date.

- An inflation-adjusted (2008 dollars) $16.6 billion federal historic tax credit cost to date has encouraged a five times greater amount of historic rehabilitation ($85 billion).

- This rehabilitation investment has generated about 1.8 million new jobs and billions of dollars of total (direct and secondary) economic gains.

- The cumulative impacts to the national economy include: output ($198 billion), gross domestic product ($98 billion), income ($72 billion), and taxes ($29 billion, including $21 billion in federal tax receipts).

- The leverage and multiplier benefits as noted above give support to the argument that the federal HTC is a strategic investment. **Our results also show that the federal cost of the HTC—a cumulative $16.6 billion in 2008 inflation-adjusted dollars—is more than offset by the $21 billion in federal taxes realized to date.**

In considering the federal HTC "cost-benefit," it should further be realized that our quantification of HTC economic and tax consequences are understated for various reasons:

For various technical reasons, our estimate of the total rehabilitation cost associated with the federal HTC (i.e., $85 billion in constant 2008 dollars over FY 1978-2008 and $3.6 billion in FY 2008) is likely understated. In tandem then, the economic and tax effects flowing from the rehabilitation investment are understated as well.

Significant economic and tax benefits accrue from the federal HTC that have not been quantified by Rutgers University because they went beyond the scope of the current investigation. The latter focused solely on the economic effects from the federal HTC-associated construction—a one-time investment.

In fact, there are recurring year-by-year economic returns from the federal HTC. These recurring benefits include the federal HTC's investment enhancing tourism, specifically heritage and cultural travel (a multi-billion dollar industry); the historic tax credit providing adaptively-reused and other commercial space for businesses that annually have a payroll and tax payments; and the positive federal HTC investment impact on property values, which then yearly have tax, wealth, and other benefits. We have also not counted the well known (though difficult to measure) tendency of historic rehabilitation to boost investor and neighborhood confidence and induce a broader trend toward community-wide revitalization.

In a related fashion, we are not capturing how the enhanced "quality of life" (QOL) realized by the federal HTC furthers the national and state economy and public tax generation (e.g., through such means as attracting the "creative class" and more generally from enhanced worker efficiency, reduced medical expenses, and the like). In short, the full economic and tax benefits from the federal HTC are yet greater than the already considerable economic and tax consequences documented in the current study.

The iconic Pontchartrain Hotel in New Orleans was rescued from severe hurricane flood damage and reopened in 2010 as 84 service-enriched senior housing units. The rehabilitation was made feasible by over $8 million in financing provided by federal and state historic and federal New Markets Tax Credits.

SUMMARY EXHIBIT 1

Summary of Federal Historic Tax Credit Statistics

--Dollar amounts are expressed in billions--

• Investment/Tax Credit Component[a]	FY 1978 – 2008					FY 2008
	Nominal$ [d]		Real$ [e]			Real$ [f]
	Total	Annual Average	Total	Annual Average		Total
Approved proposed (for tax credit) rehabilitation ("Part 2")	$57.3	$1.8	$102.8	$3.3		$5.6
Certified (for tax credit) rehabilitation ("Part 3")	$40.9	$1.3	$76.5	$2.5		$3.3
Total rehabilitation cost[b]	$45.4	$1.5	$85.0	$2.7		$3.6
Federal tax credit[c]	$8.6	$0.3	$16.6	$0.5		$0.7

--Dollar amounts are expressed in billions of Real 2008 $ [e] --

• **Economic Impacts** (See Summary Exhibits 2 through 4 for details.)	FY 1978 - 2008			FY 2008
	Total	*Annual Average*		*Total*
Jobs (in thousands)	1,815.2	58.6		58.8
Income	$71.7	$2.3		$2.6
Gross Domestic Product	$97.6	$3.1		$3.5
Output	$197.6	$6.4		$6.9
Taxes—All Government	$28.7	$0.9		$1.0
Taxes—Federal Government	$21.0	$0.7		$0.6
Taxes—State Government	$3.9	$0.1		$0.2
Taxes—Local Government	$3.8	$0.1		$0.2

Technical Background: The HTC has a multi-step application process encompassing "Part 1" (evaluation of the historic significance of the property), "Part 2" (description of the rehabilitation work), and "Part 3" (request of certification of completed work). With respect to the HTC's dollar magnitude, the most complete data is for the approved proposed (for tax credit) rehabilitation investment ("Part 2"). We do not have as good data on the year-by-year certified (for tax credit) rehabilitation ("Part 3) volume over the full FY 1978-2008 period. (Only a portion of the "Part 2" rehabilitation is ultimately certified as "Part 3.") Further, we do not have specific data on the total rehabilitation investment associated with the HTC. By way of background, both "Part 2" and "Part 3" rehabilitation statistics include only what are termed "eligible" or "qualified" items (or Qualified Rehabilitation Expenditures—QRE) for the tax credit as opposed to what are called "ineligible" or "non-qualified" costs. Examples of "eligible"/"qualified" items include outlays for renovation (walls, floors, and ceilings, etc.) construction-period interest and taxes, and architect fees; examples of "ineligible"/"non-qualified" costs include landscaping, financing and leasing fees, and various other outlays (e.g. , for fencing, paving, sidewalks and parking lots). While the "ineligible"/"non-qualified" expenses do not count for tax credit purposes, they are practically a component of the total rehabilitation investment borne by the HTC-oriented developer and in fact, the total rehabilitation investment (including "ineligible"/"non-qualified" costs) help pump-prime the economy. Based on the best published data and through additional case studies conducted specifically for the purposes of the current investigation, Rutgers University *estimates* some of the "missing information" noted above regarding the cumulative HTC investment over FY 1978-2008.

[a] Data estimated from best available information

[b] Equals all rehabilitation outlays—both "eligible"/"qualified" expenses and "ineligible"/"non-qualified" costs. The total rehabilitation cost is estimated by dividing the "Part 3" investment divided by .9. Case study investigation suggests that the "Part 3" amount is closer to 85 percent of the total rehabilitation cost, however we elected to apply the .9 factor to be conservative, that is to derive a lower rather than a higher estimate of the total rehabilitation expense.

[c] Assumes a 25 percent HTC in FY 1978 - FY 1986 and a 20 percent HTC in FY 1987 - FY 2008. These percents are applied to the certified rehabilitation ("Part 3")

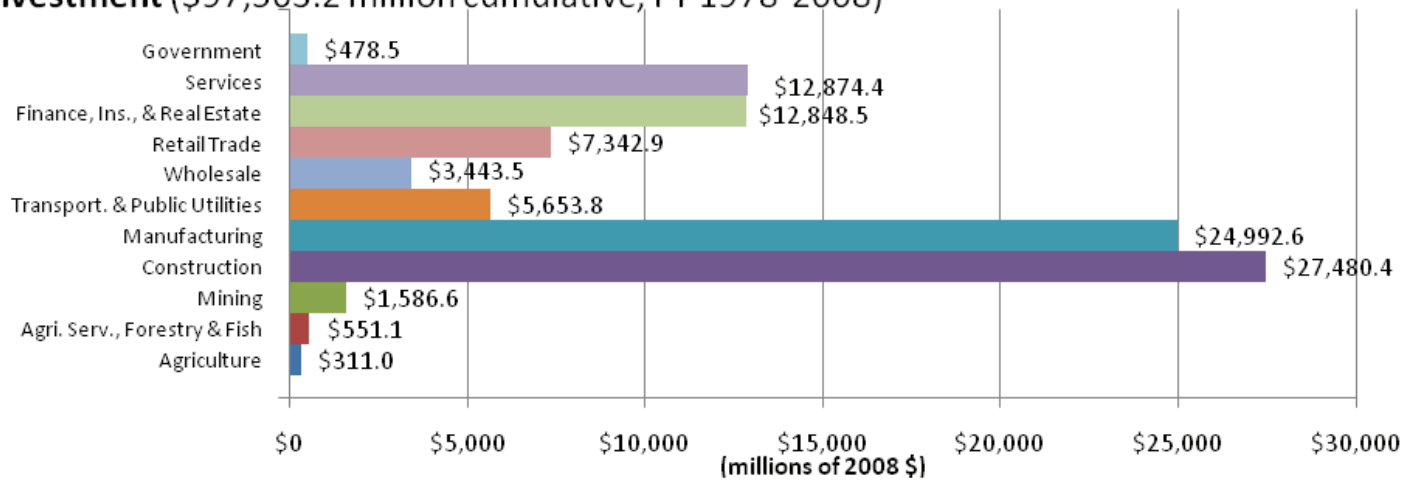
[d] In indicated year dollars--not adjusted for inflation

[e] In inflation-adjusted 2008 dollars

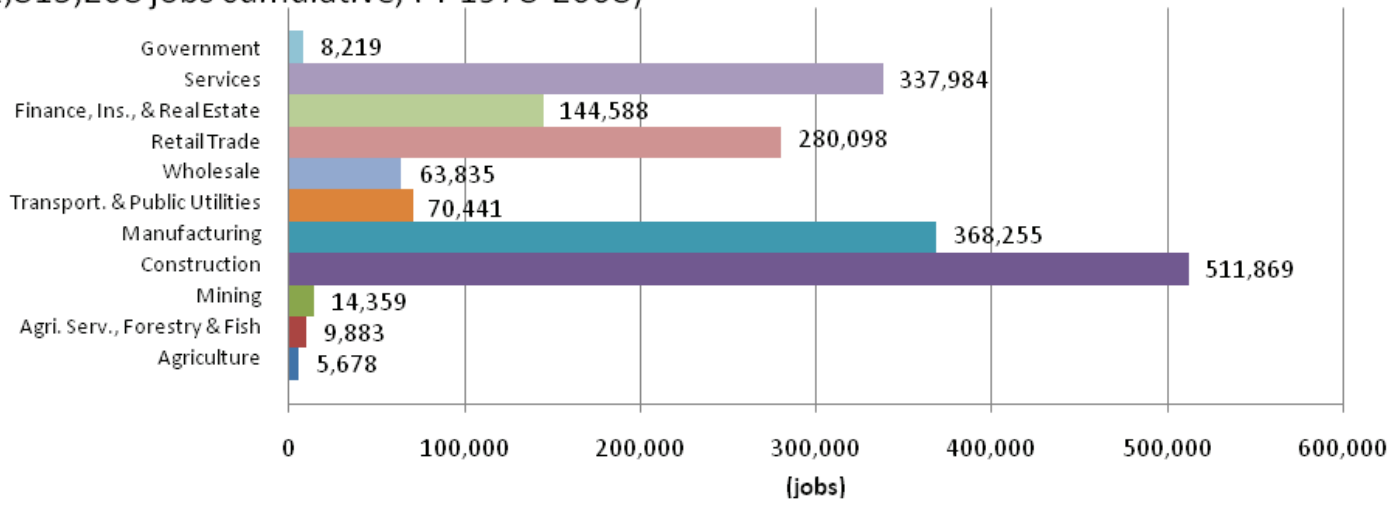
[f] Nominal and real dollars are the same for 2008

Sources: Department of the Interior , National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University

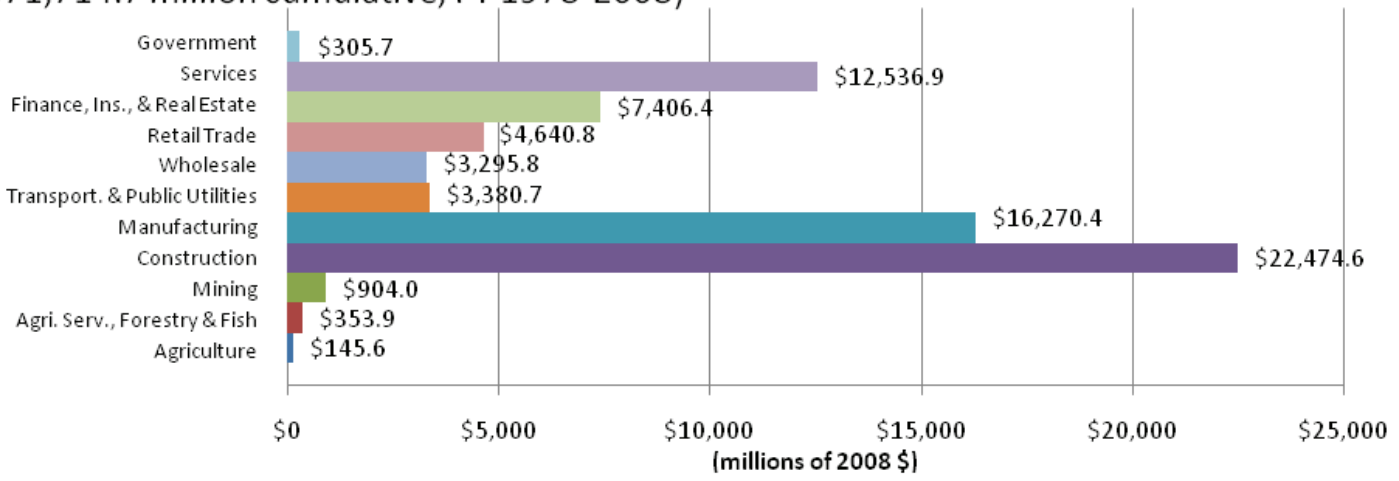
Gross Domestic Product by Sector from Federal Historic Tax Credit Investment ($97,563.2 million cumulative, FY 1978-2008)



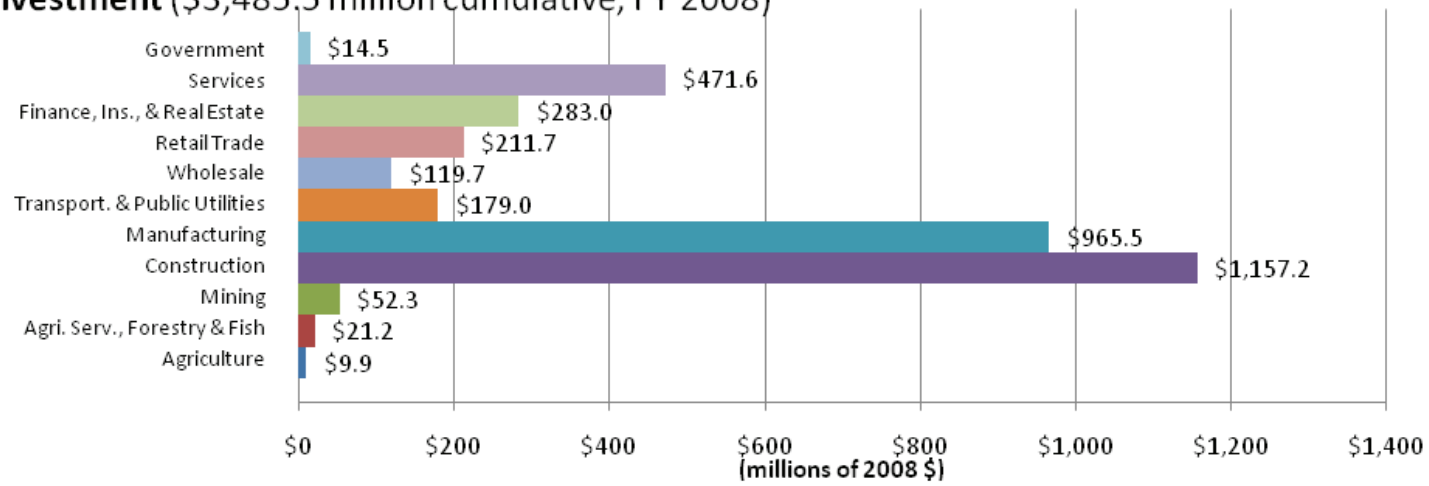
Jobs Created by Sector from Federal Historic Tax Credit Investment (1,815,208 jobs cumulative, FY 1978-2008)



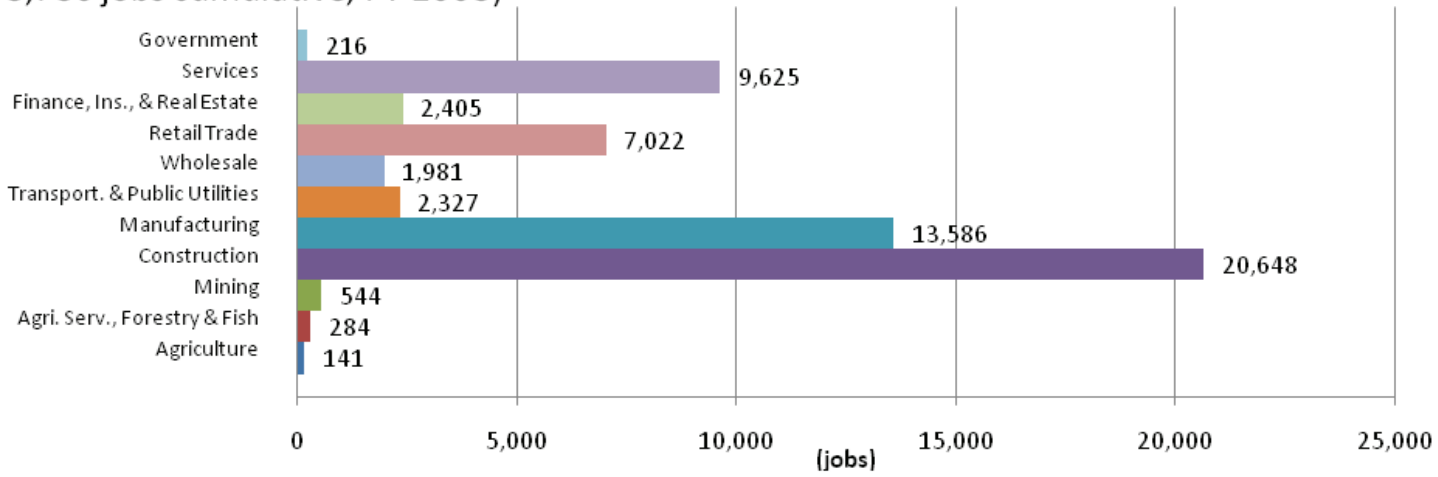
Income Created by Sector from Federal Historic Tax Credit Investment ($71,714.7 million cumulative, FY 1978-2008)



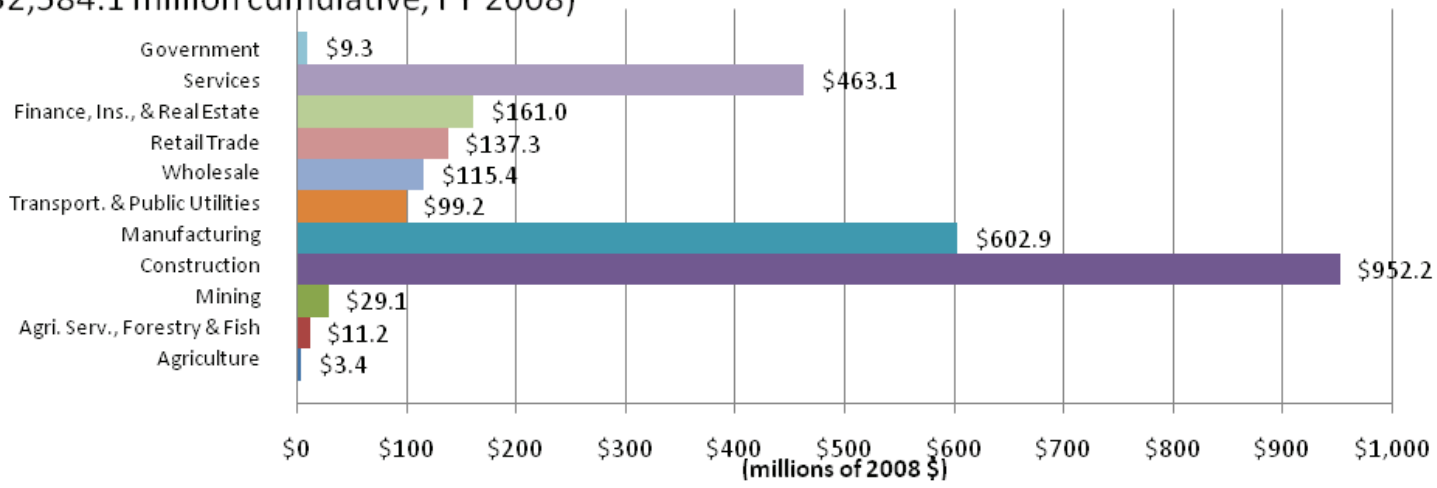
Gross Domestic Product by Sector from Federal Historic Tax Credit Investment ($3,485.5 million cumulative, FY 2008)



