NASEO
National Association of State Energy Officials

U.S. State Energy Program Update

Successful Projects and Programs Implemented by the States Utilizing SEP Funding

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Introduction

The U.S. State Energy Program (SEP) is the only program administered by the U.S. Department of Energy (DOE) that provides resources directly to the states to develop innovative energy programs to help all consumers, businesses, and sectors of the economy. A bipartisan-supported program, SEP provides discretion and deference to the nation's governors in the use of SEP funds within a broad statutory framework set forth by Congress. States set their priorities for use of SEP funds on activities such as planning for and responding to energy emergencies resulting from physical and cybersecurity threats; assisting small businesses and manufacturers in increasing energy efficiency and reducing energy costs to improve competitiveness and create jobs; developing programs to increase deployment of energy efficiency and renewable energy resources; aiding farms and rural homeowners in developing homegrown energy solutions to lower energy costs; advancing electric grid planning and optimization to enhance efficiency, reliability and affordability; and supporting local governments in retrofitting mission critical facilities such as schools, police stations, hospitals, and other public facilities to improve resilience and reduce utility bills paid by taxpayers.

The 30-year program, last authorized at $125 million, received $55 million in FY'19 appropriations. DOE's Oak Ridge National Laboratory conducted an evaluation of the program and the states' work and found that each $1 of SEP federal funds typically leverages $10.71 of state and private (non-federal) funds. Congress appropriated $55 million for SEP in FY'18 and FY'19, and the U.S. House affirmed their support for the program by unanimously passing a bill in 2017 to enhance the energy security aspects of this core program. One of NASEO's top priorities is informing Congress and the Administration about the value of the SEP and the states' use of these funds.

A Few Examples of States' Groundbreaking SEP Actions Over the Past 30 Years include:

- *Illinois, Pennsylvania, and others*: Worked with the private sector in the early 1980s to create modern Energy Savings Performance Contracting – now a multi-billion dollar annual industry.
- *Maryland, New York, California, Florida and others*: Created plans and responded to energy supply emergencies in the late 1980s which led to today's federal energy emergency program.
- *Texas, Nebraska*: Texas' Loan Star and Nebraska's Dollar and Energy Saving loan programs are among the earliest model energy efficiency financing programs that other states are replicating and have had huge uptake in financing with virtually no defaults.
- *Minnesota*: Among the nation's first wind resource mapping efforts in the 1990s which opened opportunities for private investment in wind energy.
- *Massachusetts*: Created the first widespread – 400 state buildings – wireless energy monitoring and demand response energy efficiency program in the 2000s.
- *Kentucky:* Transformed K-12 school buildings which led to the nation's first, cost- competitive Zero Net Energy Ready schools in the 2010s.
- States in the Midwest and Northeast coordinated efforts to address the propane and heating oil supply disruptions of the 2013-2014 winter season.

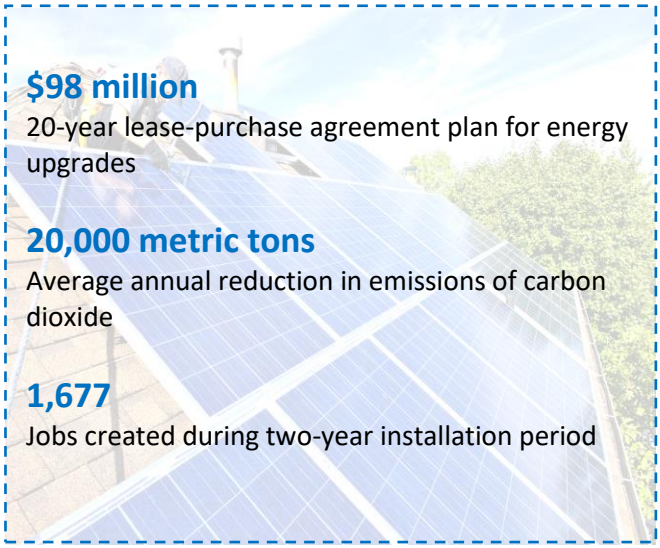
- *Southeastern states*: implemented energy emergency response plans during the historic 2017 and 2018 hurricanes that ravaged Texas, Florida, Georgia, South Carolina, North Carolina and the territories. Today, those states are using SEP to leverage private funds to implement resilience projects, such as improving the energy efficiency and on-site power capabilities of nursing homes, fire stations, and water treatment facilities, to reduce the health, safety and economic impacts of future natural disasters and potential cyber events.