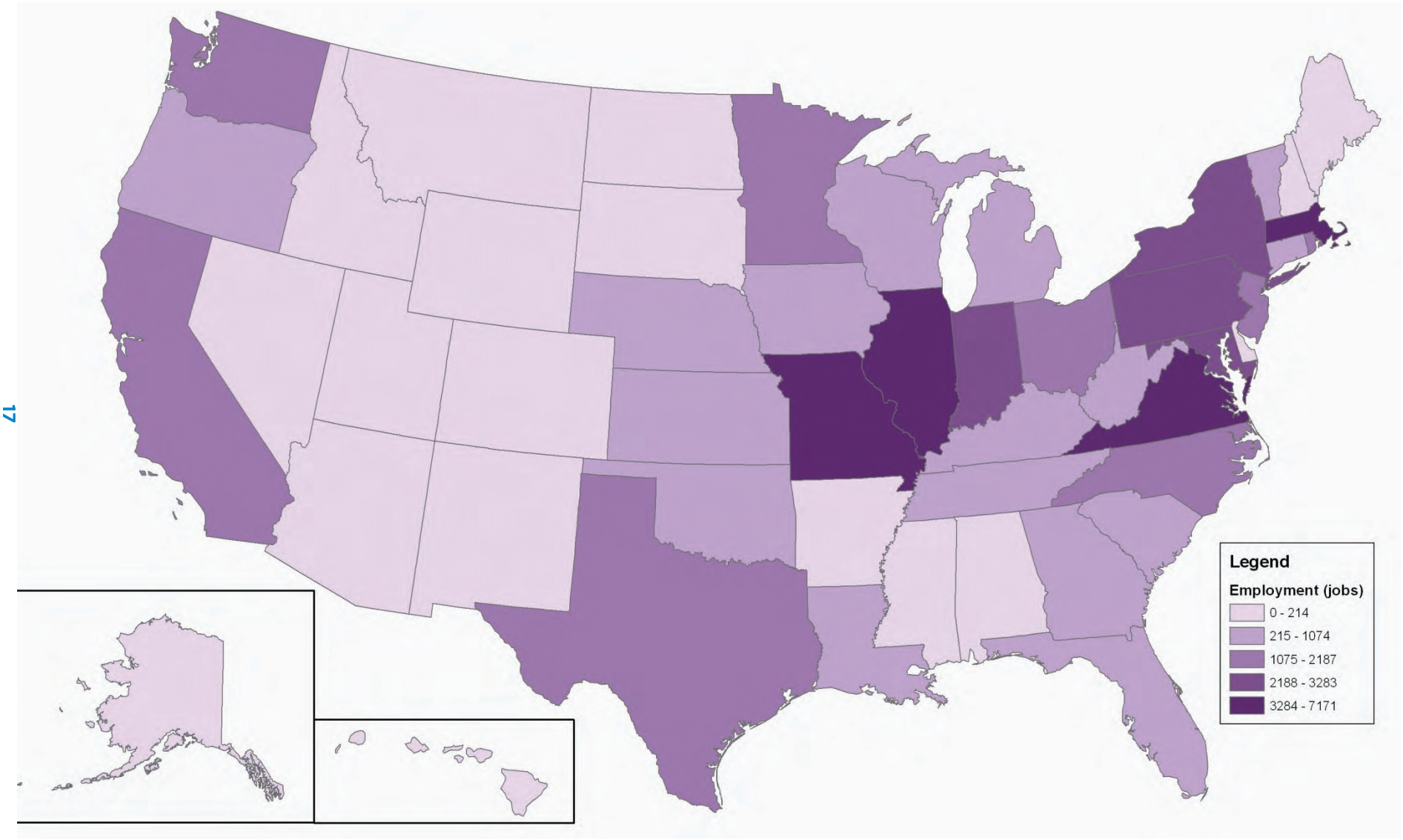
Jobs Created by Sector from Federal Historic Tax Credit Investment (58,780 jobs cumulative, FY 2008)



Income from $3,636.3 million in Federal Historic Tax Credit Investment ($2,584.1 million cumulative, FY 2008)

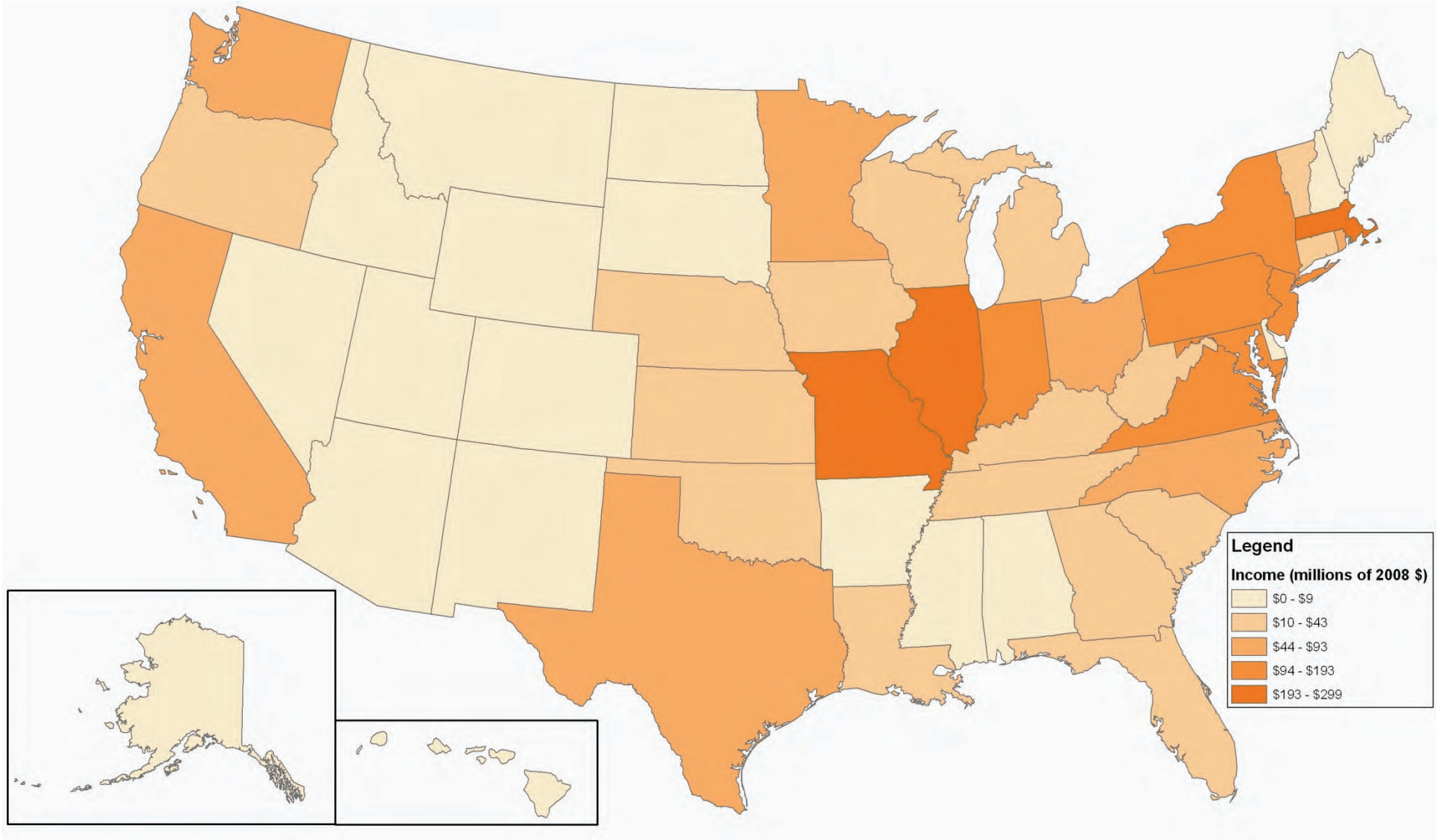


SUMMARY MAP 1
Employment Impacts to the National Economy from the Historic Tax Credit Rehabilitation Investment Fiscal Year 2008



Note: As indicated in the title, this map quantifies the impacts to the *national* economy of each state's HTC investment. Much of these national-level impacts, however, are retained within each state.

SUMMARY MAP 2
Income Impacts to the National Economy from the Historic Tax Credit Rehabilitation Investment
Fiscal Year 2008



Note: As indicated in the title, this map quantifies the impacts to the *national* economy of each state's HTC investment. Much of these national-level impacts, however, are retained within each state.

SUMMARY EXHIBIT 2
Economic and Tax Impacts of Federal Historic Tax Credit Investment on the Nation
Fiscal Years 1978-2008 ($84,997.4 Million)

	Economic Component			
	Output (000$)	Employment (jobs)	Income (000$)	Gross Domestic Product (000$)
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	2,096,228.3	5,678	145,602.5	311,049.5
2. Agri. Serv., Forestry, & Fish	1,017,145.7	9,883	353,972.0	551,089.4
3. Mining	3,708,743.8	14,359	903,976.2	1,586,596.1
4. Construction	38,592,837.3	511,869	22,474,583.3	27,480,447.4
5. Manufacturing	70,053,219.9	368,255	16,270,351.3	24,992,550.6
6. Transport. & Public Utilities	13,541,194.0	70,441	3,380,654.2	5,653,750.7
7. Wholesale	8,104,589.2	63,835	3,295,750.4	3,443,478.5
8. Retail Trade	12,612,585.7	280,098	4,640,801.8	7,342,888.3
9. Finance, Ins., & Real Estate	18,910,648.4	144,588	7,406,420.5	12,848,450.8
10. Services	27,948,192.5	337,984	12,536,923.7	12,874,421.8
11. Government	1,008,741.5	8,219	305,747.1	478,488.9
Total Effects (Private and Public)	**197,594,126.3**	**1,815,208**	**71,714,783.0**	**97,563,212.0**
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	84,997,405.6	834,865	37,746,293.2	46,022,755.6
2. Indirect and Induced Effects	112,596,720.7	980,344	33,968,489.8	51,540,456.4
3. Total Effects	197,594,126.3	1,815,208	71,714,783.0	97,563,212.0
4. Multipliers (3/1)	2.325	2.174	1.900	2.120
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages—Net of Taxes				60,882,646.8
2. Taxes				14,228,073.2
a. Local				2,183,597.5
b. State				2,146,588.2
c. Federal				9,897,887.5
General				2,208,938.9
Social Security				7,688,948.7
3. Profits, dividends, rents, and other				22,452,492.1
4. Total Gross State Product (1+2+3)				97,563,212.0
IV. TAX ACCOUNTS		Business (000$)	Household (000$)	Total (000$)
1. Income—Net of Taxes		60,882,646.8	71,714,783.0	---------
2. Taxes		14,228,073.2	14,448,587.5	28,676,660.7
a. Local		2,183,597.5	1,637,118.3	3,820,715.8
b. State		2,146,588.2	1,758,134.2	3,904,722.4
c. Federal		9,897,887.5	11,053,335.0	20,951,222.6
General		2,208,938.9	11,053,335.0	13,262,273.9
Social Security		7,688,948.7	0.0	7,688,948.7

Note: Detail may not sum to totals due to rounding.

**Terms:* Direct Effects --the proportion of direct spending on goods and services produced in the specified region.
Indirect Effects--the value of goods and services needed to support the provision of those direct economic effects.
Induced Effects--the value of goods and services needed by households that provide the direct and indirect labor.

SUMMARY EXHIBIT 3
Economic and Tax Impacts of Federal Historic Tax Credit Investment on the Nation
Fiscal Year 2008 ($3,636.3 Million)

	Economic Component			
	Output (000$)	**Employment (jobs)**	**Income (000$)**	**Gross Domestic Product (000$)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	47,205.5	141	3,395.4	9,875.9
2. Agri. Serv., Forestry, & Fish	32,519.5	284	11,162.7	21,231.4
3. Mining	108,845.4	544	29,119.6	52,260.9
4. Construction	1,609,424.8	20,648	952,203.9	1,157,167.7
5. Manufacturing	2,542,910.4	13,586	602,856.8	965,461.4
6. Transport. & Public Utilities	378,409.6	2,327	99,208.6	179,007.4
7. Wholesale	283,846.9	1,981	115,427.0	119,695.4
8. Retail Trade	372,939.1	7,022	137,280.5	211,704.7
9. Finance, Ins., & Real Estate	453,178.6	2,405	161,047.7	282,965.8
10. Services	1,021,547.6	9,625	463,054.8	471,575.3
11. Government	30,714.1	216	9,302.5	14,533.3
Total Effects (Private and Public)	6,881,541.6	58,780	2,584,059.4	3,485,479.2
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	3,635,626.7	33,522	1,614,659.6	2,009,579.6
2. Indirect and Induced Effects	3,245,914.8	25,258	969,399.8	1,475,899.6
3. Total Effects	6,881,541.6	58,780	2,584,059.4	3,485,479.2
4. Multipliers (3/1)	1.893	1.753	1.600	1.734
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages—Net of Taxes				2,176,414.7
2. Taxes				538,970.6
a. Local				136,302.6
b. State				106,613.0
c. Federal				296,055.0
General				77,514.1
Social Security				218,540.9
3. Profits, dividends, rents, and other				770,094.0
4. Total Gross State Product (1+2+3)				3,485,479.2
IV. TAX ACCOUNTS		**Business (000$)**	**Household (000$)**	**Tota (000$)**
1. Income—Net of Taxes		2,176,414.7	2,038,329.4	---------
2. Taxes		538,970.6	414,047.4	953,017.9
a. Local		136,302.6	45,263.3	181,565.9
b. State		106,613.0	54,618.2	161,231.2
c. Federal		296,055.0	314,165.9	610,220.8
General		77,514.1	314,165.9	391,680.0
Social Security		218,540.9	0.0	218,540.9

Note: Detail may not sum to totals due to rounding.

*Terms: Direct Effects --the proportion of direct spending on goods and services produced in the specified region.
Indirect Effects--the value of goods and services needed to support the provision of those direct economic effects.
Induced Effects--the value of goods and services needed by households that provide the direct and indirect labor.

Explanation of Division-Level Economic Impacts Specified in the Current Study

The economic divisional-level results specified in the current study (Summary Exhibits 2 and 3) include the following sections explained below.

Section I – Total Effects

Total effects by division including both direct and multiplier (indirect and induced) effects.

Section II – Distribution of Effects Multiplier

- II.1 Sum of all division direct effects
- II.2 Sum of all division multiplier (indirect and induced) effects
- II.3 Total effects (the sum of II.1 and II.2)
- II.4 Multiplier ratio of total effects (II.3) divided by direct effects (II.1)

Section III – Composition of Gross State Product

This comprises:

- III.1 Wages that are Net of taxes paid at the employer's location;[a]
- III.2 Taxes—local state and federal; and
- III.3 Profits, dividends, rents, and other—which depending on the year of the GDP data used in the analysis, geography, and sector involved can be either positive or negative.
- III.4 Total gross state product (sum of III.1, III.2, and III.3)—the latter is from the firms (or "business") expenditure accounts.

Section IV – Tax Accounts

The sum of taxes remitted by both business (see Section III) and households (where the latter are not included in the section III gross state product) accounts. Section IV encompasses for both business and households:

- IV.1 Wages—Net of taxes at place of work (for business) and place of residence for non in-commuting households.
- IV.2 Taxes by level of government (local, state, and federal) and type (e.g., for federal—general and social security). Note: the taxes in Section III are for business only while taxes in Section IV include the business taxes from Sec tion III and add as well household-generated taxes.

[a] Wages—Net of taxes are not the same as "income" (shown in Section I) for income includes wages, salaries, proprietor's income, and employer-paid taxes.

Source: Rutgers University Center for Urban Policy Research

Section 1: Introduction

INTRODUCTION TO FEDERAL AND STATE HISTORIC TAX CREDITS AND ALLIED SUBSIDIES TO FOSTER INVESTMENT IN HISTORIC REHABILITATION

What resources are available to finance the maintenance and rehabilitation of historic properties in the United States? While some jurisdictions may offer lower cost loans or a property tax reduction for renovating historic buildings, the most prominent resource for encouraging historic rehabilitation is a tax credit. The federal government offers a historic tax credit (HTC) and about 30 states do the same. This section begins with an overview of the financial need of the America's historic building stock and then details the historic tax credit programs (federal and state) in this country for aiding investment in historic resources so as to preserve them for future generations. We also consider other tax programs such as the Low Income Housing Tax Credit (LIHTC) and the New Markets Tax Credits (NMTC) that are often paired with the HTC so as to "twin" historic preservation with such other goals as providing affordable housing and fostering economic development in low-income communities.

The Tucson Fox Theater (c. 1929) of Tucson, Arizona, closed since 1974, was restored to its Art Deco grandeur in 2005 by a public private partnership involving the City of Tucson and the Tucson Fox Theater Foundation. The Fox has reopened as a multi-purpose cultural arts facility that hosts live performances and movies, just as it originally did. The $13 million rehabilitation was made feasible by over $2,800,000 in financing provided by the application of federal historic and New Markets Tax Credits. The Fox was the second theater in the nation to use a combination of HTC and NMTC equity investments.

FINANCIAL CHALLENGES FACING AMERICA'S HISTORIC RESOURCES AND FINANCING MECHANISMS TO MEET THE CHALLENGE

What are the maintenance and rehabilitation needs of historic properties in the United States? Can these needs be met? The weight of much anecdotal evidence and numerous quantitative studies is that the "needs" are great and the financial "gap" (i.e., the shortfall between needs and available resources) to meeting these needs is "large." The following studies illustrate the physical and financial challenge faced by the nation's legacy of historic resources.

- A national study of historical societies and sister institutions in the United States, col lectively housing 4.8 billion artifacts, found threats from water, fire, and other haz ards (President's Committee on the Arts and Humanities 2006). For instance, a recent flood damaged the Museum of Indian Arts and Culture in Santa Fe, New Mexico while a fire caused damage to the nitrate film collection at the Spokane Washington's North west Museum of Arts and Culture.

- An alarming share, about one-third, of the most cherished of the United States histor ical patrimony, those designated as National Historic Landmarks (NHLs), are deemed landmarks under "watch," "threat," "emergency," or "lost" status (National Park Service 2004). Illustrative is the threatened United State Naval Asylum (already once dam aged by fire) and the lost Pacific Salmon Cannery (housed on a barge, it sank).

- Census and other investigations of the older housing stock in the United States, a higher share of which has historic character, point to a greater relative level of physical deterioration and widespread need for rehabilitation (Williams 2004; Listokin and Crossney 2005). According to one estimate (Listokin and Crossney 2005), housing units built 1939 or earlier cumulatively required about $325 billion in renovations.

Compounding the poignancy of the condition of historic and older buildings facing chal- lenge to their physical well being and needing extensive rehab, is the shortfall of resources to address the problem. This financial shortfall or gap, can take many forms. For instance, say an historic property worth $100,000 needed $50,000 in renovation. Assume further that this property was owned by a resident household earning $40,000 annually. This household would likely not have the $50,000 in savings to repair the home nor be able to borrow the funds because the debt load would be too high. In a different context, assume an income-producing historic property had a minimal or negative net operating income or NOI (the difference between building revenues and operating expenses for property taxes, utilities, management costs and other ongoing non-mortgage outlays). In such an unattractive NOI situation, a prudent investor seeking a return would understandably hesitate to purchase the historic property and would surely be constrained against renovating the building.

While we don't know the exact magnitude of the financial gap facing the historic building resources of the United States, varied evidence suggests a gap of tens of billions of dollars if not more. The question is how to fill this multi-billion dollar gap and there are an array of financing mechanisms—strategies of different types to bridge or address the financial gap. The most prominent and proven mechanism in the United States for historic rehabilitation is the federal historic tax credit.

The History of the Federal Historic Rehabilitation Tax Credit

Until 1976, the tax code in the United States greatly favored new construction. The fastest depreciation[1] schedule—a 200 percent declining balance (DB) write-off[2] —was available only for new construction, whereas existing buildings were limited to a 125 percent declining balance schedule. The 1976 Tax Act introduced some historic preservation–supportive measures, such as counting preservation easements as charitable donations and providing for 60-month accelerated depreciation of certain costs of historic rehabilitation. Much more significant was the Economic Recovery Tax Act (ERTA) of 1981. ERTA introduced a three-tier tax credit. A 15 percent credit was allowed for the rehab of non-historic, nonresidential income-producing properties at least 30 years old; a 20 percent credit could be taken for the renovation of non-historic income-producing nonresidential properties at least 40 years old; and a 25 percent credit was available for the rehab of historic, income-producing properties, both residential and nonresidential. These credits could be applied against wage and investment income, and syndications to affluent individual investors were common; this packaging and sale of partnership interests would usually be done by financially astute syndicators who would work closely with the developer-builders of the preservation projects. For example, a $1 million rehab of a historic apartment building would qualify for a $250,000 credit, which investors could deduct dollar for dollar against their federal income tax liability according to their pro rata ownership interests in the historic renovation project.

The 1981 historic preservation tax credit was a powerful lure. Historic rehab tax credit approved investment[3] grew from $738 million in federal fiscal year (FY) 1981 to $1.128 billion in FY 1982 to $2.165 billion in FY 1983 and a high of $2.416 billion of approved proposed rehabilitation work by FY 1985. (See Exhibits 1.1 and 1.2. This set of figures is in nominal terms, that is, not adjusted for inflation). There was a spectacular increase in the number of federal HTC projects as well. (See Exhibits 1.1 and 1.2).

[1]Depreciation is attractive to real estate investors because it reduces taxable income.
[2]This tax write-off schedule is twice the straight-line depreciation on the declining balance being depreciated. A higher depreciation shelters greater income.
[3]Technically, this comprises "Part 2" of the HTC application process. The "Part 1," "Part 2," and "Part 3" of the tax credit process is described shortly.

However, the 1986 Tax Reform Act (TRA) dramatically changed the rehabilitation tax credit provisions. Instead of a 15 and 20 percent tax credit for non-historic income-producing non-residential properties 30 to 40 years old, respectively, the 1986 act reduced the non-historic credit to 10 percent and applied it only to buildings built prior to 1936. In addition, the 25 percent credit for rehab of historic, income-producing properties[4] was reduced to 20 percent. In other words, a $1 million rehab of an historic apartment building would now qualify for a $200,000 credit (instead of $250,000) which investors could deduct dollar for dollar against their federal income tax liability according to their pro rata ownership interest in the historic rehab project. While lower, this benefit is clearly quite valuable, and depending on demand and supply (and the relative attractiveness of other tax shelters), investors today pay anywhere from $.80 cent to $1.05 in today's market for every dollar of tax credits secured. Market pricing also varies according to project size, economic risks and location.

To qualify for today's 20 percent HTC, the rehabilitated property has to be a "certified historic structure" (i.e., a building individually listed on the National Register of Historic Places, or located in, and contributing to, the historic significance of a registered historic district)[5] ; a rehab has to be "substantial" (i.e., $5,000 or the adjusted basis[6] of the renovated property, whichever is greater); and finally, the rehab has to be certified. To be certified, the rehab has to be approved by the National Park Service (NPS) as being consistent with the historic character of the property and, where applicable, the district in which it is located, using the Secretary of the Interior's Standards for Rehabilitation as a guide. The HTC application process involved multiple steps; as an example, it included "Part 1" (evaluation of the historic significance of the property), "Part 2" (description of the rehabilitation work), and "Part 3" (request of certification of completed work).

The same above-described provisions were in place under the 1981 ERTA historic tax credit; however, the 1986 Tax Reform Act severely restricted application of the HTC against earned income. Earnings, including credits from real estate limited partnerships, were classified by the 1986 Tax Reform Act as "passive income," and under the 1986 "passive activity loss limitation," the passive historic tax credit (with the exception of $25,000 per year for most individuals) could not be applied against "nonpassive" income (i.e., wages, interest, and dividends). Yet it was precisely the ability to apply the HTC against wages, interest, and dividends that had prompted wealthy individuals to invest in historic rehabilitation limited partnerships.

[4] There have been proposals to extend the federal 20 percent HTC to historic, owner-occupied (not income-producing) properties, but to date this change has not been made. Numerous states, however, that grant state HTCs do extend the credit to owner-occupied historic properties.

[5] A registered historic district includes both those districts listed on the National Register and any state or local historic districts in which the district and enabling statute are certified by the Secretary of the Interior.

[6] The adjusted basis is equal to: (1) the purchase price of the property (for the improved portion subtracting land value), (2) plus any improvements effected subsequent to acquisition, (3) less the cumulative sum taken for depreciation.

The 1986 Tax Reform Act changes caused investment to plummet. From a high of about 6,100 projects with an aggregate of $2.4 billion in approved proposed Part 2 investments in FY 1985, Part 2 approvals dropped to a low of about 538 projects with an aggregate $468 million in proposed investment in FY1993. Investment has subsequently rebounded strongly. Part 2 proposed investments in FY 2006, 2007, and 2008, amounted to $4.1 billion, $4.3 billion and $5.6 billion respectively, thus exceeding the peak annual dollar investment of the ERTA era (Exhibits 1.1 and 1.2). However, the number of projects has never recovered to its 1985 peak with annual project numbers over the past several years hovering between 1,000-1,200. Through FY 2008, the HTC has cumulatively amounted to about $57 billion dollars in Part 2 approved proposed historic preservation investment distributed among 45,000 projects—proving it to be one of the most effective tools for rehabilitation. (Again, all the dollar figures in this paragraph are in nominal, not-adjusted for inflation terms).

The Dreyfus Hotel (c. 1890), located in Providence, RI and most recently used as dormitory space for Johnson and Wales University, was rehabilitated in 2006 by AS220, a nonprofit arts support organization. The Dreyfus building currently houses AS220's Main Offices, the Community Printshop, its Project Space art gallery, fourteen affordable live and four work rental studios for low-income artists. Its first-floor restaurant, featuring a bar and dining room with highly decorative wood panels and coffered ceilings, is considered to be one of the finest intact commercial interiors in Providence. Over $3,435,000 in federal and state historic and New Markets Tax Credit equity made financing this conversion possible.

As noted, all the above data on HTC activity refer to Part 2 approved proposed rehabilitation investments. We do not have as good data on the year-by-year certified (for tax credit) Part 3 volume[7] over the full FY 1978 through FY 2008 period. Further, we do not have specific data on the total rehabilitation investment associated with the HTC. By way of background, both Part 2 and Part 3 rehabilitation statistics include only what are termed "eligible" or "qualified rehab expenses"[8] (QREs) for the tax credit as opposed to what are called "ineligible" or "non-qualified" expenses[9]. While the non-qualified expenses do not count for tax credit purposes, they are nevertheless a component of the total rehabilitation investment borne by the HTC-oriented developer and in fact, the total rehabilitation investment (including the non-qualified costs) helps pump-prime the economy.

[7] Only a portion of the "Part 2" approvals is is ultimately certified as "Part 3."
[8] Examples include outlays for renovation (walls, floors, and ceilings, etc.) construction-period interest and taxes, and architect fees.
[9] Examples include landscaping, financing and leasing fees, and various other outlays (e.g., for fencing, paving, sidewalks, and parking lots).

Based on the best published data and through additional case studies conducted specifically for the purposes of the current investigation, Rutgers has estimated some of the "missing information" noted above regarding the cumulative HTC investment over 1978-2008. We believe that these estimates are reasonably accurate based on the historic relationship between the annual dollar amount of Part 2 approved proposed investments and Part 3 certified investments for the years that we have data on both. We have further relied on the relationship between total project costs versus certified rehab expenses that we have seen from data provided by the National Trust Community Investment Corporation and related work done by Rutgers on the impacts of the Kansas state historic tax credit. We further express the program statistics both in nominal year terms (i.e. not-adjusted for inflation) and in real terms (i.e. adjusted for inflation and showing all investment in 2008 dollars).

All of the cumulative (FY 1978-2008) assembled HTC investment data compiled to date is summarized in Exhibit 3 in the Executive Synthesis. The key numbers as far as economic impacts are concerned, which we examine in Section 2 of this study, are the total rehabilitation investment (and not just the certified expenses of Part 3). The total rehabilitation investment is estimated at about $3.6 billion for FY 2008 and about $85.0 billion (in inflation-adjusted 2008 dollars) for the cumulative (FY1978-2008) HTC program to date. The inflation-adjusted total rehabilitation investment by year is charted in Exhibit 1.3, and as with the previously graphed annual Part 2 investment, the total rehabilitation investment rose rapidly in the 1981-1986 Economic Recovery Tax Act (ERTA)–specified period, then plummeted in the years following the 1986 Tax Recovery Act, with uneven recovery in the last few years. In constant (inflation-adjusted 2008) dollar terms, the total rehabilitation investment linked to the HTC of $4.9 billion in FY 1985 has never been exceeded (per Exhibit 1.3).

The above cited aggregate HTC figures are comprised of tens of thousands of individual projects (see Exhibit 1.1) enabled by the important subsidy provided by the HTC. To illustrate, we will examine an adaptive reuse of a 1929 neoclassical landmarked office building in Newark, New Jersey. This building had once served as the corporate headquarters of a major New Jersey publisher and it was later used as a school, but as the building aged it no longer was fit for educational purposes. A developer proposed reusing the building as a hotel containing about 275 rooms. The project would cost about $47 million or almost $170,000 per room. The Newark hospitality market at the time (around 2000) could not support that outlay solely from conventional sources. The developer therefore proposed a package that would rely on a first mortgage of about $32 million (about two-thirds of the project costs), $7 million raised from the federal HTC (about one-seventh of the project cost), and the remaining $8 million from various sources. This project clearly would not have been feasible without the federal HTC.

The adaptive reuse of a former American Can Company complex in New Orleans into apartments and retail space (National Park Service 2007, 3) and the reuse of a 1929 Procter & Gamble soap factory into a 400,000 square foot corporate office campus along Baltimore's inner harbor were similarly realized by the federal tax credits (National Park Service 2003, 4).

Evident from the above cases is the valuable and varied application of the HTC. Since its inception, the HTC has been available for both housing and nonresidential projects. In fact, one of the features distinguishing the HTC from the 10% non-historic credit is that the former can be used for housing while the latter cannot. In practice, the HTC has often involved housing or mixed-use (housing and nonresidential) investment. Although data are not readily available on the dollar distribution of HTC investment by type, we can track the type of projects. This distribution indicates that about half of the HTC projects were exclusively housing and another 20 to 30 percent were in the mixed-use/other category. The remainder was commercial/office renovations.

Exhibit 1.4 tracks the number of housing units produced under the auspices of the federal HTC. In the heady ERTA years, about 10,000 to 20,000 units were created annually under the HTC. That fell to an annual level of 5,000 to 10,000 units in the years immediately following the 1986 Tax Reform Act. Activity has rebounded strongly in the past decade to a HTC production of about 15,000 to 20,000 units yearly.

Since the inception of federal historic preservation tax incentives, 405,385 units have been completed. Of that total, 216,993 or 54 percent, were existing housing units that were rehabilitated, and 188,396 or 46 percent were "newly" created housing units (e.g., housing resulting from the adaptive reuse of once-commercial space). (See Exhibit 1.4.)

Of the 405,385 total housing units completed under federal historic preservation tax incentive auspices since the late 1970s, 101,860 or 25 percent, were affordable to low- and/or moderate-income (LMI) families. That averages to about 3,400 LMI units per year. In FY 2008, 5,220 LMI units were produced under the HTC. While these figures are not large in an absolute sense, given national LMI housing needs, they are noteworthy when compared with some better-known affordable housing production programs; the HTC-aided LMI annual housing production approaches the scale of annual affordable housing units produced by such notable HUD programs as public housing and HOME. The HTC is largely invisible in the housing "radar", yet it deserves much greater attention, given its total and LMI housing unit production. Further, the LMI share of HTC housing units is growing. From FY 2000 through FY 2008, 37 percent, on average, of all federal HTC housing has been at LMI levels. In FY 1998, the LMI share of all HTC units reached a high of 48 percent (Exhibit 1.4).

One way developers use the HTC to create affordable units for LMI households is by "piggybacking" the HTC's benefits with other subsidies. Piggybacked financing subsidies can include many sources. One important additional aid particularly important to produce affordable historic housing units is the low-income housing tax credit (LIHTC). The federal HTC has also been extensively paired with the New Markets Tax Credits (NMTC).

LIHTC, NMTC and Historic Rehabilitation Tax Credits

Created by the Tax Reform Act of 1986, the LIHTC gives states the authority to issue tax credits to owners or developers who construct, or acquire and rehabilitate rental housing for lower-income households. The tax credit is equal to a maximum of 9 percent annually over a 10-year period. To receive the 9 percent credit (equal to about 90 percent total over the decade), the low-income units must either be new or "substantially rehabilitated" (at least $3,000 in improvements per unit or 10 percent of the building's adjusted basis) and the property cannot otherwise be subsidized by the federal government. The dollar amount of the tax credits available in any given project is equal to the tax-credit rate (up to 9 percent annually) multiplied by the dollar amount of the project's "qualified basis"—which is increased to 135% of basis in poor locations (qualified census tracts and difficult to develop areas).

Located in the Cattleman's Square Historic District, a very low-income Latino neighborhood in San Antonio, Texas, the Heimann Building (c. 1909) was rehabilitated in 2004 from a former 3-story hotel into the national headquarters of Avance, a non-profit social service organization that provides pre- and post-natale education and daycare to neighborhood residents. The conversion was made possible with over $830,000 in federal historic and New Markets Tax Credit equity.

For detailed case studies of the combined use of the federal HTC and LIHTC, see the Century Plaza, Far East Building, Canton Cotton Mill, Marquette Manor and Indiana Cotton Mill projects in Section 3.

Another strategic combination has involved the paring of the federal HTC with the New Martkets Tax Credits (NMTC). The NMTC is offered from the Community Development Financial Institution (CDFI) Fund within the United States Department of the Treasury. Authorized by the Community Renewal Tax Relief Act of 2000, the NMTC grants a 39 percent tax credit for investment in Community Development Entities (CDEs). While the NMTC is not directed to historic preservation per se, it can and has been applied in this context—provided standard NMTC guidelines are met.

A National Trust Community Investment Corporation study of the first 4 Rounds of NMTC program has shown that about one in 10 transactions and approximately 20% of all Qualified Equity Investments involved the twinning of historic and New Markets Tax Credits. NPS statistics show that two-thirds of all approved HTC projects since 2002 have been located in NMTC-eligible Low-Income Census Tracts. No similar studies or statistics exist for the twinning of LIHTCs and federal HTCs, but anecdotal evidence suggests that as much as 15% of all LIHTC affordable housing projects are adaptive reuses of historic properties that also generate HTCs. Three illustrative case studies of twinning HTCs and NMTCs, the Carpenter Center for the Performing Arts, the American Brewery Building and the Pontchartrain Hotel, are included in Section 3.

Modernizing the Federal Historic Tax Credit

The federal HTC is a singularly important subsidy for historic preservation in the United States. Many of the most prominent preservation projects done in this country over the past three decades have used this mechanism. When layered with other subsidies, such as the LIHTC and NMTC, the HTC's ability to promote preservation, coupled with other desirable objectives such as affordable housing and economic development in low-income communities, has been extended yet further.

However, the value of the federal HTC could be improved through modifying some of its provisions. The HTC was a more potent subsidy under its Economic Recovery Tax Act (ERTA) provisions in the 1981 through 1986 era than its Tax Reform Act (TRA) era (1986 to date). Additionally, there are some major and often illogical differences between the 20 percent credit and its sister 10 percent rehabilitation credit. In response to the above, there have been calls to bring back some of the ERTA-era provisions of the rehabilitation tax credits, to reduce the disparities between the latter and the LIHTC, and in general to remove structural impediments to the application of the rehabilitation tax credits. Major recommendations are summarized below in Exhibit 1.5. These provisions are contained in HR 1375 and S 1743 currently before the House and Senate in the 111th Congress.

Exhibit 1.5 - Strategies to Modernize the 20% and 10% Rehabilitation Tax Credits

PROVISION	IMPACT
30% Small Deal Credit – limited to small projects with up to $5 million in Qualified Rehab Expenditures. Small Deal Credits would be freely transferable outside the real estate partnership.	Reduce the transaction costs of small deals thereby providing more subsidy to the costs of rehabilitation. Promote greater use of the HTC in rural areas and small towns.
Energy Efficiency Supplement – for properties that achieve a 30-50% increase in energy efficiency, provides a $2.00-5.00 per square foot supplemental credit.	Encourage developers of historic properties to maximize the use of conventional energy saving materials.
Twinning HTCs and Renewable Energy Credits – allows same twinning of Section 47 and 48 credits currently allowed for LIHTCs and NMTCs.	Encourage developers of historic properties to use alternative energy sources for HVAC and hot water.
Moderate Rehab – by lowering the "substantial rehab test" to 50% of adjusted basis, would allow moderate rehabilitation.	Expand the stock of eligible HTC properties and incentivize new property owners to undertake rehabilitation.
Improve the 10% Credit – Index eligibility to properties 50 years or older and allow the use of the 10% credit for housing.	Expand the stock of eligible non-historic properties. Provide needed affordable and market rate housing
Expand Non-profit Use of the HTC – eliminate restrictions on non-profit and government agency tenancy in HTC properties.	Improve leasing potential of HTC properties that depend on access to the entire market of prospective tenants.
Increase the Value of State HTCs – eliminate federal taxation of the proceeds of State HTCs.	Increase the pricing of State HTCs to the level of the federal HTC ($.90-1.00 per tax credit dollar).

This legislation addresses important changes that have been shown to be necessary based on over 30 years of program experience. There are three distinct themes. The 30% Small Deal Credit, with the proposed ability to sell this credit as a certificate outside a limited partnership, would foster greater use of the federal HTC in small town and rural settings where project and building sizes are much smaller. The certificate sale, already used by many state HTC statutes, lowers transaction costs which tend to be about the same regardless of deal size. Relatively high transaction costs for small deals absorb a disproportionate share of the value of the credit, acting as a disincentive to the use of the federal HTC outside major metropolitan areas.

The Energy Efficiency Supplement and the provision for twinning the federal HTC and Renewable Energy Credits reflect an effort to better align preservation with the important national goal of reducing carbon emissions and slowing global warming. Historic rehab is arguably already a "green" activity due to the location of older properties in areas with available transit, educational and utility infrastructure. Rehab is also an opportunity to recycle the "embodied energy" used to construct these buildings and manufacture the materials originally used in their construction. Encouraging greater use of conventional insulating strategies through the Energy Efficiency Supplement and promoting the use of alternative energy sources through the twinning of the federal HTC and Renewable Energy Credits would make an inherently green activity even greener.

The third important theme is expanding the older building stock eligible for the federal HTC and its sister 10% non-historic tax credit. By lowering the substantial rehab test to 50% from 100% of adjusted basis, moderate rehab would be possible. Moderate rehab is often just the treatment an old building needs when it is first purchased and its adjusted basis is at its highest level. (See footnote 6 above for a definition of adjusted basis.) By indexing the pre-1936 eligibility date for the 10% credit to buildings 50 years and older, the large segment of commercial and residential building stock constructed after World War II would become eligible for this important federal subsidy.

The Growth of State Historic Tax Credits

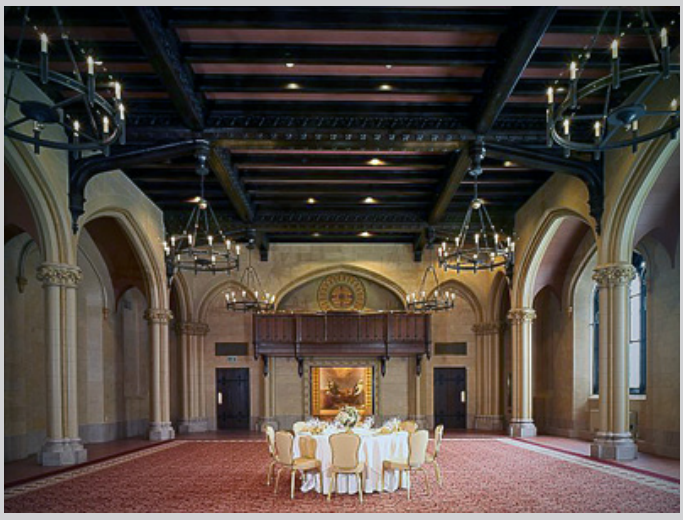
In considering the many above described potential changes to the federal HTC, it is important to note that states, in adopting HTCs of their own, have often already incorporated the more flexible provisions that have been proposed for the federal HTC. Background on the subject is presented below.

Even before the 1986 Tax Reform Act, some states had enacted state investment tax credits for historic rehabilitation of their own. After all, if the federal tax credits were successful, why not replicate the same model at the state level. With the changes wrought by the 1986 Reform Act which reduced the benefits of the federal tax credits, even more states stepped into the breach and adopted investment tax credits of their own to encourage historic renovation. As of July 2007, about 30 states had such provisions. A selected listing of states with such programs include Colorado, Indiana, Maryland, New Mexico, Rhode Island, Utah, Virginia, West Virginia, and Wisconsin.

To encourage investment, the state HTCs often has more flexible requirements than their federal HTC equivalents. Many have kept the pre-TRA tax credit percentage at 25 percent, rather than mirroring the current federal HTC of 20 percent. Many state HTCs are available to both income-producing properties (as the federal HTC) and historic residences (currently excluded by the federal HTC). Many states permit a lower investment threshold for the state HTC relative to the federal requirement (e.g., only $5,000 in Indiana, Kansas, Maryland, and Maine) or even have no minimum dollar investment (e.g., Delaware, Georgia, Iowa, and Louisiana).