The following overview report summarizes 50 recent projects and programs developed and implemented by the State Energy Offices utilizing SEP funds and public-private partnerships.

Alabama

SEP Funds Leveraged $98 Million in Energy Savings Performance Contracts

In Alabama, the State Energy Office initiated an energy savings performance contract (ESPC) leveraging State Energy Program (SEP) funds to implement a 20-year lease-purchase agreement to implement $98 million of energy upgrades. All energy efficient measures have been completed and the state has produced significant annual savings from the new, more reliable and energy-efficient equipment. In addition to the energy cost savings, the project created an estimated 1,677 jobs during the nearly two-year installation period. The environmental benefits from the energy savings projects have included an average reduction in emissions of carbon dioxide of over 20,000 metric tons annually, as well as reductions in nitrogen and mercury emissions.



$98 million
20-year lease-purchase agreement plan for energy upgrades

20,000 metric tons
Average annual reduction in emissions of carbon dioxide

1,677
Jobs created during two-year installation period

Alaska

SEP Funds Leveraged to Develop a Statewide C-PACE Program

$300,000
In SEP funds leveraged

$96 million
In projected annual energy savings

10,000
In projected retrofitted commercial buildings

100 million
In projected retrofitted square feet

In Alaska, the State Energy Office leveraged $300,000 SEP dollars to develop a statewide approach to C-PACE. The approach will accelerate the C-PACE market through creating uniform parameters, establishing a statewide administrator, and providing technical assistance to local governments. The state projects the use of C-PACE in Alaska to provide up to $96 million in annual savings annually and retrofit over 100 million square feet in approximately 10,000 commercial buildings.

Arizona

SEP Funds Supported Energy Efficiency Improvements in 33 School Districts Statewide

In Arizona, the State Energy Office directed SEP funds to support energy efficiency improvements in 33 school districts statewide. The School Energy Efficiency Program, administered in conjunction with the Arizona School Facility Board, provided grants covering up to 30 percent of project costs with the school district responsible for the remaining 70 percent either through a privately financed energy savings performance contract (ESPC) or utilizing bonds. In both cases, energy savings from the project were utilized to repay the funds. For example, under the program, Higley Unified School District implemented lighting, controls and Heating Ventilation Air Conditioning (HVAC) upgrades in four schools. In one of the schools the energy efficiency measures translated into annual savings of $153,855 – nearly 30 percent of its utility bill. The energy savings will repay the school's share of their energy performance contract in seven years.

33
School districts statewide

30%
Of project costs covered by SEP funded grants

$153,855
Annual utility bill savings within one school

Arkansas

SEP Funds Leveraged to Administer the Arkansas Energy Performance Contracting Program

$146.4 million
In guaranteed energy cost savings

$8.3 million
In annual energy cost savings

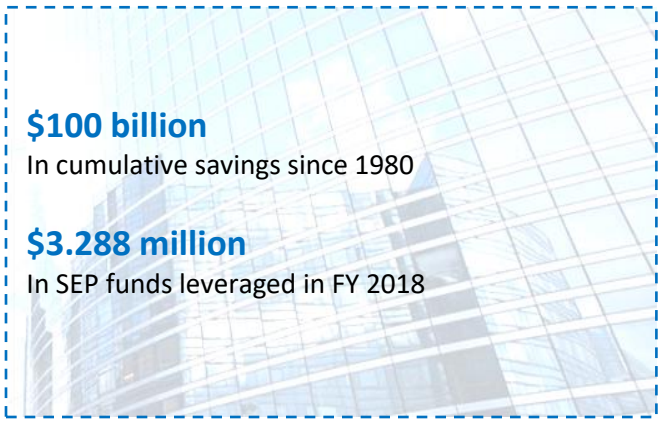
Over 45 million kWh
In annual electricity savings

75,000 MMBTUs
In yearly measured reduction of heating fuel consumption

In Arkansas, the State Energy Office leveraged 192,000 in SEP funding to administer the Arkansas Energy Performance Contracting Program since 2014. To date, fifteen approved projects, guaranteeing $146.4 million in energy cost savings for public entities in Arkansas, have been executed through the program. Seven additional projects are in active stages of review or development as of FY19.