The state of Missouri has one of the most extensive state tax credits for rehabilitation in the United States, and as is evident front Exhibit 1.6, the Missouri state HTC is far more flexible than the federal HTC. The Missouri HTC has many of the provisions that have been proposed to make the federal HTC more potent. These include raising the credit to 25 percent, allowing the credit to be used on non-income producing historic residences, and having a much lower minimum investment. Missouri's neighbor to the west, Kansas, also has a state HTC and it too is more flexible than the federal HTC. For example, the Kansas HTCs are transferable outside the real estate partnership (thus making them more valuable) and the Kansas HTC, unlike the federal HTC, can be readily used by non-profit entities.

One of the reasons states have adopted more flexible HTCs relative to the federal HTC is to create a potent vehicle to pump prime their economy through enhanced rehabilitation activity, with the latter then creating new jobs and other economic benefits—and ultimately increasing state coffers. To illustrate, we shall describe the Kansas situation before and after it adopted a state HTC in 2001.



This former Masonic Temple (c. 1869), saved from the wrecking ball by Preservation Maryland, was rehabilitated in 2006 into a conference facility for the adjacent Tremont Plaza Hotel in Baltimore, Maryland. The transformation was made feasible with over $6,300,000 in financing provided by federal and state historic and New Markets Tax Credit equity. By painstakingly restoring the Masons' ornate ceremonial spaces, the William C. Smith Company has created the most sought after meeting space in Baltimore.

The Kansas HTC has markedly enhanced HTC investment in Kansas. In the 21 years (1981-2001) prior to the adoption of the KHTC, Kansas completed about 50 HTC projects (average 2.4 per year) with an aggregate $113.7 million investment in inflation-adjusted (2009) dollars (average $5.4 million per year). In the eight years since the adoption of the Kansas HTC (2002-2009), a total of 542 tax credit-aided projects (average 68 per year) have been completed, representing an aggregate investment of $271.0 million (2008) dollars (average $33.9 million per year).

Major economic benefits have ensued from the Kansas HTC-aided investment. The in-state (to Kansas) total (direct and multiplier) economic impact from the $271 million of Kansas HTC-assisted rehabilitation includes 4,443 jobs generating $323 million in output (total value of economic shipments), $142 million in labor income, $183 million in gross state product or GSP (wealth or value added at the state level), and $56 million in taxes ($41 million federal, $8 million state, and $7 million local). The in-state wealth (GSP minus federal taxes) resulting from rehabilitation expenditures amounts to $142 million, indicating a high 78 percent retention.

The current federal HTC also generates considerable economic benefit. A more flexible federal HTC would ratchet up yet more of the economic and tax gain to the nation. We start below in Section 2 by quantifying the economic contribution of the current federal HTC.

The formerly segregated, historic African American W.B. Wicker School (c. 1927) located in Sanford, North Carolina, was converted in 2006 into office, classroom and community service space by Brick Capital Community Development Corporation with the help of the Self-Help Development Corporation of Durham, NC. The financing package included over $1,800,000 in federal and state historic and New Markets Tax Credit equity.

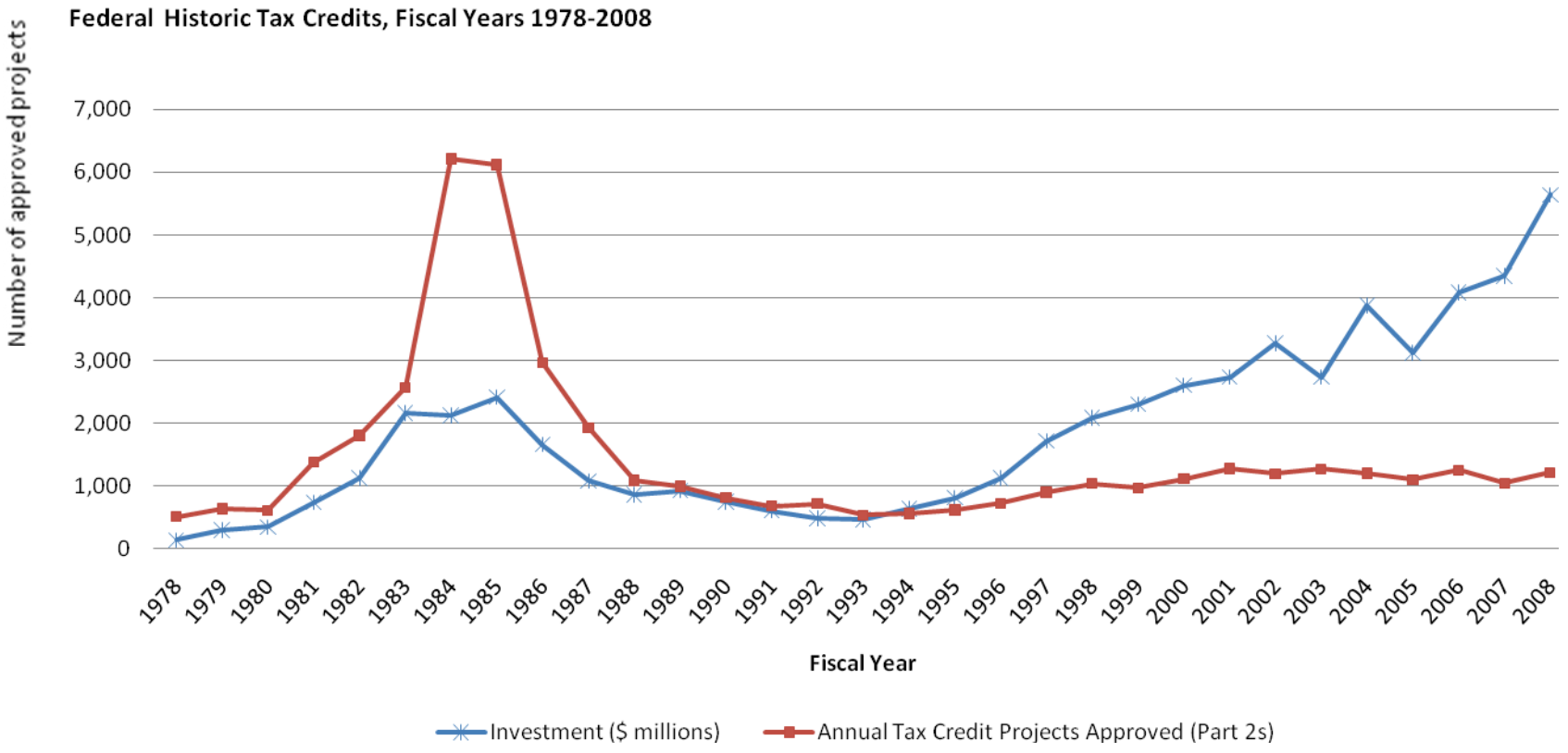
EXHIBIT 1.1
Federal Historic Tax Credits, Fiscal Years 1978-2008

Fiscal Year	Investment (millions $[a] Part 2s)	Cumulative Investment (millions $[a])	Annual Tax Credit Projects Approved (Part 2s)	Cumulative Annual Tax Credit Projects Approved
1978	140	140	512	512
1979	300	440	635	1,147
1980	346	786	614	1,761
1981	738	1,524	1,375	3,136
1982	1,128	2,652	1,802	4,938
1983	2,165	4,817	2,572	7,510
1984	2,123	6,940	6,214	13,724
1985	2,416	9,356	6,117	19,841
1986	1,661	11,017	2,964	22,805
1987	1,084	12,100	1,931	24,736
1988	865	12,965	1,092	25,828
1989	927	13,894	994	26,822
1990	750	14,642	814	27,636
1991	608	15,250	678	28,314
1992	491	15,741	719	29,033
1993	468	16,209	538	29,571
1994	641	16,850	560	30,131
1995	812	17,662	621	30,752
1996	1,130	18,792	724	31,476
1997	1,720	20,512	902	32,378
1998	2,085	22,597	1,036	33,414
1999	2,303	24,900	973	34,387
2000	2,602	27,502	1,115	35,502
2001	2,737	30,239	1,276	36,778
2002	3,272	33,511	1,198	37,976
2003	2,733	36,244	1,270	39,246
2004	3,878	40,121	1,200	40,446
2005	3,127	43,248	1,101	41,547
2006	4,082	47,330	1,253	42,800
2007	4,346	52,676	1,045	43,845
2008	5,641	57,317	1,213	45,058

[A] These figures are in nominal indicated year terms, that is *not* adjusted for inflation.

Sources: Department of the Interior, National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University.

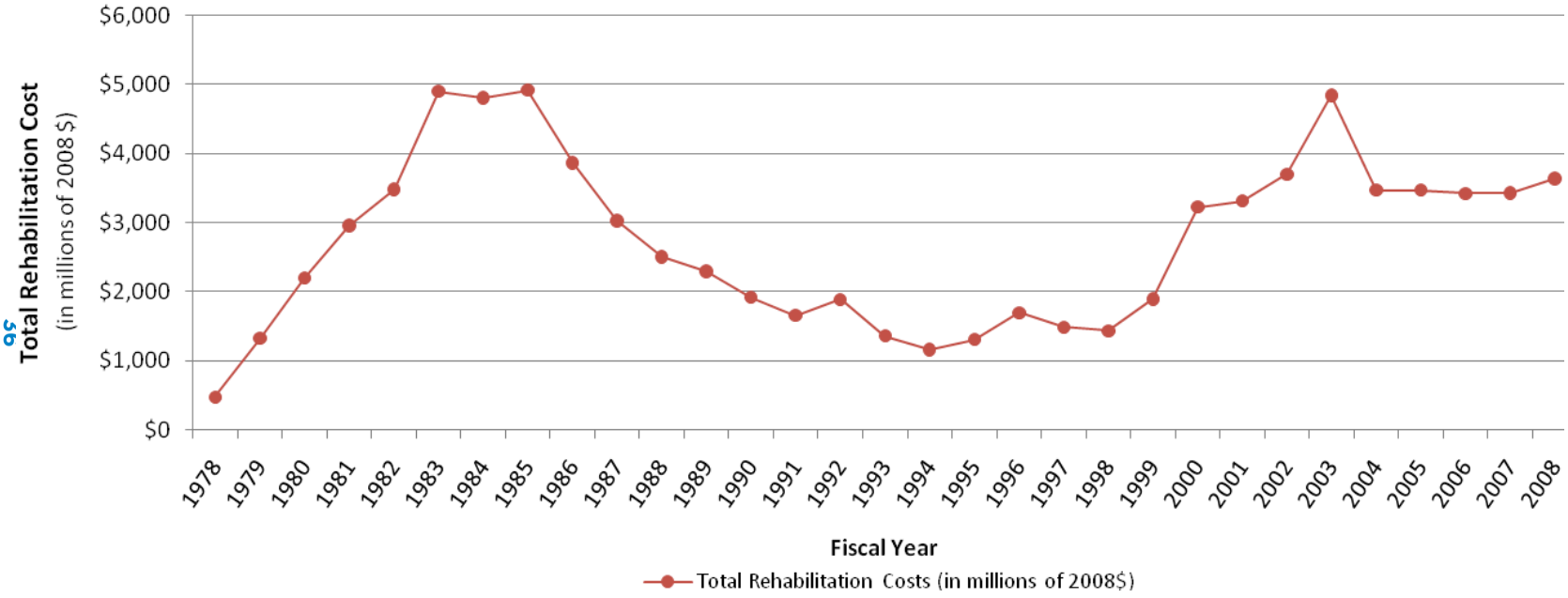
EXHIBIT 1.2



Notes: Tallies are Part 2s
Dollar values are not adjusted for inflation.

Sources: Department of the Interior, National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University.

EXHIBIT 1.3
Total Rehabilitation Costs[a] Associated with the Federal Historic Tax Credit, Fiscal Years 1978-2008



Notes: Figures are estimated and are in inflation adjusted 2008 dollars.

[a] Includes all rehabilitation outlays—both "eligible"/"qualified" and "ineligible"/"non-qualified" expenses.

Sources: Department of the Interior, National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University.

EXHIBIT 1.4 Federal Historic Tax Credits Involving Housing
scal Year 1978 to Fiscal Year 2008

Fiscal Year (FY)	Total Number of Housing Units Completed	Number of Units Rehabilitated	Number of Units Created	Total Number of Low-/Moderate-Income Units	Percentage of Low-/Moderate-Income Units to Total Number of Housing Units Completed
FY1978	6,962	3,876	3,086	1,197	17
FY1979	8,635	4,807	3,828	1,485	17
FY1980	8,349	4,648	3,701	1,435	17
FY1981	10,425	6,332	4,093	3,073	29
FY1982	11,416	6,285	5,131	2,635	23
FY1983	19,350	12,689	6,661	3,792	20
FY1984	20,935	16,002	4,933	142	1
FY1985	22,013	16,618	5,395	868	4
FY1986	19,524	12,260	7,264	640	3
FY1987	15,522	11,306	4,216	1,241	8
FY1988	10,021	7,206	2,815	592	6
FY1989	11,316	7,577	3,739	2,034	18
FY1990	8,415	6,098	2,317	1,993	24
FY1991	5,811	4,081	1,730	1,288	22
FY1992	7,536	5,523	2,013	1,762	23
FY1993	8,286	5,027	3,259	1,546	19
FY1994	10,124	6,820	3,304	2,159	21
FY1995	8,652	5,747	2,905	2,416	28
FY1996	11,545	5,537	6,008	3,513	30
FY1997	15,025	5,447	9,578	6,239	42
FY1998	13,644	6,144	7,500	6,616	48
FY1999	13,833	4,394	9,439	4,815	35
FY2000	17,266	5,740	11,530	6,668	38
FY2001	11,546	4,950	6,596	4,938	43
FY2002	13,886	5,615	8,271	5,673	41
FY2003	15,374	5,715	9,659	5,485	36
FY2004	15,784	5,738	10,046	5,357	34
FY2005	14,438	5,469	8,969	4,863	34
FY2006	14,695	6,411	8,284	5,622	38
FY2007	18,006	6,272	11,734	6,553	36
FY2008	17,051	6,659	10,392	5,220	31
Total	**405,385**	**216,993**	**188,396**	**101,860**	**786**

Sources: Department of the Interior, National Park Service, Technical Preservation Services; and calculations by Rutgers University

EXHIBIT 1.6
Comparison of Federal, Missouri and Kansas Historic Rehabilitation Tax Credits

Characteristic	Federal Credit	Missouri Credit	Kansas Credit
a. Credit percentage (%)	20	25	25 (30 for non-profit)
b. Commercial buildings	Qualify	Qualify	Qualify
c. Residences	Do not qualify	Qualify	Qualify
d. Reduction of basis by amount of credit	Yes	No	No (?)
e. Minimum investment	"Substantial"—greater of $5,000 or adjusted basis	50 % of total basis, but only $5,000 for residences	"Substantial"—must exceed $5,000
f. Project expense cap	None	None	None
g. Recapture	Yes	No	No (?)
h. Historic preservation standard	"Secretary of Interior Standards for Rehabilitation"	Same as federal	Same as federal
i. Transferable	No	Yes	Yes
j. Non-profit utilization	Limited	Ineligible	Yes

Source: Rutgers University

Section 2: Economic Impacts of the Federal Historic Tax Credit

Section 1 estimated the real (inflation-adjusted to 2008 dollars) total rehabilitation investment throughout the United States that was enabled by the federal HTC at about $85.0 billion for the cumulative period FY 1978 through FY 2008 and approximately $3.6 billion for FY 2008. These two total federal tax credit-aided historic rehabilitation outlays can be translated into ensuing total economic benefits. Before quantifying these effects, we must explain what is meant by total economic impacts from an investment and how these are determined.

This study examines the total economic impacts of federal tax credit-aided historic rehabilitation, encompassing both the direct and multiplier effects. The direct impact component consists of labor and material purchases made specifically for the rehabilitation activity. The multiplier effects incorporate what are referred to as indirect and induced economic consequences. The indirect impact component consists of spending on goods and services by industries that produce the items purchased for the historic rehabilitation activity. The induced impact component focuses on the expenditures made by the households of workers involved either directly or indirectly with the activity. To illustrate, lumber purchased at a hardware store for historic rehabilitation is a direct impact. The purchases of the mill that produced the lumber are an indirect impact. The household expenditures of the workers at both the mill and the hardware store are induced impacts.

Economists estimate direct, indirect, and induced effects using an input-output model (I-O). This study specifies the total economic effects of federal tax credit-aided historic rehabilitation through a state-of-the-art I-O model developed by the Rutgers University Center for Urban Policy Research (CUPR) for the National Park Service, Division of Cultural Resources, National Center for Preservation Technology and Training.[10] The model is termed the Preservation Economic Impact Model (PEIM).

In the current analysis, the PEIM is applied to both cumulative (FY 1978 through 2008) federal tax credit-aided historic rehabilitation investment in the United States (about $85.0 billion in 2008 inflation-adjusted dollars) and to the one-year 2008 annual tax credit-aided rehabilitation investment (about $3.6 billion) throughout the nation. In applying the cumulative analysis, we consider the effects of the $85 billion rehabilitation investment as if effected in one year (2008), rather than retroactively backdating and applying the economic model for each of the 31 years encompassing the FY 1978-2008 study period. The results of the PEIM model include many fields of data. The fields most relevant to this study are the total impacts of the following:

[10] Technical detail on the I-O model used in this study is described in Appendix A.

•**Jobs:** Employment, both part- and full-time, by place of work, estimated using the typical job characteristics of each industry. (Manufacturing jobs, for example, tend to be full-time; in retail trade and real estate, part-time jobs predominate.) All jobs generated at businesses in the region are included, even though the associated labor income of in-commuters may be spent outside of the region. In this study, all results are for activities occurring within the time frame of one year. Thus, the job figures should be read as job-years, where several individuals might fill one job-year on any given project.

•**Income:** "Earned" or labor income, specifically wages, salaries, and proprietors' income. Income does not include non-wage compensation (such as benefits, pensions, or insurance); transfer payments; or dividends, interest, or rents.

•**Wealth:** Value added — the sub-national equivalent of gross domestic product (GDP). At the state level, this is called gross state product (GSP) or, in some public data, GDP by state. Value added is widely accepted by economists as the best measure of economic well-being. It is estimated from state-level data by industry. For a firm, value added is the difference between the value of goods and services produced and the value of goods and non-labor services purchased. For an industry, therefore, it is composed of labor income (net of taxes); taxes; non-wage labor compensation; profit (other than proprietors' income); capital consumption allowances; and net interest, dividends, and rents received.

•**Output:** Of the measures in any input-output report, perhaps the least well-defined one is that labeled "output." Output is defined as the value of shipments, which is reported in the Economic Census. The value of shipments is very closely related to the notion of business revenues. Thus it is NOT the "output" to which most other economists refer and which is better known as "gross domestic product" (GDP).

Within input-output analysis, "output" is also not the same as business revenues, for several reasons. It is probably better defined as net business receipts, however. First, establishments often sell some of their output to themselves and therefore do not ship it. Hence, such sales cannot be included in the Census's tally of the value of shipments. Second, to avoid some double counting in national accounts (those used to produce input-output tables), "output" in the wholesale and retail trade industries is measured simply as their margins, which is value added plus the costs of inputs used in the course of doing business. That is, for these trade industries, "output" does NOT include the value of the items stocked on shelves.

•**Taxes:** Tax revenues generated by the activity. The tax revenues are detailed for the federal, state, and local levels of government. Totals are calculated by industry.
Federal tax revenues include corporate and personal income, Social Security, and excise taxes, estimated from calculations of value added and income generated.
State tax revenues include income, excise, sales, and other state taxes, estimated from calculations of value added and income generated (e.g. visitor purchases).
Local tax revenues include payments to sub-state governments, mainly through property taxes on new worker households and businesses. Local tax revenues can also include sales and other taxes.

Summary Exhibit 2 (in the Executive Synthesis) shows the cumulative economic impacts of the federal tax credit-aided historic rehabilitation over FY 1978 through FY 2008—a span of 31 years. Summary Exhibit 3 quantifies the one year annual economic impacts of the federal tax credit-aided historic rehabilitation in FY 2008 alone.

The major data reported in these two exhibits is organized into the following sections:

I. Total Effects
II. Distribution of Effect/Multiplier
III. Composition of Gross State Product
IV. Tax Accounts
V. Effects per Million Dollars of Initial Expenditure

Each of these sections is described in detail in Summary Exhibit 4 (in the Executive Synthesis). With this background presented, we can turn to our findings.