California

SEP Funds Supported the Development of New Appliance Standards and Grid Resilience



In California, the State Energy Office utilized SEP funds to support the development and implementation of appliance and building standards. Activities SEP funds support include technical and engineering analyses, market assessments, active engagements with industry and other stakeholders, and stewardship of related rulemakings. Of note in 2018 was adoption of the nation-leading 2019 California Building Energy Efficiency Standards for nonresidential and residential buildings, which become effective in January 1, 2020. The 2019 Building Standards encourage inclusion and seamless integration of features that support grid interactivity and resilience. In the realm of appliance efficiency, CEC is currently developing standards for a number of device categories, including commercial and industrial air compressors, and is implementing new standards for some general service lamps, showerheads, and other water-conserving fixtures, computers and monitors, portable electric spas, and portable air conditioners. Since 1980, the appliance and building standards have saved the California economy more than $100 billion. Via the Energy Commission, California maintains its productive multi-decade working relationship with the USDOE in these and other areas.

Colorado

SEP Funds Supported Launch of Colorado Clean Energy Fund

$450,000
In SEP funds leveraged

10:1
Expected private-public capital leverage ratios

In Colorado, the State Energy Office leveraged $450,000 in SEP funds to establish the Colorado Clean Energy Fund (CCEF). Operating as a green bank, the CCEF will work to support investment in underserved sectors of the state's economy by leveraging private capital for clean energy project development. The CCEF intends to leverage 5:1 or 10:1 ratios of private-to-public capital to reduce emissions, improve energy security, create jobs and expand economic growth.

Connecticut

SEP Funds Helped Connecticut Businesses, Municipalities, and Residents Achieve $81.1 Million in Energy Savings

In Connecticut, the State Energy Office launched Energize CT, which used SEP funds to leverage resources to serve more than 989,000 households statewide in 2014, saving approximately $43.9 million. More than 6,000 Connecticut businesses and municipalities also saved approximately $37.2 million for the year through the program. These numbers are up from 2013, which saw 477,000 homeowners and renters, and 4,000 businesses and municipalities take advantage of Energize CT services. Energize CT provides in-home services such as Home Energy Solutions (HES), rebate and retail product programs, and a new home construction program.

989,000
Connecticut households reached

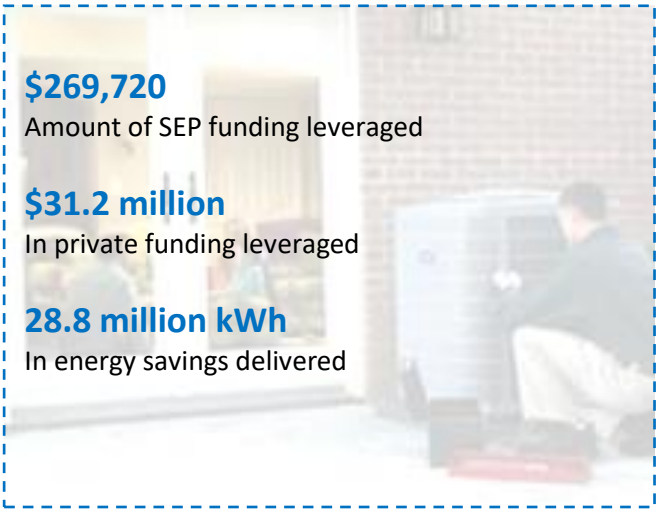
6,000
Businesses and municipalities
(taking advantage of Energize CT services)

$43.9 million
Total savings in 2014 for Connecticut residents

$37.2 million
Total savings in 2014 for Connecticut businesses and municipalities

Delaware

$269,720 in SEP Funds Helped Provide Energy Efficiency Rebates



$269,720
Amount of SEP funding leveraged

$31.2 million
In private funding leveraged

28.8 million kWh
In energy savings delivered

In Delaware, the State Energy Office utilized SEP funds in operating the Green Energy Fund (GEF) and Energy Efficiency Investment Fund (EEIF). The GEF provides grant incentives to Delaware electric utility customers for the installation of solar photovoltaic systems, solar hot water heating systems, geothermal heat pumps, small wind applications, renewable energy fuel cells, and energy efficiency investments. The EEIF provides grant incentives to Delaware businesses, local governments, and non-profits to make facility upgrades that lower their energy use and cost. From July 2017 through June 2018, the GEF provided 843 grants totaling about $1.7 million in rebate incentives to customers, and the EEIF supported 186 projects with over $3.2 million in grants allocated. This allowed for $6.08 to be leveraged for each $1 in grant money given.

District of Columbia

SEP Funds Supported Modeling of an Electrification Pathway to Reduce Energy Waste by 50 Percent

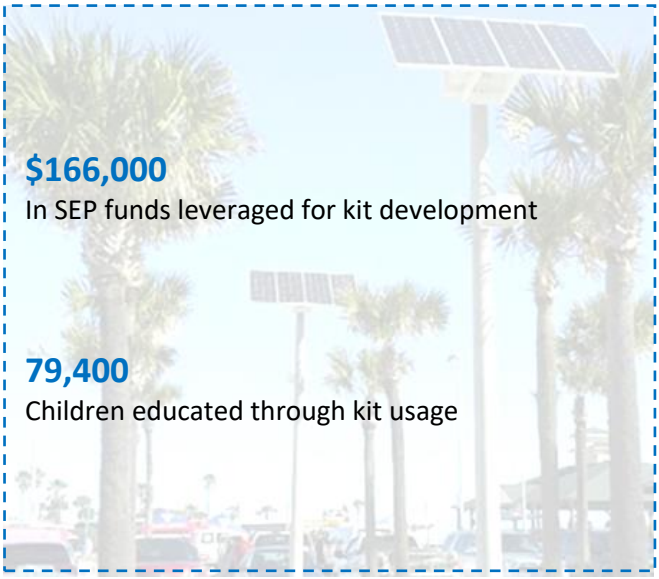
In the District of Columbia, the Energy Office is using SEP funds to identify an electrification path to reduce energy waste over the next 12 years. The District is modeling load growth and distribution system impacts from increasing amount of renewables on its grid, and focusing on increasing charging station and EV usage. The Energy Office will design a set of measures to concentrate distributed energy resources in neighborhoods with high electricity demand. The solutions will help other cities in the same utility footprint to coordinate distributed resource investments to reduce demand in high-growth areas.

$300,000
In SEP funding leveraged

50%
Projected reduction in energy waste by 2032

Florida

$166,000 in SEP Funds Supported Energy Education Kits to Develop Teamwork, Problem-solving Abilities, and Investigate Environmental Issues

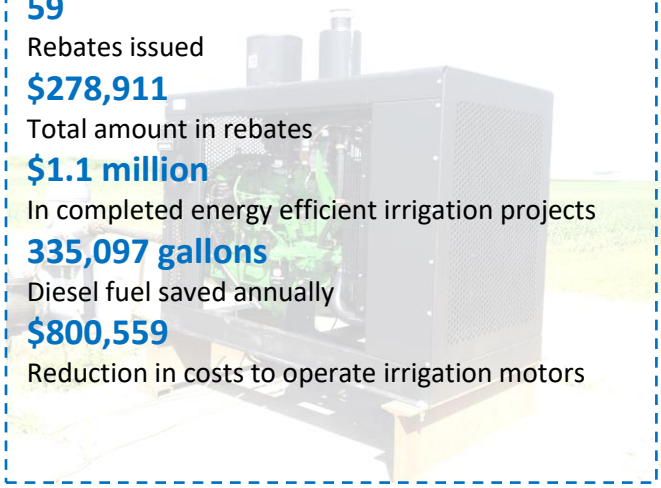


$166,000
In SEP funds leveraged for kit development

79,400
Children educated through kit usage

In Florida, State Energy Office used $166,000 in SEP funds to provide Florida K-12 public schools with 244 energy education kits designed to develop teamwork, problem-solving abilities, and investigate environmental issues. These kits include materials, such as solar panels and electric motors, which provide opportunities for hands-on science, technology, engineering, and mathematics skills. An estimated 79,400 children around the state will be impacted by these kits. Due to the overwhelming popularity of this program, an additional 677 energy education kits worth $495,000, as well as 11 Advanced Micro Grid Clean Energy Trainer (CET) Kits worth $28,500, will be distributed in the Spring/Summer of 2019. The CET Kits allow students to see firsthand the entire energy conversion chain and learn about the individual technologies of wind, solar, and hydrogen power. Students can also simulate different load and weather profiles, requiring them to combine the individual energy components to different setups and match energy supply or demand.