ECONOMIC IMPACTS OF CUMULATIVE FEDERAL HISTORIC TAX CREDIT-AIDED TOTAL REHABILITATION INVESTMENT IN THE UNITED STATES (FY 1978 – 2008)

Between FY 1978 and 2008, an estimated cumulative total of about $85 billion of historic rehabilitation was aided by the federal historic tax credit. The total economic impacts to the nation from the $85 billion in cumulative historic rehabilitation spending include 1,815,208 jobs generating an additional $197.6 billion in output, $71.7 billion in income, $97.6 billion in gross domestic product (GDP), and $28.7 billion in taxes ($21.0 billion federal government taxes, $3.9 billion state government taxes, and $3.8 billion local government taxes). (See Summary Exhibit 2 in the Executive Synthesis).

The benefits that accrue from the cumulative investment in federal tax credit-aided historic rehabilitation projects are extensive. Almost all sectors of the nation's economy see their payrolls and production increased (Summary Exhibit 2). Just under 30 percent of the national-based jobs from the cumulative $85 billion tax credit-aided rehabilitation investment (511,869 of 1,815,208 jobs) and national gross domestic product ($27.5 billion of $97.6 billion GDP) created by historic rehabilitation aided by the federal HTC accrue to the nation's construction industry; this is as one would expect, given the share of such projects that require the employment of building contractors. Other major economic sector beneficiaries are services (337,984 jobs, $12.9 billion in GDP) as well as manufacturing (368,255 jobs, $25.0 billion GDP) and the retail trade (280,098 jobs, $7.3 billion GDP) sectors. The finance insurance and real estate (FIRE) sector garners 144,588 jobs and $12.8 billion GDP. As a result of the interconnectedness of the national economy and because both direct and multiplier effects are considered, other segments of the national economy not immediately associated with historic rehabilitation are affected as well, such as agriculture, mining and transportation and public utilities, or TPU. (See Summary Exhibit 2 for details). For instance the TPU sector realizes a gain of 70,441 jobs and about $5.7 billion of GDP.

Exhibit 2.1 summarizes the key economic effects (employment, income, GDP, output, and taxes) by year of the federal tax credit-aided rehabilitation investment for each of the 31 years spanning the FY 1978 – FY 2008[11] study period. For instance, in inflation-adjusted dollars, 1985 was the peak year of investment when $4.9 billion of total federal tax credit-aided rehabilitation investment occurred. (This timing was no accident as the 1985 peak reflected the run-up of investor interest evoked by the expanded scope of the tax credits brought about by the Economic Recovery Tax of 1981.) As the peak year of investment, 1985 would also have realized the highest economic benefits from the federal tax credit-aided activity, such as about 105,000 jobs and $4.2 billion income. (These and the other values in Exhibit 2.4 are in 2008 terms.) See Exhibit 2.1 for more detail on the 1985 economic-effects from the HTC as well as for earlier or later years.

ECONOMIC IMPACTS OF ANNUAL FEDERAL HISTORIC TAX CREDIT-AIDED REHABILITATION INVESTMENT IN THE UNITED STATES (FY 2008)

As noted earlier, the federal historic tax credit-aided rehabilitation investment in FY 2008 is about $3.6 billion. The total national economic impacts of this include 58,780 jobs generating $6.9 billion in output, $3.5 billion in GDP, $2.6 billion in income and $953 million in total taxes ($610 million federal government, $161 state government, and $182 million local government). (See Summary Exhibit 3 in the Executive Synthesis).

As with the cumulative FY 1978 – FY 2008 rehabilitation effects, the annual FY 2008 investment in historic rehabilitation accrues benefits across the national economy (Summary Exhibit 3). For instance, of the $3.5 billion in GDP, $1.2 billion, $1.0 billion, and $0.5 billion are found among the following three economic sectors respectively: construction, manufacturing, and services. GDP gains of about $0.2 to $0.3 billion apiece are realized by the retail trade industry and as well as the finance, insurance, and real estate industry. A GDP addition of about $0.1 billion is realized by the wholesale sector. (See Summary Exhibit 3 for further details).

[11] This should be interpreted as follows in applying the cumulative FY 1978-2008 analysis. We consider the effects of the $85 billion investment as if effected in one year, namely 2008. Thus, when Exhibit 2.4 shows the economic effects for each year over FY 1978-2008, we are not backdating the model to each of these years, but rather indicating what each year's investment realizes in 2008 values.

The national impacts of the FY 2008 federal tax credit-aided rehabilitation investment from each state as of that year is summarized in Exhibit 2.2. For instance, the ten states shown below had considerably varying levels of tax credit investment as of FY 2008 and with that, very different levels of national-level job and income effects. While the effects to the nation are shown, as we shall see below, most of the benefit is retained within each state's boundaries.

State	FY 2008 HTC-Aided Rehabilitation Investment *(in $ millions)*	*Selected National Economic Impacts*	
		Jobs	Income *(in $ millions)*
Alabama	$6.7	124	$4.3
Florida	$37.3	650	$26.4
Illinois	$360.5	5,314	$262.4
Indiana	$154.7	2,711	$110.6
Michigan	$38.8	616	$27.5
New York	$198.5	3,284	$141.4
Ohio	$75.2	1,351	$53.5
Pennsylvania	$165.8	2,695	$120.3
Virginia	$269.8	4,541	$193.1
Washington	$130.5	2,091	$93.6

The considerable state-level capture of the national-level economic effects from the federal tax credit-aided rehabilitation investment is illustrated through reconnaissance investigation in three states: California, Missouri, and Pennsylvania. In FY 2008, the federal tax credit-aided rehabilitation investment in these three locations amounted to $90.2 million, $418.6 million, and $165.8 million, respectfully. For these three states, we quantify national-level and state-level impacts, the latter a new geographic analysis not yet conducted in this study. The results are summarized in Exhibit 2.3.

For example, the national economic impacts of the FY 2008 $418.6 million in tax credit-aided historic rehabilitation investment in Missouri include 7,171 jobs generating an additional $796 million in output, $299 million in income, $396 million in GDP, and $94 million in taxes (Exhibit 2.3—upper portion). The Missouri retained portion (Exhibit 2.3—lower portion), of the FY 2008 $418.6 million in historic rehabilitation spending translates to 5,336 jobs generating $518 million in output, $225 million in labor income, $275 million in gross state product (GSP), and $66 million in taxes. The in-state wealth (GSP minus federal taxes) resulting from rehabilitation expenditures amounts to $210 million, indicating a high 76 percent retention rate.

Similar high state-level retention rates characterize California and Pennsylvania as well. (Compare the state-level economic impact portion of Exhibit 2.3 to the national-level economic impact portion of same exhibit.) It stands to reason that the lion's share of the economic benefits from the construction activity aided by the federal tax credit stays within a given state's boundaries as opposed to "leaking" elsewhere.[12] That is borne out by the three states (California, Missouri and Pennsylvania) reconnaissance investigation and likely characterizes most other states as well. Thus, much of the national-level impacts from the FY 2008 federal historic tax credit-aided investment that occurs in each state (Exhibit 2.2) is likely retained at the state level.

RELATIVE ECONOMIC EFFECTS OF FEDERAL TAX CREDIT-AIDED HISTORIC REHABILITATION

How does tax credit-aided historic rehabilitation fare as an economic pump-primer vis-à-vis other non-preservation investments? The short answer is "quite well," and for documenting that, we will illustrate effects in the state of Kansas. Exhibit 2.4 shows, in side-by-side fashion, the relative economic effects of the historic rehabilitation of commercial buildings in Kansas vis-à-vis new construction of different types of buildings, including commercial new construction in that state. It further shows, for comparative purposes, the economic effects of new highway construction—a classic infrastructure investment. The economic impacts include total (direct and indirect/induced) income, wealth, and tax consequences per fixed increment of investment ($1 million) at both the national and in-state levels.

The side-by-side comparisons in Exhibit 2.4 reveal that across building and investment types, historic rehabilitation in Kansas is a reasonably comparable, and in some categories superior, economic pump-primer vis-à-vis new construction. At the national level (i.e. effects to the entire United States), the economic impacts of historic rehabilitation versus new construction in Kansas is roughly comparable on some measures (job creation) and somewhat different on other measures (e.g., historic rehabilitation has the edge with respect to taxes generated, but has a somewhat smaller effect with respect to income—see the upper portion of Exhibit 2.4).

At the in-state level however (i.e. effects to Kansas), historic rehabilitation has a markedly superior benefit (see the lower portion of Exhibit 2.4). A $1 million investment in historic rehabilitation in Kansas realizes a markedly better economic effect to Kansas with respect to employment, income, GSP, and state-local taxes compared to a similar increment of investment (i.e. $1 million) in an array of residential and nonresidential new construction in Kansas as well as new infrastructure investment (e.g., building highways) in the state.

[12] The exact amount of "leakage" will vary state by state, for instance reflecting whether a state can supply the steel and lumber used in renovation.

One other consideration of what comprises a "good investment" is the relative comparison of historic rehabilitation investment versus investment in such sectors of the economy as manufacturing, agriculture, and services. **On this basis, historic rehabilitation typically has economic advantages per fixed increment of investment ($1 million), as illustrated in Exhibit 2.5, which contains business activities important in Kansas, such as manufacturing (e.g., electrical machinery and automobile), agriculture (wheat farming), and services (telecommunication). The national economic impacts of the investment in commercial historic rehabilitation generally outpace those of the alternative investments just cited (see the upper portion of Exhibit 2.5).**

The in-state benefit of commercial historic rehabilitation is far superior. A $1 million investment in historic rehabilitation in Kansas realizes a markedly better economic effect to Kansas with respect to employment, income, GSP, and state/local taxes compared to a $1 million investment in economic activities notable in Kansas such as agriculture, manufacturing, and services. (See the lower portion of Exhibit 2.5 for details).

It is important to view these findings in a holistic fashion. A healthy economy will include all the activities noted above, such as new construction as well as rehabilitation of the historic stock as well as a broad array of agriculture, manufacturing, services, and other pursuits. So, it is not a question of historic rehabilitation as opposed to other pursuits, but rather historic rehabilitation joining the many activities of the broader economy so as to realize the commendable strong economic "bang for the buck" offered by that rehabilitation.

EXHIBIT 2.1
Economic and Tax Impacts of Federal HTC Investment on the Nation by Year, Fiscal Years 1978-2008

	Total Rehabilitation Costs	National Economic Impacts				Tax Impacts			
Year	Annual Costs	Employment (jobs)	Income	GDP	Output	Local	State	Federal	Total
	(in 2008 $ millions)		(in 2008 $ millions)			(in 2008 $ thousands)			
1978	$472.4	10,088	$398.5	$542.2	$1,098.1	$21,233.0	$21,699.8	$116,432.9	$159,365.8
1979	$1,322.8	28,250	$1,116.1	$1,518.4	$3,075.1	$59,460.9	$60,768.3	$326,059.0	$446,288.2
1980	$2,196.2	46,902	$1,853.0	$2,520.9	$5,105.5	$98,721.1	$100,891.7	$541,345.6	$740,958.4
1981	$2,958.5	63,182	$2,496.2	$3,395.9	$6,877.6	$132,987.3	$135,911.3	$729,247.3	$998,145.9
1982	$3,482.9	74,382	$2,938.7	$3,997.8	$8,096.8	$156,561.4	$160,003.7	$858,517.9	$1,175,083.0
1983	$4,897.3	104,586	$4,132.0	$5,621.3	$11,384.7	$220,137.2	$224,977.4	$1,207,141.5	$1,652,256.2
1984	$4,805.5	102,627	$4,054.6	$5,516.0	$11,171.5	$216,013.7	$220,763.2	$1,184,529.7	$1,621,306.7
1985	$4,916.1	104,987	$4,147.8	$5,642.8	$11,428.4	$220,981.3	$225,840.1	$1,211,770.0	$1,658,591.3
1986	$3,866.6	82,575	$3,262.3	$4,438.2	$8,988.7	$173,806.6	$177,628.1	$953,083.3	$1,304,518.0
1987	$3,023.6	64,573	$2,551.1	$3,470.6	$7,029.1	$135,915.2	$138,903.6	$745,302.9	$1,020,121.8
1988	$2,500.0	53,391	$2,109.4	$2,869.7	$5,811.9	$112,379.7	$114,850.6	$616,243.5	$843,473.7
1989	$2,291.9	48,946	$1,933.8	$2,630.8	$5,328.0	$103,024.1	$105,289.3	$564,941.5	$773,254.9
1990	$1,916.9	40,937	$1,617.3	$2,200.3	$4,456.2	$86,166.2	$88,060.7	$472,499.7	$646,726.6
1991	$1,653.2	35,305	$1,394.8	$1,897.6	$3,843.1	$74,311.8	$75,945.7	$407,494.9	$557,752.3
1992	$1,883.2	40,217	$1,588.9	$2,161.6	$4,377.8	$84,650.3	$86,511.6	$464,187.4	$635,349.2
1993	$1,356.4	28,967	$1,144.4	$1,556.9	$3,153.2	$60,971.4	$62,312.0	$334,342.1	$457,625.5
1994	$1,156.7	24,704	$976.0	$1,327.8	$2,689.1	$51,997.0	$53,140.3	$285,130.1	$390,267.4
1995	$1,306.2	27,896	$1,102.1	$1,499.4	$3,036.6	$58,717.1	$60,008.1	$321,980.4	$440,705.7
1996	$1,694.7	36,193	$1,429.9	$1,945.3	$3,939.8	$76,180.3	$77,855.3	$417,741.3	$571,777.0
1997	$1,483.1	31,673	$1,251.3	$1,702.3	$3,447.7	$66,665.8	$68,131.6	$365,567.5	$500,364.9
1998	$1,432.1	30,584	$1,208.3	$1,643.8	$3,329.2	$64,374.7	$65,790.1	$353,004.0	$483,168.7
1999	$1,890.5	40,374	$1,595.1	$2,170.0	$4,395.0	$84,981.6	$86,850.1	$466,004.0	$637,835.7
2000	$3,224.5	68,862	$2,720.6	$3,701.2	$7,496.0	$144,943.9	$148,130.8	$794,812.2	$1,087,886.8
2001	$3,309.3	70,673	$2,792.1	$3,798.5	$7,693.0	$148,754.1	$152,024.8	$815,706.0	$1,116,485.0
2002	$3,699.3	79,003	$3,121.2	$4,246.2	$8,599.9	$166,288.6	$169,944.8	$911,857.9	$1,248,091.4
2003	$4,840.7	103,377	$4,084.2	$5,556.3	$11,253.1	$217,592.5	$222,376.7	$1,193,186.9	$1,633,156.0
2004	$3,466.7	74,035	$2,925.0	$3,979.2	$8,059.1	$155,831.3	$159,257.6	$854,514.3	$1,169,603.2
2005	$3,466.4	74,029	$2,924.7	$3,978.9	$8,058.4	$155,818.2	$159,244.2	$854,442.5	$1,169,504.9
2006	$3,419.4	73,025	$2,885.0	$3,924.9	$7,949.1	$153,705.1	$157,084.6	$842,854.9	$1,153,644.5
2007	$3,427.9	73,207	$2,892.2	$3,934.7	$7,968.9	$154,088.5	$157,476.5	$844,957.4	$1,156,522.4
2008	$3,636.3	77,657	$3,068.1	$4,173.9	$8,453.4	$163,455.8	$167,049.8	$896,324.0	$1,226,829.6
Totals	**$84,997.4**	**1,815,208**	**$71,714.8**	**$97,563.2**	**$197,594.1**	**$3,820,715.8**	**$3,904,722.4**	**$20,951,222.6**	**$28,676,660.7**

Sources: Department of the Interior, National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University.

EXHIBIT 2.2
Economic and Tax Impacts of Federal HTC Investment on the Nation by State, Fiscal Year 2008

State	Total Rehabilitation Costs	National Economic Impacts				Tax Impacts			
	Annual Costs	Employment (jobs)	Income	GDP	Output	Local	State	Federal	Total
	(in 2008 $ millions)		(in 2008 $ millions)			(in 2008 $ thousands)			
Alabama	$6.7	124	$4.3	$8.0	$11.0	$119.4	$177.7	$1,026.5	$1,323.6
Alaska	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Arizona	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Arkansas	$6.9	142	$4.8	$7.1	$12.7	$135.9	$248.2	$1,147.7	$1,531.8
California	$90.2	1,346	$65.4	$85.4	$176.5	$2,276.8	$3,640.7	$16,573.9	$22,491.4
Colorado	$13.5	215	$9.5	$13.2	$25.3	$342.8	$436.5	$2,243.5	$3,022.8
Connecticut	$52.0	745	$36.2	$50.4	$95.2	$2,741.1	$2,324.3	$8,342.8	$13,408.2
Delaware	$4.2	66	$3.0	$4.0	$7.8	$193.0	$202.7	$658.4	$1,054.1
District of Columbia	$0.2	2	$0.1	$0.2	$0.3	$11.6	$4.6	$23.5	$39.7
Florida	$37.3	650	$26.4	$35.7	$69.9	$1,929.6	$1,166.2	$6,295.4	$9,391.3
Georgia	$33.2	656	$23.0	$33.9	$60.8	$1,565.9	$1,520.3	$5,616.1	$8,702.3
Hawaii	$3.8	54	$2.6	$3.7	$6.7	$130.3	$153.7	$564.5	$848.5
Idaho	$0.9	18	$0.6	$0.9	$1.7	$22.1	$22.9	$140.1	$185.1
Illinois	$360.5	5,314	$262.4	$338.6	$703.9	$11,422.3	$10,368.0	$63,126.7	$84,916.9
Indiana	$154.7	2,711	$110.6	$148.8	$295.2	$50,973.7	$33,964.5	$26,294.7	$111,232.9
Iowa	$45.1	815	$30.6	$45.6	$79.4	$1,510.8	$1,344.3	$7,077.3	$9,932.5
Kansas	$36.4	661	$25.4	$35.2	$67.4	$8,582.7	$5,971.0	$5,852.0	$20,405.7
Kentucky	$52.0	994	$36.0	$50.8	$95.1	$5,196.4	$4,138.7	$8,281.6	$17,616.7
Louisiana	$24.1	425	$17.2	$22.5	$45.6	$839.4	$874.4	$3,947.1	$5,660.9
Maine	$0.4	6	$0.2	$0.3	$0.8	$17.9	$16.6	$62.4	$97.0
Maryland	$178.9	2,764	$125.6	$168.9	$331.9	$5,805.6	$5,252.8	$28,645.3	$39,703.7
Massachusetts	$361.0	4,691	$253.4	$339.9	$672.3	$9,632.6	$11,621.6	$58,272.1	$79,526.2
Michigan	$38.8	616	$27.5	$36.8	$73.2	$1,149.4	$1,397.7	$6,405.4	$8,952.6
Minnesota	$114.2	1,798	$80.2	$108.0	$213.2	$4,008.7	$4,534.9	$18,408.5	$26,952.1
Mississippi	$3.5	73	$2.4	$3.5	$6.4	$264.7	$210.9	$566.2	$1,041.8
Missouri	$418.6	7,171	$298.5	$395.5	$795.8	$11,561.3	$13,224.3	$69,323.1	$94,108.7
Montana	$6.6	128	$4.6	$6.5	$12.1	$244.1	$226.3	$1,026.1	$1,496.5
Nebraska	$25.3	484	$17.3	$25.0	$45.2	$5,217.1	$3,564.7	$3,909.0	$12,690.8
Nevada	$0.2	3	$0.1	$0.2	$0.3	$4.8	$2.7	$27.3	$34.8

EXHIBIT 2.2 (continued)

State	Total Rehabilitation Costs	National Economic Impacts				Tax Impacts			
	Annual Costs (in 2008 $ millions)	Employment (jobs)	Income (in 2008 $ millions)	GDP (in 2008 $ millions)	Output (in 2008 $ millions)	Local (in 2008 $ thousands)	State (in 2008 $ thousands)	Federal (in 2008 $ thousands)	Total (in 2008 $ thousands)
New Hampshire	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
New Jersey	$152.4	2,188	$108.2	$142.3	$289.6	$2,989.5	$4,504.7	$24,935.2	$32,429.3
New Mexico	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
New York	$198.5	3,284	$141.4	$188.9	$373.5	$12,863.3	$10,898.6	$34,120.8	$57,882.7
North Carolina	$80.7	1,512	$56.8	$80.8	$151.2	$1,950.7	$2,821.3	$13,802.8	$18,574.9
North Dakota	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Ohio	$75.2	1,351	$53.5	$74.1	$142.8	$3,264.1	$2,750.2	$13,039.0	$19,053.2
Oklahoma	$21.6	427	$15.4	$21.6	$41.3	$521.3	$752.8	$3,714.8	$4,988.8
Oregon	$58.0	1,027	$42.1	$55.2	$113.0	$1,509.8	$2,034.5	$10,120.6	$13,664.9
Pennsylvania	$165.8	2,695	$120.3	$159.5	$323.3	$5,525.7	$4,686.0	$29,188.8	$39,400.5
Rhode Island	$106.1	1,618	$72.4	$108.7	$190.9	$3,838.0	$3,356.2	$16,578.6	$23,772.9
South Carolina	$21.6	404	$15.0	$21.9	$39.5	$618.7	$693.3	$3,590.6	$4,902.6
South Dakota	$9.5	191	$6.7	$8.7	$17.8	$307.7	$179.5	$1,430.4	$1,917.6
Tennessee	$53.3	942	$37.3	$51.7	$99.3	$1,503.4	$1,141.1	$8,684.7	$11,329.2
Texas	$101.9	1,646	$73.8	$96.5	$199.5	$3,518.6	$2,021.5	$18,183.3	$23,723.4
Utah	$6.6	123	$4.6	$6.5	$12.3	$174.7	$220.9	$1,090.4	$1,485.9
Vermont	$28.2	499	$20.4	$26.7	$54.0	$1,101.3	$1,388.0	$4,581.9	$7,071.3
Virginia	$269.8	4,541	$193.1	$260.9	$514.1	$6,991.1	$9,062.1	$46,205.9	$62,259.1
Washington	$130.5	2,091	$93.6	$126.8	$250.7	$6,025.7	$4,718.4	$22,527.8	$33,271.9
West Virginia	$25.8	494	$17.9	$25.9	$47.1	$783.5	$904.0	$4,151.9	$5,839.3
Wisconsin	$61.8	1,075	$43.7	$60.1	$116.0	$2,178.7	$2,487.0	$10,416.2	$15,082.0
Wyoming	$0.0	0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Totals	**$3,636.3**	**58,780**	**$2,584.1**	**$3,485.5**	**$6,881.5**	**$181,565.9**	**$161,231.2**	**$610,220.8**	**$953,017.9**

Sources: Department of the Interior, National Park Service, Technical Preservation Services; National Council of State Historic Preservation Offices; and calculations by Rutgers University.