Georgia



59
Rebates issued
$278,911
Total amount in rebates
$1.1 million
In completed energy efficient irrigation projects
335,097 gallons
Diesel fuel saved annually
$800,559
Reduction in costs to operate irrigation motors

SEP Funds Helped Launch Irrigation Efficiency Rebate Program, Resulting in 59 Issued Rebates Totaling $278,911

In Georgia, the State Energy Office leveraged SEP funds to launch a rebate program to help farmers with the costs of replacing inefficient diesel irrigation engines with more energy-efficient electric irrigation motors. Farmers in three counties had the opportunity to apply for up to $15,000 in rebates. Thirty-eight projects were completed and saved 12,835 MMBTUs a year—the equivalent of power used in more than 3,000 homes in one month, and 145,000 gallons of diesel fuel per year, which would fuel more than 200 cars for a year. The popularity of the program encouraged the Georgia State Energy Office to create a statewide program which yielded the following results: 59 rebates totaling $278,911 issued; $1.1 million in energy efficient irrigation projects completed; and 335,097 gallons of diesel fuel saved annually. In addition, the program led to an $800,559 reduction in costs to operate irrigation motors.

Hawaii

SEP-Funded Visualization Tools Will Help Navigate Path to 100% Clean Energy

$225,076
In SEP funds leveraged

2020: 606 GWh
2030: 1,501 GWh
2040: 4,188 GWh
2045: 6,875 GWh
In projected incremental renewable energy growth by each date

50,000
Number of solar photovoltaic systems on residences

In Hawaii, the State Energy Office is using SEP funds to develop visualization tools that will enable decisionmakers and stakeholders to better analyze and communicate the tradeoffs and interdependencies of resource development plans to achieve 100 percent renewable energy. The first phase of the Hawaii Advanced Visualization Environment Nexus (HAVEN), involved the development of a platform that utilizes advanced computing infrastructure and state-of-the-art visualization. HAVEN will leverage the collaborative work of HSEO and NREL through support from the DOE to develop an open source model which will allow HSEO to analyze and compare various energy plans. The second phase of HAVEN enhances the user interface and streamlines data uploads to enable the tool to be readily applied to any island grids and analyze additional planning scenarios.

Idaho

SEP Funding Leveraged to Coordinate Energy Emergency Preparedness Planning Efforts

In Idaho, the State Energy Office leverages SEP funding to coordinate Idaho's energy planning and policy development. This includes support for energy emergency preparedness planning activities as well as educating rural communities about energy efficiency through the state's Government Leading by Example (GLBE) program.

Energy-related emergency preparedness planning activities that Idaho participates in include updating Idaho's Energy Assurance Plan, development of a petroleum shortage response plan, and participation in all energy-related emergency preparedness planning meetings and tabletop exercises. Recently, OEMR assisted in the development and production of an energy resilience workshop that included a diverse set of stakeholders from the public and private sector.

Through the GLBE program, Idaho's energy office partners with rural counties and communities to reduce energy use in existing public buildings. By providing resources like energy audits and cost-share funding, the energy office helps local governments pursue energy efficient projects in order to demonstrate the importance and ease of energy conservation to rural communities. Idaho's efforts help communities of all sizes across the state, but are especially helpful to small, rural communities that do not have the staff levels or resources of larger cities.

Illinois

9
Workshops and webinars held throughout Illinois

446
Code officials and building professionals trained through workshops and webinars

130
Individuals trained through online courses

160
Energy code questions answered through technical support center

$140,700 in SEP Funds to Increase Energy Efficiency through Energy Code Training and Support

In Illinois, the State Energy Office utilized $140,700 of SEP funds to help residential and commercial buildings become more energy efficient through Energy Code training and support. Since January 1, 2018, their Energy Code Training Program has been increasing awareness and encouraging compliance with the Illinois Energy Conservation Code to improve the energy efficiency of new construction and renovation in Illinois. The program aims to train and support code officials, construction and design professionals and trades throughout the state, particularly in areas where code compliance is low. Workshops allow opportunities for professionals to network and interact with experts, while webinars and online courses provide convenient learning opportunities for busy professionals. Individuals also receive answers to energy code questions through the program's technical support center. This program is implemented by the Smart Energy Design Assistance Center (SEDAC) at the University of Illinois.