EXHIBIT 2.3
Summary of the Annual (FY 2008) Economic Impacts of Federal HTC Investment in California, Missouri, and Pennsylvania

		I	II	III
		California Rehabilitation Using Federal HTC	*Missouri Rehabilitation Using Federal HTC*	*Pennsylvania Rehabilitation Using Federal HTC*
DIRECT EFFECTS		$90.2 million FY 2008 total rehabilitation costs results in:	$418.6 million FY 2008 total rehabilitation costs results in:	$165.8 million FY 2008 total rehabilitation costs results in:
	National Total (Direct and Multiplier) Impacts			
NATIONAL TOTAL IMPACTS (DIRECT AND MULTIPLIER)	Jobs (person-years)	1,346	7,171	2,695
	Income ($ million)	65.4	298.5	120.3
	Output ($ million)	176.5	795.8	323.3
	GDP* ($ million)	85.4	395.5	159.5
	Taxes ($ million)	22.5	94.1	39.4
	Federal ($ million)	16.6	69.3	29.2
	State ($ million)	3.6	13.2	4.7
	Local ($ million)	2.3	11.6	5.5
↓	**In-State Kansas Total (Direct and Multiplier) Impacts**			
STATE PORTION OF NATIONAL TOTAL IMPACTS	Jobs (person-years)	1,103	5,336	2,095
	Income ($ million)	54.2	224.5	94.4
	Output ($ million)	134.9	518.1	227.7
	GSP* ($ million)	69.1	275.3	120.6
	Taxes ($ million)	20.9	85.3	36.0
	Federal ($ million)	15.8	65.6	27.5
	State ($ million)	3.2	11.0	3.9
	Local ($ million)	1.9	8.7	4.5
	In-state wealth* ($ million)	53.3	209.7	93.1

*GDP = Gross Domestic Product; GSP = Gross State Product; In-state wealth = GSP less federal taxes
Note: Totals may differ from indicated subtotals because of rounding

EXHIBIT 2.4
Relative Economic Effects of Historic Rehabilitation Versus New Construction per Million Dollars Spent in Kansas
(National and In-State [Kansas] Impacts)

	Effects Per Million Dollars of Initial Expenditure						
Geographic Level/ Economic Effect	*Commercial Historic Rehabilitation*	*New Construction*					
		Single-Family	**Multifamily**	**Nonresidential**	**Highway**	**Civic/ Institutional**
National							
Employment (jobs)	21.9	19.8	19.7	20.4	17.5	20.1
Income ($000)	$700	$810	$813	$859	$782	$844
GDP ($000)	$969	$1,111	$1,113	$1,159	$1,064	$1,134
State-Local Taxes ($000)	$175	$92	$92	$94	$86	$92
In-State (to Kansas)						
Employment (jobs)	16.4	11.0	11.0	11.7	9.9	11.3
Income ($000)	$522	$454	$453	$495	$466	$480
GSP ($000)	$674	$570	$568	$609	$590	$586
State-Local Taxes ($000)	$39	$23	$23	$22	$22	$21

Notes: GDP = Gross Domestic Product, GSP = Gross State Product
Source: Rutgers University, Center for Urban Policy Research, 2009.

EXHIBIT 2.5
Relative Economic Impacts of Historic Rehabilitation Versus Other Economic Activities per Million Dollars Spent in Kansas
(National and In-State [Kansas] Impacts)

Geographic Level/ Economic Effect	Commercial Historic Rehabilitation	Electrical Machinery	Wheat Farming	Auto Manufacturing	Telecommunication Services
National					
Employment (jobs)	21.9	19.4	4.2	12.0	8.3
Income ($000)	$700	$791	$168	$500	$450
GDP	$969	$929	$817	$824	$926
State-local taxes ($000)	$175	$79	$44	$57	$62
In-State (to Kansas)					
Employment (jobs)	16.4	11.8	2.6	5.3	4.4
Income ($000)	$522	$470	$100	$205	$289
GSP	$674	$485	$706	$400	$679
State-local taxes ($000)	$39	$14	$29	$12	$26

Notes: GDP = Gross Domestic Product, GSP = Gross State Product
Source: Rutgers University, Center for Urban Policy Research, 2009.

QUALITATIVE IMPACTS OF THE FEDERAL HISTORIC TAX CREDIT SELECTED NATIONAL CASE STUDIES

Thus far the analysis has quantified the economic impacts of the federal HTC as estimated by the Rutgers Input-Output model (PEIM). We get a further perspective on the federal HTC's impacts through qualitative case study analysis. The latter describe what transpired on a project by project basis and provide not only the local economic impacts, but additionally what the rehabilitation aided by the federal HTC has meant to local communities.

As part of the current investigation, ten case studies were conducted. The ten cases involved the rehabilitation of the:

- o Carpenter Center for the Performing Arts (Richmond, Virginia)
- o Pontchartrain Hotel (New Orleans, Louisiana)
- o Harmony Mills (Cohoes, New York)
- o American Brewery Building (Baltimore, Maryland)
- o Caplan Building (Portland, Oregon)
- o Canton Cotton Mill (Canton, Georgia)
- o Marquette Manor (Two Rivers, Wisconsin)
- o Century Plaza Apartments (Sioux City, Iowa)
- o Far East Building (Los Angeles, California)
- o Indiana Cotton Mill (Cannelton, Indiana)

Each case study is organized in a parallel format that includes the following sections:

- •Project summary
- •Property description
- •Project budget and sources of funding

We encourage the reader to browse all ten case studies for they show the important preservation "facts on the ground" realized by the federal HTC. As a preview of the ten cases, we offer the following synopsis.

The case studies point to how the federal HTC (as well as other allied programs) has helped foster the stabilization-revitalization of older yet important neighborhoods in various communities across the country and has encouraged adaptive reuse, sometimes with the added bonus of providing affordable housing. To illustrate, the Cotton Mills Apartment project converted a vacated cotton mill in Cannelton, Indiana into 70 affordable housing units; a property abandoned since the mid 1950s when the mill closed for business. What was once a flagrant eyesore is now the architectural gem of the community.

In another instance, the American Brewery Building in Baltimore, MD, located in a highly blighted low-income neighborhood made up of row-houses and small commercial storefronts, now houses a non-profit social and human services provider, and has become a cornerstone of redevelopment efforts in the community. In Richmond, VA, the historic Carpenter Theater was restored as the marquee stage of the Richmond CenterStage project into a four-venue performing arts complex. The project received tremendous financial support from the city, the state, and patrons of the arts committed to bringing a rich, cultural hub to Virginia's capital city.

At the heart of the Los Angeles National Landmark Little Tokyo Historic District, a community with a median income well below the county median income level, is the rehabilitated Far East Building. Damaged during a 1994 earthquake, the now-restored building provides 14 affordable housing units, houses the Far East Café—a community institution for decades—and a computer learning center for area residents and members of the community.

In the aggregate, the 10 projects had total costs of $204,696,481, ranging from about $2.2 million to about $85.5 million, with an average cost of $20.5 million.

Of the total project costs, rehabilitation and construction costs were most significant at $134,883,809, (65.9% of total), followed by soft and other costs, $54,344,597 (26.5%), and finally acquisition costs, which were $15,468,075 (7.6%). The sources of total project funds—$204,024,884—came from a variety of sources including $66.8 million in equity, $60.3 million in debt, $53.3 million in other federal, state, and local (non-tax credit) assistance and $23.5 million from other sources.

The lion's share of the $66.8 million of equity came from both federal and state tax credits. The Historic Tax Credits accounted for $47.9 million of the equity, followed by Low Income Housing Tax Credits at $7.0, $5.1 million from the New Markets Tax Credit and $6.8 million from other sources. Six of the ten case studies "twinned" the Historic Tax Credit with either the LIHTC or the NMTC. Tax credit assistance of various types is absolutely crucial for the financing of historic rehabilitation projects.

Taking on debt was the second largest source of funding for these 10 case studies. Of the $60.3 million in debt, $56.7 million was acquired through banks, and $3.6 million through government loans or other sources.

In summary, successful rehabilitation projects are enabled by a layering of sources of funds and various subsidies, anchored by the federal historic and complementary credits.

Exhibit 3.1 Summary of Costs and Funding Sources of Ten Historic Rehabilitation Case Studies			
Profile/Scale			
Project	*Average*	*Total*	*Percent*
Composition of Costs			
Acquisition	$1,546,808	$15,468,075	7.6%
Rehabilitation	$13,488,381	$134,883,809	65.9%
Soft and other costs	$5,434,460	$54,344,597	26.5%
Total Cost	$20,469,648	$204,696,481*	100%
Sources of Funds ($)			
Equity ($)	$6,681,782	$66,817,815	32.7%
HTC (Federal and State)	$4,786,464	$47,864,643	23.5%
LIHTC	$700,834	$7,008,343	3.4%
NMTC	$513,422	$5,134,224	2.5%
Other	$681,061	$6,810,605	3.3%
Debt ($)	$6,030,226	$60,302,262	29.6%
Bank	$5,669,780	$56,697,796	27.8%
Government	$360,447	$3,604,466	1.8%
Other Public ($)	$5,337,452	$53,374,519	26.2%
Other ($)	$2,353,029	$23,530,288	11.5%
Total Funds	$20,402,488	$204,024,884	100%

*Sources do not exactly equal uses due to definitional variations among case study participants.

PROJECT PROFILE

CARPENTER CENTER FOR THE PERFORMING ARTS

ADDRESS	600 East Grace Street Richmond Virginia	**ORIGINAL USE**	Loew's Movie Theater
DATE BUILT	1928	**NEW USE**	Performing arts center, home of the Richmond Symphony, Richmond Ballet, Virginia opera and numerous emerging community arts groups.
REHABILITATION	2004-2009		
DEVELOPER	Center Stage Foundation		

BACKGROUND

Designed by John Eberson as a Loew's Movie Theatre, the Carpenter Theatre first opened its doors in 1928. It showed films until 1979 when it was shuttered due to competition from suburban multiplexes. It remained vacant until 1983 when it was restored and re-opened as the Carpenter Center for the Performing Arts. Despite this relatively recent rehabilitation, the theatre was in shabby condition and its poor acoustics, lobby and amenities were not sufficient to regularly draw repeat customers. Further, its constrained stage size prevented the Carpenter from attracting major touring shows.

The Richmond CenterStage project, a four-venue performing arts complex that includes the original theater building, offered the Carpenter a lift out of mediocrity. In December 2004, the Carpenter was again closed while the CenterStage Foundation began a $25 million renovation and restoration of the theatre. The Carpenter Theatre is now part of an innovative performing arts complex that offers arts patrons a rich and varied arts experience in downtown Richmond.

The Center Stage project also included the construction of a new 80,000 square foot facility, the Dorothy Pauley Square, next to the historic Carpenter. All area arts groups now have the opportunity to use this innovative complex which includes: Rhythm Hall, a multipurpose venue which caters to jazz combos, dance troupes and other arts organizations; Libby Gottwald Community Playhouse, a 200-seat theater used primarily by small, non-profit theater groups and for small musical performances; and, the Genworth Bright Lights Education Center, a performing arts education facility which offers educational workspaces, a visual arts gallery, meeting rooms and offices. The Genworth features outreach programs to area public school students interested in careers in the performing arts, theater management and technology.

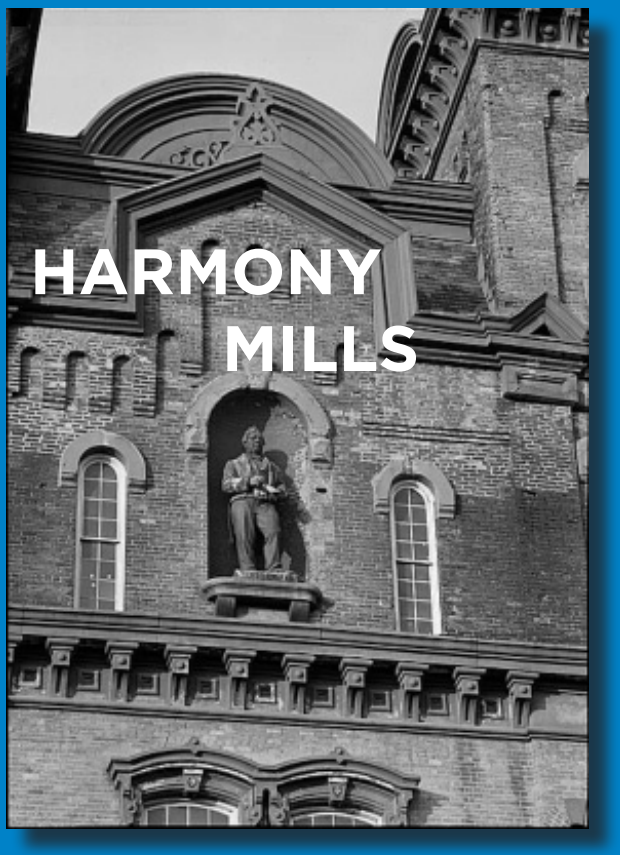
PROJECT FINANCING

Summary of Costs

Rehabilitation and new construction	$60,533,960
Reserves	4,300,950
Soft costs and other	$20,659,954
TOTAL development cost	$85,488,864

Sources of Financing

Grant - Commonwealth of Virginia	$8,500,000
Grant - City of Richmond	$25,000,000
Donations - corporate and individual	$13,700,000
Equity - federal historic tax credit	$8,857,692
Equity – state historic tax credit	$9,000,000
Equity - New Markets Tax Credit	$2,286,375
Other	$18,144,797
TOTAL financing sources	$85,488,864



ADDRESS	100 NORTH MOHAWK ST COHOES, NEW YORK
DATE BUILT	1866-1872
REHABILITATION	2005-2006
DEVELOPER	URI KAUFMAN AND IRA SCHWARTZ
ORIGINAL USE	TEXTILE MILL
NEW USE	LOFT APARTMENTS

BACKGROUND

The Harmony Mills complex was built between 1866 and 1872 in Cohoes, NY, ten miles north of Albany. Upon completion, it was the largest industrial complex in North America and reputed to be the largest textile mill. This National Historic Landmark includes four main mill buildings and several ancillary structures. Mill No. 3 is the largest and most famous of the mill buildings. It is located on a cliff above the Mohawk River, providing the entire east side of the building with dramatic river views. Until recently, Mill No. 3, largely vacant and severely deteriorated, was only partially occupied by light manufacturing, warehouse and other commercial tenants. The current developers acquired the former textile mill in 2000.

Mill No. 3, 192,000 gross square feet in size, has unusually elaborate decorative features. It retains the original grandeur of its ornate corner towers, iron roof cresting and the elegantly detailed fifth story, including a memorial statue to Thomas Garner, company president. It is divided into three separate sections: a northern wing, central tower, and southern wing. This project consisted of the southern wing and the central tower. The top four floors of the south wing have been converted into 96 loft apartments while its basement and ground floor are now 106 indoor parking spaces. The central tower of Mill No. 3 features a leasing office, community space, a health club and a business center. The result is what is being described as “Manhattan-style living on the Mohawk”— high quality one-, two- and three-bedroom loft apartments, complete with original wood floors, high-speed internet access and soaring views of the river.

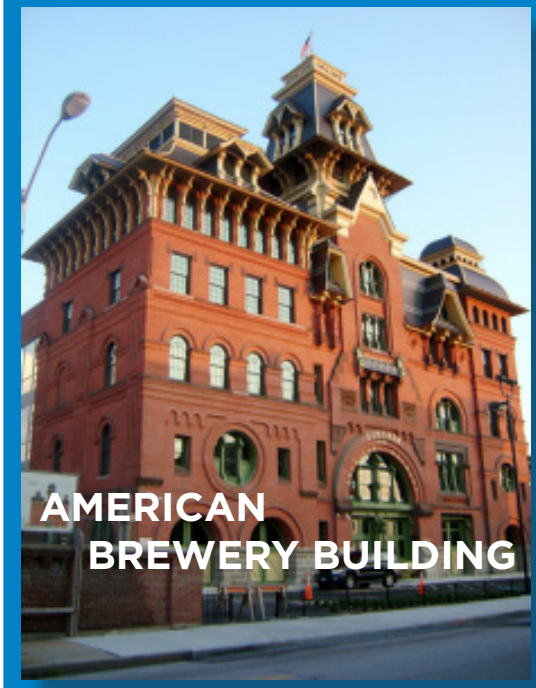
PROJECT FINANCING

Summary of Costs

Acquisition	$1,750,000
Rehabilitation and construction	$11,103,710
Soft costs and other	$5,319,084
TOTAL project cost	$18,172,794

Sources of Financing

Bank loan	$12,125,000
Federal Historic Tax Credit equity	$2,619,621
Building value	$1,750,000
Other equity	$1,017,782
Other	$660,391
TOTAL sources of financing	$18,172,794



ADDRESS	1701 NORTH GAY STREET BALTIMORE, MARYLAND
DATE BUILT	1877
REHABILITATION	2007-2009
DEVELOPER	HUMANIM, INC.
ORIGINAL USE	J.F. WIESSNER & SONS BREWHOUSE
NEW USE	OFFICE AND PROGRAM SPACE FOR NON-PROFIT HUMAN SERVICE PROVIDER

BACKGROUND

The property used in this adaptive reuse was a vacant, five-story, 26,000 gross square foot former beer brewhouse. The building was built in 1877 for the J.F Wiessner & Sons Brewing Co., and was originally one of two dozen buildings in a five-acre brewery complex. The brewery was sold to American Brewing, Inc. in 1933 and continued as a brewery until it was closed in 1973. In 1977 the property was donated to the City of Baltimore. In response to an RFP from the City, Humanim, Struever Brothers, Eccles and Rouse, and Gotham Development were awarded the rights to develop the brewhouse and the adjacent bottling plant in 2005.

The American Brewery Building is located in the Broadway East neighborhood of Baltimore. The Project is approximately two miles northeast of the CBD and three-quarters of a mile north of Johns Hopkins University medical complex. The Broadway East neighborhood is a low-income area of row-houses and small commercial storefronts that suffers from a high degree of abandonment and blight. Roughly half of the properties in the area are vacant or have been demolished.

The Project was developed by Humanim, a 35-year-old non-profit provider of social and human services that has worked in East Baltimore for 20 years. Humanim serves individuals with developmental, emotional, neurological and physical disabilities, including traumatic brain injuries, through vocational, clinical and residential services. Humanim provides services from eight office locations in central, eastern and southern Maryland, including three locations in Baltimore.