Indiana

SEP Funding Supported Energy Retrofits in 11 Commercial and Industrial Plants

In Indiana, the State Energy Office utilized SEP funding to help companies identify and make energy efficiency upgrades. The Indiana Conserving Hoosier Industrial Power (CHIP) program provided $2.2 million in grants to commercial or industrial facilities. Eleven companies in Indiana were selected, through a competitive process to receive grants ranging from $52,000 to $400,000. In order to be considered for a CHIP grant, the proposed project had to be located in Indiana, and demonstrate measurable improvements in energy efficiency, result in a reduction in energy demand, or implement an energy recycling process.

$2.2 million
In grants awarded to commercial and industrial facilities

11
Companies selected for efficiency upgrades

$52,000 - $400,000
Amount of grants awarded

Iowa

SEP Supported the Development of Multiple Projects, Including 25 Business Audits Resulting in Average Annual Savings of $50,000

In Iowa, the State Energy Office used SEP funds to support the development of a variety of projects, such as the Iowa Waste Reduction Assistance Center at the University of Northern Iowa. Leveraging grant funds, the center created a program to reduce energy use and costs at small businesses by providing a compressed air leak detection audit. Over the six-month project, audits were completed at 25 businesses, such as auto body and service shops. Total annual savings were estimated at nearly $50,000 with the potential to save over 600,000 kWh in electrical use.

25
Audits performed for businesses

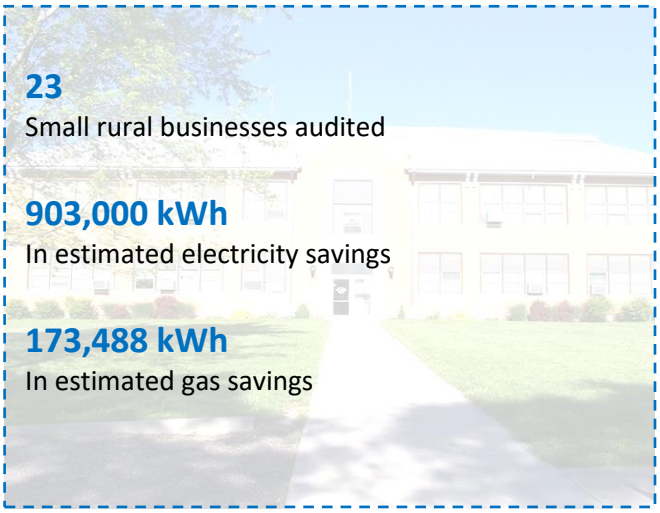
$50,000
Total annual estimated savings

600,000 kWh
Total annual estimated electrical savings

Kansas

SEP Funds Leveraged to Provide Audits for 23 Small Rural Businesses

In Kansas, The Kansas Corporation Commission, Energy Division, Small Business Energy Audits program is accomplished through a partnership with the Kansas State University – Engineering Extension staff for technical assistance to conduct and complete the audits for small rural businesses. This assistance included with applications for the USDA grants and assistance with implementing the recommendations. In program year 2017, 23 energy audits were completed for small rural businesses in Kansas that included grocery stores, pubs, a pumpkin patch (barn and out buildings), family medical clinic and a guest ranch. The energy measures included the typical windows, doors, coolers, insulation, HVAC, but also included solar and geothermal efforts. Of those 23 audits, 11 submitted USDA REAP grant applications.



Kentucky

SEP Funds Leveraged More than $4.4 Million for the School Energy Managers Projects (SEMP)

$4.4 million
Amount of funding for SEMP

$50 million
Cumulative avoided utility costs redirected back into school budgets

40
Energy managers providing energy management services to
81
Public school districts

In Kentucky, the State Energy Office, working with the Kentucky School Boards Association (KSBA)-School Energy Managers Project (SEMP), leveraged SEP funding to support a $4.4 million project over a three-year period. SEMP provides energy management services to Kentucky's school districts and has established a statewide energy management infrastructure focusing on intelligent energy choices for new and existing public schools. Currently, there are 40 energy managers providing services to 81 of Kentucky's 173 K-12 public school districts. KSBA reports more than $50 million in avoided utility costs between 2010 and 2015 have been redirected back into school budgets.