PROJECT FINANCING

Summary of Costs

Acquisition	$100,000
Rehabilitation and construction	$14,765,589
Soft costs and other	$7,958,217
TOTAL development cost	$22,823,806

Sources of Financing

New Markets enhanced bank loan	$14,000,000
Corporate and foundation grants	$2,739,643
City of Baltimore grant	$700,000
Historic and New Markets equity	$5,286,913
Other	$97,500
TOTAL sources of financing	$22,823,806

ADDRESS	411 NEBRASKA STREET SIOUX CITY, IA	**ORIGINAL USE**	DEPARTMENT STORE
DATE BUILT	1885	**NEW USE**	RESIDENTIAL APARTMENTS AND COMMERCIAL SPACE
REHABILITATION	1999	**NUMBER OF UNITS**	17

BACKGROUND

Occupying nearly a quarter-block of downtown Sioux City, the former T.S. Martin & Company Department Store is a large, three-story, "L" shaped, masonry building with a flat roof and two prominent storefronts. The main building fronts on 4th Street and is comprised of three buildings dating from 1885. They were given a unifying facade in 1910-11. Stylistically, the main building represents the Prairie School. The adjoining Annex, which fronts Nebraska Street, was constructed in 1901-02 in the Beaux Arts style with a roof-line knee wall, an accentuated cornice with acanthus leaf brackets, and decorative swags.

The new uses of the building includes 17 one- and two-bedroom units of affordable housing on the second and third floors and 12,000 square feet of commercial space on the first floor. All 17 units benefit tenants at or below 60 percent of the area median income for Woodbury County. A community room, elevator, skywalk, and parking complete the adaptive reuse design.

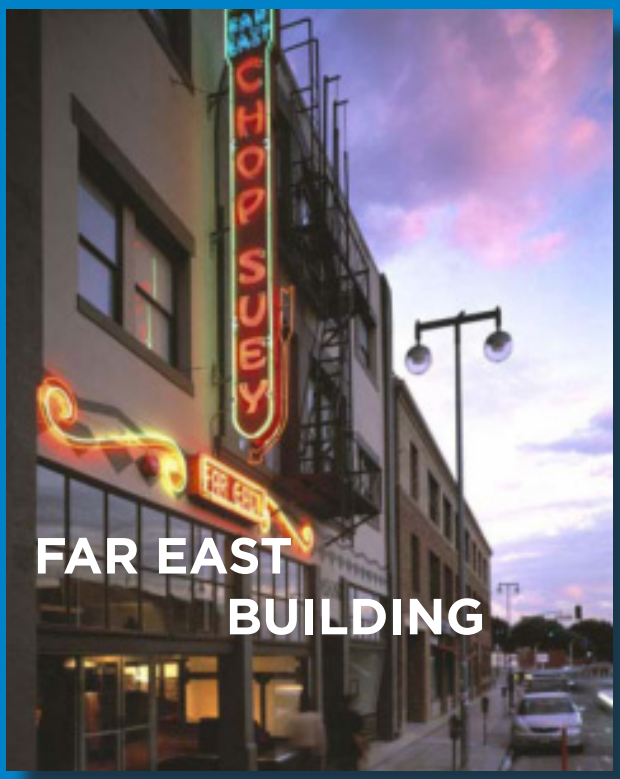
PROJECT FINANCING

Summary of Costs

Acquisition	$ 0
Rehabilitation	$1,830,000
Soft costs	$409,660
TOTAL development cost	$2,239,660
TOTAL per unit cost	$102,463

Sources of Financing

Conventional loan	$511,000
Historic Tax Credit equity	$374,081
Low-Income Housing Tax Credit equity	$769,919
HOME Funds - Sioux City	$150,000
HUD HOME funds	$250,000
Federal Home Loan Bank grant	$100,000
Sioux City grant	$15,000
Other	$69,660
TOTAL sources of financing	$2,239,660



ADDRESS	347-353 E. 1ST STREET LOS ANGELES, CA
DATE BUILT	1890
REHABILITATION	2002-2003
ORIGINAL USE	RESIDENT HOTEL & COMMERCIAL
NEW USE	SAME
TOTAL COST	$3,811,599
NUMBER OF UNITS	16

BACKGROUND

The mission of the Little Tokyo Service Center Community Development Corporation (LTSC CDC) is to contribute to the revitalization of the Little Tokyo community, as a multi-ethnic neighborhood, and as the cultural center for the broader Japanese American community of Southern California. The Far East Building is located in the heart of the Little Tokyo Historic District on First Street. Comprised of mom-and-pop retail stores, restaurants, and residential hotels, this community is very poor and has a median income well below the county median.

Formerly housing 24 single-room-occupancy (SRO) units and two commercial spaces, the three and one-half story Far East Building had been vacant since it suffered significant structural damage during the 1994 Northridge Earthquake. The rehabilitation has restored the existing historic fabric, reinforced the masonry building's structural integrity, and converted the SRO units into 14 studios and 2 one-bedroom units. All of the units are affordable to households earning less than 50 percent of the area median income and 8 units are affordable at 35 percent of area median. The latter 8 units are subsidized by project-based Section 8 rental subsidies to provide housing for homeless persons. The famous Far East Cafe on the ground floor has been a community institution for decades. It has been restored and brought back to life as a new restaurant, which has created jobs and helped stimulate the local neighborhood economy. A second ground-floor commercial space is the new home for LTSC's DISKovery Computer Learning Center, providing technology access to Far East and area residents.

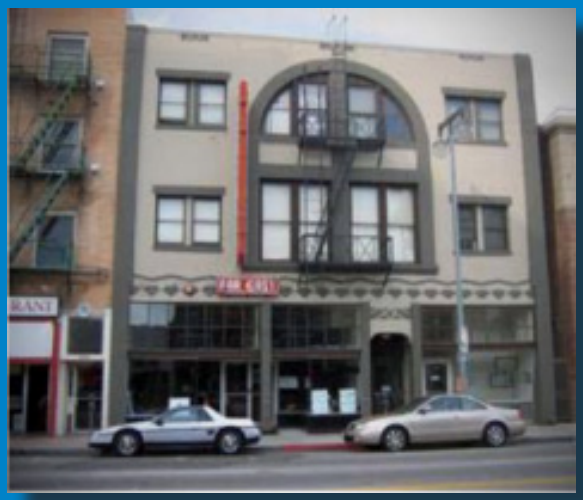
On-site supportive services are provided by LTSC CDC and its parent social service organization, Little Tokyo Service Center. Services provided include job development, computer training, case management, and emergency food and clothing distribution.

PROJECT FINANCING

Summary of Costs

Acquisition*	$ 60,993
Rehabilitation	$2,780,105
Soft costs	$ 970,501
TOTAL development cost	$3,811,599
TOTAL per unit cost	$ 183,438

*Building was donated in exchange for CDC paying closing and holding costs and back taxes.



Sources of Financing

Los Angeles Housing Department	$525,000
Los Angeles Mayor's Office of Economic Development	$400,000
CA Dept. of Housing and Community Development	$515,380
Housing Authority of the County of Los Angeles	$288,086
California Housing Finance Agency (CHFA)	$160,000
Valley Economic Development Center	$240,000
Low Income Housing Tax Credit (4 percent)	$731,335
Historic Tax Credit	$600,309
Federal Home Loan Bank grant	$80,000
HUD Supportive Housing Program	$250,000
Capital campaign by LTS CDC	$ 21,489
TOTAL financing sources	$3,811,599

ADDRESS	2031 ST. CHARLES AVE NEW ORELANS, LA
DATE BUILT	1927
REHABILITATION	2009
ORIGINAL USE	HOTEL
NEW USE	SERVICE ENRICHED SENIOR HOUSING
NUMBER OF UNITS	84

BACKGROUND

The iconic, 12-story, 92,000 gross square foot Pontchartrain Hotel was the tallest commercial building in New Orleans when it was built in 1927. Over the years, it has been used as both an apartment building and hotel. The former ground-floor Bayou Bar and Caribbean Room restaurant contained murals by a significant local artist and had been popular landmarks since WWII.

The hotel was acquired by the current owners in 1987 and operated as a hotel until 2007. Although the property experienced some flooding during Hurricane Katrina, it was the following months of dampness, lack of utilities, and vandalism that caused the extensive interior deterioration of the building. The interior demolition and abatement were completed prior to closing, and full-scale rehabilitation began upon closing in September 2008.

The building has been converted into service-enriched housing for seniors, some of whom have been displaced by Hurricane Katrina or are unable to move into appropriate housing because of damage to other senior facilities in the area. There are 15 studio units, 63 one-bedroom units and 6 two-bedroom units. Services include three meals per day, recreational activities, scheduled transportation, housekeeping, laundry, emergency response throughout the building and a wellness program. The facility is operated by an affiliate of the developer and is associated with Touro Infirmary, a 150-year old non-profit hospital and healthcare provider located about 10 blocks away in the Garden District.

PROJECT FINANCING

Summary of Costs

Acquisition	$ 4,800,000
Rehabilitation	$8,390,046
Soft costs	$7,322,257
TOTAL development cost	$20,512,333
TOTAL per unit cost	$244,194

Sources of Financing

Bank loan	$8,423,796
Federal HTC equity	$2,763,887
State HTC equity	$2,423,941
NMTC equity	$2,847,849
Other equity	$1,934,824
Other	$2,118,036
TOTAL sources of financing	$20,512,333

ADDRESS	500 SW FIFTH AVE PORTLAND, OR
DATE BUILT **REHABILITATION**	1906 2007-2009
ORIGINAL USE	OFFICE BUILDING
NEW USE	OFFICE SUITES WITH RETAIL SPACE ON 1ST FLOOR

BACKGROUND

The project consists of a 7-story, plus basement, 41,283 gross square foot, L-shaped, former office building, constructed in 1906, of reinforced concrete with brick exterior and a flat roof. The building is situated on a 5,100 sf rectangular-shaped, corner parcel on the southeast corner of SW Fifth Avenue and Washington Street in Portland, with the entrance to the main lobby on SW Fifth Avenue. The building had been vacant since the early 2000s. It was listed on the National Register on April 24, 2007.

The developer has reconfigured the ground floor for an entrance lobby, with one office/retail space to be occupied by E-Trade. Each of the upper 6 floors has been redesigned for one office suite of approximately 4,800 sf. The basement contains a common area that includes a lounge-meeting room and storage space of approximately 200 sf for each of the 6 upper floors. There are two elevators serving each of the 7 floors and an interior stairway which provides access to all floors and the roof.

The building was in fair condition prior to rehabilitation. The most significant structural work included: replacement of all HVAC and mechanical, electrical, and plumbing systems; seismic retro-fit; new telecommunications (TI/cable accessible); updated compliance with fire and ADA requirements; repair of exterior brick at the top of the building damaged due to water penetration; and repair and waterproofing of the top of the parapet walls. Repair and/or replacement of interior historic elements included: restoration of historic trim and details in ground floor lobby and upper floor interior lobbies.

PROJECT FINANCING

Summary of Costs

Acquisition	$1,821,982
Rehabilitation	$6,463,302
Soft costs	$4,137,859
TOTAL development cost	$12,423,143

Sources of Financing

Bank loan	$6,700,000
Federal HTC equity	$1,967,109
Other equity	$2,107,999
Other	$1,648,035
TOTAL sources of financing	$12,423,143

CANTON MILL LOFTS

ADDRESS	200 RIVERSTONE PKWY CANTON, GA	**ORIGINAL USE** **NEW USE**	TEXTILE MILL MARKET RATE APARTMENTS
DATE BUILT	1924	**BUILDING AREA**	390,000 SQ.FT.
REHABILITATION	2000	**NUMBER OF UNITS**	315

BACKGROUND

The Canton Mill, located north of Atlanta, has been a Canton,GA landmark since it was built in 1924. At one time, the textile mill fabricated high-quality denim from raw cotton and was a major area employer. The mill was closed in the early 1980s, but was revived 20 years later as an attractive loft apartment complex. Careful attention was given to the structure to preserve and recreate the historic appearance of the mill, including the removal of non-historic additions. To help maintain the “mill look,” interior spaces showcase the mill structure by exposing original elements such as wood columns and beams.

The mill buildings contain dynamic one- and two-story units with a mix of one- and two-bedroom layouts. The complex includes a total of 315 apartments along with modern amenities such as a pool, workout facility, landscaped courtyard, outdoor recreation areas, overlook roof decks, and a museum-like three-story lobby highlighting the history of the mill, complete with artifacts.

PROJECT FINANCING

Summary of Costs

Acquisition	$1,500,000
Rehabilitation	$20,300,000
Soft costs	$5,500,000
TOTAL development cost	$27,300,000
TOTAL per unit cost	$87,300

Sources of Financing

Bank loan	$15,500,000
HTC equity	$11,800,000
TOTAL sources of financing	$27,300,000

ADDRESS	1800-1802 JEFFERSON ST TWO RIVERS, WI
DATE BUILT **REHABILITATION**	1909 2001
ORIGINAL USE	ELEMENTARY SCHOOL
NEW USE	32 UNITS OF AFFORDABLE SENIOR HOUSING
BUILDING AREA	24,000 SQ.FT.
NUMBER OF UNITS	32

BACKGROUND

Marquette Manor, originally built in 1909, was the former St. Luke's Catholic Elementary School. The property was renovated by MetroPlains Development LLC into a 32-unit apartment complex for senior citizens in Two Rivers, Wisconsin. Marketed and financed as affordable housing, seniors have the opportunity to live in apartments that have retained many of their original historical features including large windows, antique storage lockers, original chalkboards, and pressed metal ceilings. The one- and two-bedroom units range in size from 482 to 800 square feet. Tenants are encouraged to use the shared community room that has also retained its original historic look.

PROJECT FINANCING

Summary of Costs

Acquisition	$85,000
Rehabilitation	$2,671,931
Soft costs	$652,654
TOTAL development cost	$3,409,585
TOTAL per unit cost	$106,550

Sources of Financing

Bank loan	$366,000
State HTC equity	$92,704
Federal HTC equity	$575,404
LIHTC	$1,668,564
HOME funds	$220,000
CDBG	$300,000
Tax increment financing	$165,000
Other financing	$21,913
TOTAL financing sources	$3,409,585

COTTON MILLS APARTMENTS

ADDRESS	310 WASHINGTON STREET CANNELTON, IN
DATE BUILT	1849-1851
REHABILITATION	2001
ORIGINAL USE	COTTON MILL MANUFACTURING
NEW USE	AFFORDABLE HOUSING
BUILDING AREA	78,310 SQ.FT.
NUMBER OF UNITS	70

BACKGROUND

This project involved the rehabilitation of the former Indiana Cotton Mill, a National Historic Landmark, located in Cannelton, Indiana. The four-story structure with a full attic was constructed between 1847 and 1851. The mill operated continuously until its closing in 1954. Essentially, the building had been vacant since its closing. The Romanesque Revival style structure is constructed of native sandstone and contains approximately 80,000 square feet on its four lower floor levels. Its most prominent features are twin 100 foot-tall towers flanking the main entrance on its south façade. The rehabilitation project utilized Low Income Housing Tax Credits, HOME funds, state and federal HTCs, and Hometown Indiana Historic Preservation grant funds to convert the former mill building into 70 affordable housing units.

PROJECT FINANCING

Summary of Costs

Acquisition	$550,100
Rehabilitation	$6,045,166
Soft costs	$1,531,271
TOTAL development cost	$8,126,537
TOTAL per unit cost	$116,093

Sources of Financing

Bank loan	$530,000
Trust Fund loan	$500,000
Federal HTC equity	$1,402,982
LIHTC	$3,838,525
State HTC equity	$100,000
HOME funds	$320,000
Federal Home Loan Bank Grant	$300,000
Hometown Indiana Grant	$97,626
Community Foundation Grant	$85,000
Save America's Treasures Grant	$250,000
Deferred developer fee	$702,404
TOTAL development sources	$8,126,537

APPENDIX A

APPENDIX A
INPUT-OUTPUT ANALYSIS: TECHNICAL NOTES

This appendix discusses the history and application of input-output analysis and details the input-output model, called the R/Econ™ I-O model, developed by Rutgers University and used in the current investigation on the federal historic tax credits. This model offers significant advantages in detailing the total economic effects of an activity (such as historic rehabilitation and heritage tourism), including multiplier effects.

Estimating Multipliers

The fundamental issue determining the size of the multiplier effect is the "openness" of regional economies. Regions that are more "open" are those that import their required inputs from other regions. Imports can be thought of as substitutes for local production. Thus, the more a region depends on imported goods and services instead of its own production, the more economic activity leaks away from the local economy. Businessmen noted this phenomenon and formed local chambers of commerce with the explicit goal of stopping such leakage by instituting a "buy local" policy among their membership. In addition, during the 1970s, as an import invasion was under way, businessmen and union leaders announced a "buy American" policy in the hope of regaining ground lost to international economic competition. Therefore, one of the main goals of regional economic multiplier research has been to discover better ways to estimate the leakage of purchases out of a region, a measure of the region's self-sufficiency.

The earliest attempts to systematize the procedure for estimating multiplier effects used the economic base model, still in use in many econometric models today. This approach assumes that all economic activities in a region can be divided into two categories: "basic" activities that produce exclusively for export, and region-serving or "local" activities that produce strictly for internal regional consumption. Since this approach is simpler but similar to the approach used by regional input-output analysis, a brief explanation of how multiplier effects are estimated using the economic base approach is provided below. If we let x be export employment, l be local employment, and t be total employment, then

$$t = x + 1$$

For simplification, we create the ratio a as

$$a = \frac{l}{t}$$

so that $l = at$

then substituting into the first equation, we obtain $t = x + at$

By bringing all of the terms with t to one side of the equation, we get

$$t - at = x \text{ or } t(1 - a) = x$$

Solving for t, we get $t = x/(1 - a)$

Thus, if we know the amount of export-oriented employment, x, and the ratio of local to total employment, a, we can readily calculate total employment by applying the economic base multiplier, 1/(1-a), which is embedded in the above formula. Thus, if 40 percent of all regional employment is used to produce exports, the regional multiplier would be 2.5. The assumption behind this multiplier is that all remaining regional employment is required to support the export employment. Thus, the 2.5 can be decomposed into two parts the direct effect of the exports, which is always 1.0, and the indirect and induced effects, which is the remainder—in this case 1.5. Hence, the multiplier can be read as telling us that for each export-oriented job another 1.5 jobs are needed to support it.

$\Delta t = \Delta x/(1 - a)$

This notion of the multiplier has been extended so that x is understood to represent an economic change demanded by an organization or institution outside of an economy—so-called final demand. Such changes can be those affected by government, households, or even by an outside firm. Changes in the economy can therefore be calculated by a minor alteration in the multiplier formula:

The high level of industry aggregation and the rigidity of the economic assumptions that permit the application of the economic base multiplier have caused this approach to be subject to extensive criticism. Most of the discussion has focused on the estimation of the parameter a. Estimating this parameter requires that one be able to distinguish those parts of the economy that produce for local consumption from those that do not. Indeed, virtually all industries, even services, sell to customers both inside and outside the region. As a result, regional economists devised an approach by which to measure the degree to which each industry is involved in the nonbase activities of the region, better known as the industry's regional purchase coefficient. Thus, they expanded the above formulations by calculating for each I industry

$$l_i = r_1 d_1$$

and

$$x_1 = t_1 - r_1 d_i$$

given that di is the total regional demand for industry i's product. Given the above formulae and data on regional demands by industry, one can calculate an accurate traditional aggregate economic base parameter by the following:

$$a = l/t = \Sigma l_{ii}/\Sigma t_i$$

Although accurate, this approach only facilitates the calculation of an aggregate multiplier for the entire region. That is, we cannot determine from this approach what the effects are on the various sectors of an economy. This is despite the fact that one must painstakingly calculate the regional demand as well as the degree to which they each industry is involved in nonbase activity in the region.

As a result, a different approach to multiplier estimation that takes advantage of the detailed demand and trade data was developed. This approach is called input-output analysis.

A Brief History Of Input-Output Analysis

The basic framework for input-output analysis originated nearly 250 years ago when François Quesenay published Tableau Economique in 1758. Quesenay's "tableau" graphically and numerically portrayed the relationships between sales and purchases of the various industries of an economy. More than a century later, his description was adapted by a fellow Frenchman, Léon Walras, who advanced input-output modeling by providing a concise theoretical formulation of an economic system (including consumer purchases and the economic representation of "technology").

It was not until the twentieth century, however, that economists advanced and tested Walras's work. Wassily Leontief greatly simplified Walras's theoretical formulation by applying the Nobel prize–winning assumptions that both technology and trading patterns were fixed over time. These two assumptions meant that the pattern of flows among industries in an area could be considered stable. These assumptions permitted Walras's formulation to use data from a single time period, which generated a great reduction in data requirements.

Although Leontief won the Nobel Prize in 1973, he first used his approach in 1936 when he developed a model of the 1919 and 1929 U.S. economies to estimate the effects of the end of World War I on national employment. Recognition of his work in terms of its wider acceptance and use meant development of a standardized procedure for compiling the requisite data (today's national economic census of industries) and enhanced capability for calculations (i.e., the computer).

The federal government immediately recognized the importance of Leontief's development and has been publishing input-output tables of the U.S. economy since 1939. The most recently published tables are those for 1987. Other nations followed suit. Indeed, the United Nations maintains a bank of tables from most member nations with a uniform accounting scheme.

Framework Of Analysis

Input-output modeling focuses on the interrelationships of sales and purchases among sectors of the economy. Input-output is best understood through its most basic form, the interindustry transactions table or matrix. In this table (see Exhibit A.1 for an example), the column industries are consuming sectors (or markets) and the row industries are producing sectors. The content of a matrix cell is the value of shipments that the row industry delivers to the column industry. Conversely, it is the value of shipments that the column industry receives from the row industry. Hence, the interindustry transactions table is a detailed accounting of the disposition of the value of shipments in an economy. Indeed, the detailed accounting of the interindustry transactions at the national level is performed not so much to facilitate calculation of national economic impacts as it is to back out an estimate of the nation's gross domestic product.

EXHIBIT A.1
Direct Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	.10	.33	.08	.02
Manufacturing	.40	.13	.29	.33
Services	.15	.03	.04	.02
Other	.15	.05	.42	.22

Next in the process of producing input-output multipliers, the Leontief Inverse is calculated. To explain what the Leontief Inverse is, let us temporarily turn to equations. Now, from Exhibit A.1 we know that the sum across both the rows of the square interindustry transactions matrix (Z) and the final demand vector (y) is equal to vector of production by industry (x). That is,

$$x = Zi + y$$

where i is a summation vector of ones. Now, we calculate the direct requirements matrix (A) by dividing the interindustry transactions matrix by the production vector or

$$A = ZX\text{-}1$$

where X-1 is a square matrix with inverse of each element in the vector x on the diagonal and the rest of the elements equal to zero. Rearranging the above equation yields

$$Z = AX$$

where X is a square matrix with the elements of the vector x on the diagonal and zeros elsewhere. Thus,

$$x = (AX)i + y$$

or, alternatively,

$$x = Ax + y$$

solving this equation for x yields

$$x = (I-A)^{-1} y$$

Total Output	=	Total Requirements	*	Final Demand

The Leontief Inverse is the matrix (I-A)-1. It portrays the relationships between final demand and production. This set of relationships is exactly what is needed to identify the economic impacts of an event external to an economy.

Because it does translate the direct economic effects of an event into the total economic effects on the modeled economy, the Leontief Inverse is also called the total requirements matrix. The total requirements matrix resulting from the direct requirements matrix in the example is shown in Exhibit A.3.

EXHIBIT A.3
Total Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	1.5	.6	.4	.3
Manufacturing	1.0	1.6	.9	.7
Services	.3	.1	1.2	.1
Other	.5	.3	.8	1.4
Industry Multipliers	.33	2.6	3.3	2.5

In the direct or technical requirements matrix in Exhibit A.2, the technical coefficient for the manufacturing sector's purchase from the agricultural sector was .33, indicating the 33 cents of agricultural products must be directly purchased to produce a dollar's worth of manufacturing products. The same "cell" in Exhibit A.3 has a value of .6. This indicates that for every dollar's worth of product that manufacturing ships out of the economy (i.e., to the government or for export), agriculture will end up increasing its production by 60 cents. The sum of each column in the total requirements matrix is the *output multiplier* for that industry.

Multipliers

A *multiplier* is defined as the system of economic transactions that follow a disturbance in an economy. Any economic disturbance affects an economy in the same way as does a drop of water in a still pond. It creates a large primary "ripple" by causing a direct change in the purchasing patterns of affected firms and institutions. The suppliers of the affected firms and institutions must change their purchasing patterns to meet the demands placed upon them by the firms originally affected by the economic disturbance, thereby creating a smaller secondary "ripple." In turn, those who meet the needs of the suppliers must change their purchasing patterns to meet the demands placed upon them by the suppliers of the original firms, and so on; thus, a number of subsequent "ripples" are created in the economy.

The multiplier effect has three components—direct, indirect, and induced effects. Because of the pond analogy, it is also sometimes referred to as the *ripple effect*.

- A *direct effect* (the initial drop causing the ripple effects) is the change in purchases due to a change in economic activity.

- An *indirect effect* is the change in the purchases of suppliers to those economic ac tivities directly experiencing change.

- An *induced effect* is the change in consumer spending that is generated by changes in labor income within the region as a result of the direct and indirect effects of the economic activity. Including households as a column and row in the interindustry ma trix allows this effect to be captured.

EXHIBIT A.3
Total Requirements Matrix

Extending the Leontief Inverse to pertain not only to relationships between **total** production and final demand of the economy but also to **changes** in each permits its multipliers to be applied to many types of economic impacts. Indeed, in impact analysis the Leontief Inverse lends itself to the drop-in-a-pond analogy discussed earlier. This is because the Leontief Inverse multiplied by a change in final demand can be estimated by a power series. That is,

$$(I\text{-}A)\text{-}1\ \Delta y = \Delta y + A\ \Delta y + A(A\ \Delta y) + A(A(A\ \Delta y)) + A(A(A(A\ \Delta y))) + \ldots$$

Assuming that Δy—the change in final demand—is the "drop in the pond," then succeeding terms are the ripples. Each "ripple" term is calculated as the previous "pond disturbance" multiplied by the direct requirements matrix. Thus, since each element in the direct requirements matrix is less than one, each ripple term is smaller than its predecessor. Indeed, it has been shown that after calculating about seven of these ripple terms that the power series approximation of impacts very closely estimates those produced by the Leontief Inverse directly.

In impacts analysis practice, Δy is a single column of expenditures with the same number of elements as there are rows or columns in the direct or technical requirements matrix. This set of elements is called an *impact vector*. This term is used because it is the vector of numbers that is used to estimate the *economic impacts* of the investment.

There are two types of changes in investments, and consequently economic impacts, generally associated with projects—o*ne-time impacts* and *recurring impacts*. One-time impacts are impacts that are attributable to an expenditure that occurs once over a limited period of time. For example, the impacts resulting from the construction of a project are one-time impacts. Recurring impacts are impacts that continue permanently as a result of new or expanded ongoing expenditures. The ongoing operation of a new train station, for example, generates recurring impacts to the economy. Examples of changes in economic activity are investments in the preservation of old homes, tourist expenditures, or the expenditures required to run a

historical site. Such activities are considered changes in final demand and can be either positive or negative. When the activity is not made in an industry, it is generally not well represented by the input-output model. Nonetheless, the activity can be represented by a special set of elements that are similar to a column of the transactions matrix. This set of elements is called an economic disturbance or impact vector. The latter term is used because it is the vector of numbers that is used to estimate the impacts. In this study, the impact vector is estimated by multiplying one or more economic *translators* by a dollar figure that represents an investment in one or more projects. The term translator is derived from the fact that such a vector **translates** a dollar amount of an activity into its constituent purchases by industry.

One example of an industry multiplier is shown in Exhibit A.4. In this example, the activity is the preservation of a historic home. The direct impact component consists of purchases made specifically for the construction project from the producing industries. The indirect impact component consists of expenditures made by producing industries to support the purchases made for this project. Finally, the induced impact component focuses on the expenditures made by workers involved in the activity on-site and in the supplying industries.

EXHIBIT A.4
Components of the Multiplier for the Historic Rehabilitation of a Single-Family Residence

DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT
Excavation/Construction Labor Concrete Wood Bricks Equipment Finance and Insurance	Production Labor Steel Fabrication Concrete Mixing Factory and Office Expenses Equipment Components	Expenditures by wage earners on-site and in the supplying industries for food, clothing, durable goods, entertainment

Regional Input-Output Analysis

Because of data limitations, regional input-output analysis has some considerations beyond those for the nation. The main considerations concern the depiction of regional technology and the adjustment of the technology to account for interregional trade by industry.

In the regional setting, local technology matrices are not readily available. An accurate region-specific technology matrix requires a survey of a representative sample of organizations for each industry to be depicted in the model. Such surveys are extremely expensive. Because of the expense, regional analysts have tended to use national technology as a surrogate for regional technology. This substitution does not affect the accuracy of the model as long as local industry technology does not vary widely from the nation's average[13].

[13] Only recently have researchers studied the validity of this assumption. They have found that large urban areas may have technology in some manufacturing industries that differs in a statistically significant way from the national average. As will be discussed in a subsequent paragraph, such differences may be unimportant after accounting for trade patterns.

Even when local technology varies widely from the nation's average for one or more industries, model accuracy may not be affected much. This is because interregional trade may mitigate the error that would be induced by the technology. That is, in estimating economic impacts via a regional input-output model, national technology must be regionalized by a vector of regional purchase coefficients[14], *r*, in the following manner:

$$(I-rA)\text{-}1\ r \bullet \Delta y$$
$$or$$
$$r \bullet \Delta y + rA\,(r \bullet \Delta y) + rA(rA\,(r \bullet \Delta y)) + rA(rA(rA\,(r \bullet \Delta y))) + \ldots$$

where the vector-matrix product rA is an estimate of the region's direct requirements matrix. Thus, if national technology coefficients—which vary widely from their local equivalents—are multiplied by small RPCs, the error transferred to the direct requirements matrices will be relatively small. Indeed, since most manufacturing industries have small RPCs and since technology differences tend to arise due to substitution in the use of manufactured goods, technology differences have generally been found to be minor source error in economic impact measurement. Instead, RPCs and their measurement error due to industry aggregation have been the focus of research on regional input-output model accuracy.

Comparing Regional Economic Impact Models

In the United States there are three major vendors of regional input-output models. They are U.S. Bureau of Economic Analysis's (BEA) RIMS II multipliers, Minnesota IMPLAN Group Inc.'s (MIG) IMPLAN Pro model, and Rutgers University's own R/Econ™ I–O model. Rutgers University has had the privilege of using them all. (R/Econ™ I–O builds from the PC I–O model produced by the Regional Science Research Corporation's (RSRC).)

Although the three systems have important similarities, there are also significant differences that should be considered before deciding which system to use in a particular study. This document compares the features of the three systems. Further discussion can be found in Brucker, Hastings, and Latham's article in the Summer 1987 issue of The Review of Regional Studies entitled "Regional Input-Output Analysis: A Comparison of Five Ready-Made Model Systems." Since that date, Rutgers University and MIG have added a significant number of new features to PC I–O (now, R/Econ™ I–O) and IMPLAN, respectively.

Model Accuracy

RIMS II, IMPLAN, and RECON™ I–O all employ input-output (I–O) models for estimating impacts. All three regionalized the U.S. national I–O technology coefficients table at the highest levels of disaggregation (more than 500 industries). Since aggregation of sectors has been shown to be an important source of error in the calculation of impact multipliers, the retention of maximum industrial detail in these regional systems is a positive feature that they share. The systems diverge in their regionalization approaches, however. The difference is in the manner that they estimate regional purchase coefficients (RPCs), which are used to regionalize the technology matrix. An RPC is the proportion of the region's demand for a good or service that is fulfilled by the region's own producers rather than by imports from producers in other areas. Thus, it expresses the proportion of the purchases of the good or service

[14] A regional purchase coefficient (RPC) for an industry is the proportion of the region's demand for a good or service that is fulfilled by local production. Thus, each industry's RPC varies between zero (0) and one (1), with one implying that all local demand is fulfilled by local suppliers. As a general rule, agriculture, mining, and manufacturing industries tend to have low RPCs, and both service and construction industries tend to have high RPCs.

that do not leak out of the region, but rather feed back to its economy, with corresponding multiplier effects. Thus, the accuracy of the RPC is crucial to the accuracy of a regional I–O model, since the regional multiplier effects of a sector vary directly with its RPC.

The techniques for estimating the RPCs used by Rutgers University and MIG in their models are theoretically more appealing than the location quotient (LQ) approach used in RIMS II. This is because the former two allow for crosshauling of a good or service among regions and the latter does not. Since crosshauling of the same general class of goods or services among regions is quite common, the Rutgers University-MIG approach should provide better estimates of regional imports and exports. Statistical results reported in Stevens, Treyz, and Lahr (1989) confirm that LQ methods tend to overestimate RPCs. By extension, inaccurate RPCs may lead to inaccurately estimated impact estimates.

Further, the estimating equation used by Rutgers University to produce RPCs should be more accurate than that used by MIG. The difference between the two approaches is that MIG estimates RPCs at a more aggregated level (two-digit SICs, or about 86 industries) and applies them at a desegregate level (over 500 industries). Rutgers University both estimates and applies the RPCs at the most detailed industry level. The application of aggregate RPCs can induce as much as 50 percent error in impact estimates (Lahr and Stevens, 2002).

Although both RECON™ I–O and IMPLAN use an RPC-estimating technique that is theoretically sound and update it using the most recent economic data, some practitioners question their accuracy. The reasons for doing so are three-fold. First, the observations currently used to estimate their implemented RPCs are based on 20-years old trade relationships—the Commodity Transportation Survey (CTS) from the 1977 Census of Transportation. Second, the CTS observations are at the state level. Therefore, RPC's estimated for sub-state areas are extrapolated. Hence, there is the potential that RPCs for counties and metropolitan areas are not as accurate as might be expected. Third, the observed CTS RPCs are only for shipments of goods. The interstate provision of services is unmeasured by the CTS. IMPLAN replies on relationships from the 1977 U.S. Multiregional Input-Output Model that are not clearly documented. RECON™ I–O relies on the same econometric relationships that it does for manufacturing industries but employs expert judgment to construct weight/value ratios (a critical variable in the RPC-estimating equation) for the nonmanufacturing industries.

The fact that BEA creates the RIMS II multipliers gives it the advantage of being constructed from the full set of the most recent regional earnings data available. BEA is the main federal government purveyor of employment and earnings data by detailed industry. It therefore has access to the fully disclosed and disaggregated versions of these data. The other two model systems rely on older data from County Business Patterns and Bureau of Labor Statistic's ES202 forms, which have been "improved" by filling-in for any industries that have disclosure problems (this occurs when three or fewer firms exist in an industry or a region).

Model Flexibility

For the typical user, the most apparent differences among the three modeling systems are the level of flexibility they enable and the type of results that they yield. R/Econ™ I–O allows the user to make changes in individual cells of the 515-by-515 technology matrix as well as

in the 11 515-sector vectors of region-specific data that are used to produce the regionalized model. The 11 sectors are: output, demand, employment per unit output, labor income per unit output, total value added per unit of output, taxes per unit of output (state and local), nontax value added per unit output, administrative and auxiliary output per unit output, household consumption per unit of labor income, and the RPCs. Te PC I–O model tends to be simple to use. Its User's Guide is straightforward and concise, providing instruction about the proper implementation of the model as well as the interpretation of the model's results.

The software for IMPLAN Pro is Windows-based, and its User's Guide is more formalized. Of the three modeling systems, it is the most user-friendly. The Windows orientation has enabled MIG to provide many more options in IMPLAN without increasing the complexity of use. Like R/Econ™ I–O, IMPLAN's regional data on RPCs, output, labor compensation, industry average margins, and employment can be revised. It does not have complete information on tax revenues other than those from indirect business taxes (excise and sales taxes), and those cannot be altered. Also like R/Econ™, IMPLAN allows users to modify the cells of the 538-by-538 technology matrix. It also permits the user to change and apply price deflators so that dollar figures can be updated from the default year, which may be as many as four years prior to the current year. The plethora of options, which are advantageous to the advanced user, can be extremely confusing to the novice. Although default values are provided for most of the options, the accompanying documentation does not clearly point out which items should get the most attention
Further, the calculations needed to make any requisite changes can be more complex than those needed for the R/Econ™ I–O model. Much of the documentation for the model dwells on technical issues regarding the guts of the model. For example, while one can aggregate the 538-sector impacts to the one- and two-digit SIC level, the current documentation does not discuss that possibility. Instead, the user is advised by the Users Guide to produce an aggregate model to achieve this end. Such a model, as was discussed earlier, is likely to be error ridden.

For a region, RIMS II typically delivers a set of 38-by-471 tables of multipliers for output, earnings, and employment; supplementary multipliers for taxes are available at additional cost. Although the model's documentation is generally excellent, use of RIMS II alone will not provide proper estimates of a region's economic impacts from a change in regional demand. This is because no RPC estimates are supplied with the model. For example, in order to estimate the impacts of rehabilitation, one not only needs to be able to convert the engineering cost estimates into demands for labor as well as for materials and services by industry, but must also be able to estimate the percentage of the labor income, materials, and services which will be provided by the region's households and industries (the RPCs for the demanded goods and services). In most cases, such percentages are difficult to ascertain; however, they are provided in the R/Econ™ I–O and IMPLAN models with simple triggering of an option. This model ought not to be used for evaluating any project or event where superior data are available or where the evaluation is for a change in regional demand (a construction project or an event) as opposed to a change in regional supply (the operation of a new establishment).

Model Results

Detailed total economic impacts for about 500 industries can be calculated for jobs, labor

income, and output from R/Econ™ I–O and IMPLAN only. These two modeling systems can also provide total impacts as well as impacts at the one- and two-digit industry levels. RIMS II provides total impacts and impacts on only 38 industries for these same three measures. Only the manual for R/Econ™ I–O warns about the problems of interpreting and comparing multipliers and any measures of output, also known as the value of shipments.

As an alternative to the conventional measures and their multipliers, R/Econ™ I–O and IMPLAN provide results on a measure known as "value added." It is the region's contribution to the nation's gross domestic product (GDP) and consists of labor income, nonmonetary labor compensation, proprietors' income, profit-type income, dividends, interest, rents, capital consumption allowances, and taxes paid. It is, thus, the region's production of wealth and is the single best economic measure of the total economic impacts of an economic disturbance.

In addition to impacts in terms of jobs, employee compensation, output, and value added, IMPLAN provides information on impacts in terms of personal income, proprietor income, other property-type income, and indirect business taxes. R/Econ™ I–O breaks out impacts into taxes collected by the local, state, and federal governments. It also provides the jobs impacts in terms of either about 90 or 400 occupations at the request of the user. It goes a step further by also providing a return-on-investment-type multiplier measure, which compares the total impacts on all of the main measures to the total original expenditure that caused the impacts. Although these latter can be readily calculated by the user using results of the other two modeling systems, they are rarely used in impact analysis despite their obvious value.

Because the CTS data are at the state level only, it is important for the purposes of this study that the local industry demand, the supply/demand ratio, and the region's size in square miles are included in the equation. They allow the equation to extrapolate the estimation of RPCs for areas smaller than states. It should also be noted here that the CTS data only cover manufactured goods. Thus, although calculated effectively making them equal to unity via the above equation, RPC estimates for services drop on the weight/value ratios. A very high weight/value ratio like this forces the industry to meet this demand through local production. Hence, it is no surprise that a region's RPC for this sector is often very high (0.89). Similarly, hotels and motels tend to be used by visitors from outside the area. Thus, a weight/value ratio on the order of that for industry production would be expected. Hence, an RPC for this sector is often about 0.25.

The accuracy of Rutgers University's estimating approach is exemplified best by this last example. Ordinary location quotient approaches would show hotel and motel services serving local residents. Similarly, IMPLAN RPCs are built from data that combine this industry with eating and drinking establishments (among others). The results of such an aggregation process are an RPC that represents neither industry (a value of about 0.50) but which is applied to both. In the end, not only is Rutgers University's RPC-estimating approach the most sound, but it is also widely acknowledged by researchers in the field as being state of the art.

Advantages And Limitations Of Input-Output Analysis

Input-output modeling is one of the most accepted means for estimating economic impacts.

This is because it provides a concise and accurate means for articulating the interrelationships among industries. The models can be quite detailed. For example, the current U.S. model currently has more than 500 industries representing many six-digit North American Industrial Classification System (NAICS) codes. The Rutgers University model used in this study has 517 sectors. Further, the industry detail of input-output models provides not only a consistent and systematic approach but also more accurately assesses multiplier effects of changes in economic activity. Research has shown that results from more aggregated economic models can have as much as 50 percent error inherent in them. Such large errors are generally attributed to poor estimation of regional trade flows resulting from the aggregation process.

Input-output models also can be set up to capture the flows among economic regions. For example, the model used in this study can calculate impacts for a county as well as the total Ohio state economy.

The limitations of input-output modeling should also be recognized. The approach makes several key assumptions. First, the input-output model approach assumes that there are no economies of scale to production in an industry; that is, the proportion of inputs used in an industry's production process does not change regardless of the level of production. This assumption will not work if the technology matrix depicts an economy of a recessional economy (e.g., 1982) and the analyst is attempting to model activity in a peak economic year (e.g., 1989). In a recession year, the labor-to-output ratio tends to be excessive because firms are generally reluctant to lay off workers when they believe an economic turnaround is about to occur.

A less-restrictive assumption of the input-output approach is that technology is not permitted to change over time. It is less restrictive because the technology matrix in the United States is updated frequently and, in general, production technology does not radically change over short time periods.

Finally, the technical coefficients used in most regional models are based on the assumption that production processes are spatially invariant and are well represented by the nation's average technology. In a region as large as an entire state, this assumption is likely to hold true.

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