Louisiana

$22 Million of SEP Funds Used for Statewide Energy Efficiency Improvements

$22 million
Invested for energy efficiency improvements

$30 million
In private funds leveraged

28
Number of statewide energy efficiency improvements

51 million
In annual kWh savings

In Louisiana, the State Energy Office has invested over $22 million from its Revolving Loan Fund to finance over $52 million in energy efficiency improvements. Loans have been awarded in 21 parishes affecting approximately 2 million citizens. Projects include wastewater plant equipment upgrades, street lighting, chiller replacements, and other improvements to parish governments, schools, universities, and hospitals. Through its low interest Revolving Loan Program, Louisiana is encouraging the development and deployment of cost-effective energy efficiency solutions such as compressed natural gas infrastructure construction, vehicle conversions, renewable energy, and other environmental and economic development projects.

Maine

SEP Funds Used to Assess Rural Efficiency Gap

In Maine, the State Energy Office, in partnership with the Island Institute and a team of experts from other rural states, leveraged $232,000 in SEP funds to assess the existence of a rural efficiency gap in the oil-dependent states of Alaska, Maine, New Hampshire, and Vermont. The project team also developed and documented replicable program models and strategies that 'bridge' this gap, thereby allowing residents in these rural, cold climate communities to access energy efficiency programs and lower their energy costs. The team continues to disseminate information gathered during the project to local, state, and national audiences, including policymakers, program implementers, and community-based organizations.

$232,000
In SEP funding utilized

60 million
In potential rural residents assisted through the multi-media tools developed through the initiative

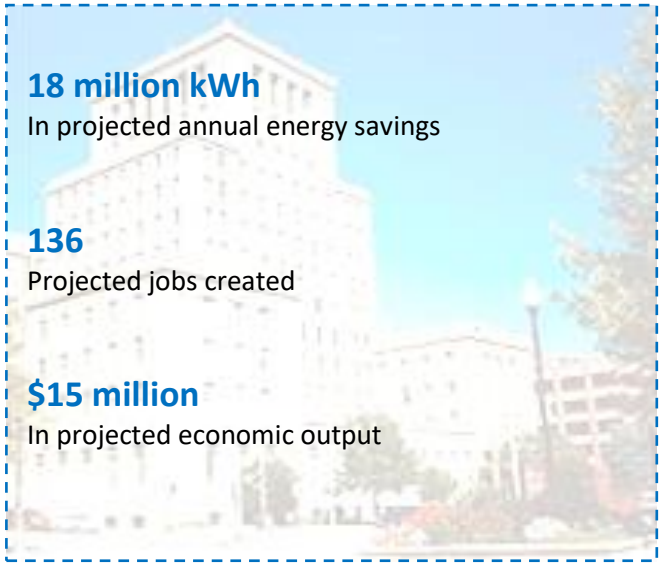
178,500
In sq. ft. retrofitted

$808,777
In private funding leveraged

Maryland

SEP Dollars Used to Leverage Private Capital to Encourage LED Streetlight Replacement in Local Government Jurisdictions

In Maryland, the State Energy Office is leveraging $430,400 of SEP dollars to help local governments convert their streetlights to energy-efficient LEDs. The Office will help local governments through support during utility negotiations, providing technical resources, and delivering financing, procurement, and implementation guidance. The state expects to have at least two utilities alter their tariff and fixture ownership structure to encourage this conversion by the end of the project, and five communities implementing LED conversations. This should lead to approximately 18 million kWh in electricity savings annually, $15 million invested into the state's economy, and 136 jobs created.



Massachusetts

Leveraged SEP Funding to Provide Grants to Hospitals to Increase Energy Resiliency

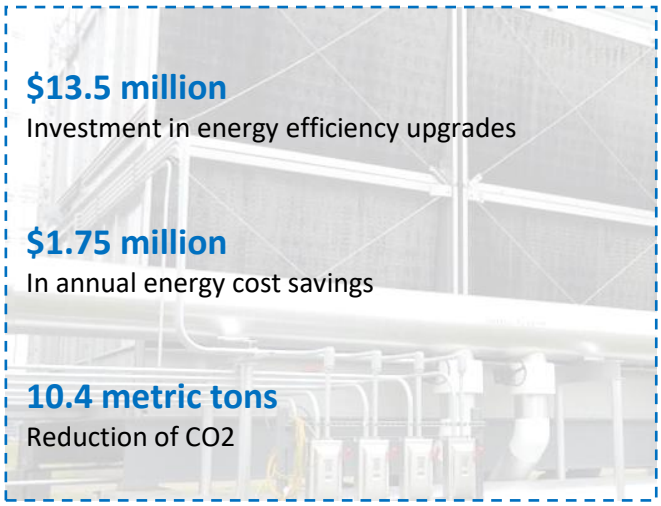
$9.6 million
Grants awarded to state hospitals

9
Hospitals receiving resiliency grants

In Massachusetts, the State Energy Office leveraged SEP funding to award nine grants totaling $9,671,558 to Massachusetts hospitals to ensure that they are able to provide medical services through long duration electricity outages by utilizing clean energy technologies. The grants were funded by DOER's Community Clean Energy Resiliency Initiative, a $40 million initiative focused on community resiliency projects that use clean energy technology solutions to protect citizens from interruptions in energy services caused by severe weather made worse by climate change. SEP funds aided in supporting the development and implementation of these projects at the Massachusetts DOER.

Michigan

SEP Funds Helped Save $1.75 Million in Annual Energy Costs for Michigan State Office Complex



$13.5 million
Investment in energy efficiency upgrades

$1.75 million
In annual energy cost savings

10.4 metric tons
Reduction of CO2

In Michigan, the State Energy Office leveraged SEP funding to make several upgrades to the Energy Center at the State of Michigan Secondary Complex. The Energy Center provides steam and chilled water throughout the complex and now also provides electricity using the recently installed cogeneration system. The 2.4 MW system supplies 35-50 percent of the complexes electricity (enough power for 2,575 Michigan homes) while generating 14,000lb/hr of steam as a byproduct. Depending on demand, the steam is used for heating (in combination with two 20,000 lb/hr heat recovery steam generators) or for cooling (using two 1,000 ton absorption chillers). About $13.5 million has been invested in energy efficiency upgrades with an estimated annual savings of $1.75 million in energy costs, more resilient facility operation, and 10.4 metric tons reduction of carbon dioxide.

Minnesota

SEP Provided Rebates through $15 Million, "Trillion BTU Improvement Program"

In Minnesota, the State Energy Office utilized SEP funding to launch the Trillion BTU energy efficiency improvement program. The program has leveraged $15 million in funds to originate 71 loans to businesses and nonprofits over five years. The low-interest loans (4-6 percent) have allowed borrowers to save $5.3 million each year and reduce energy consumption by more than 146 billion BTUs annually. The revolving loan fund program has created or retained over 1,000 jobs. Loan amounts range from $50,000 to $1 million, with terms up to five years. Minnesota's State Energy Office leveraged SEP funds to create the program, and is overseeing the program, which is administered by the Saint Paul Port Authority.

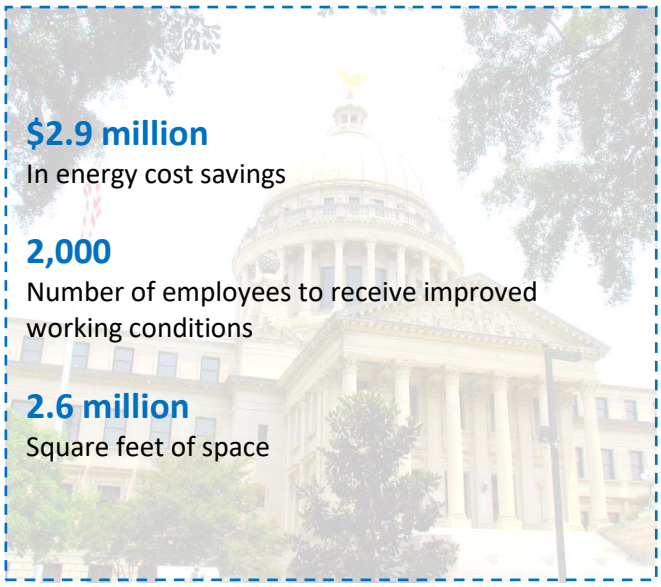
$15 million
Trillion BTU loan fund

$24.3 million
Total loan originations

146 billion
BTUs saved annually

Mississippi

SEP Funds Utilized for Industrial Energy Efficiency Program will Save $2.9 Million in Energy Costs



In Mississippi, the State Energy Office is utilizing SEP formula funds to launch a new grant program aimed at improving the energy efficiency in the manufacturing sector in Mississippi. The Mississippi Development Authority Energy and Natural Resources Division (ENRD) has gone through a major staffing transition over the last five years. The DOE SEP program staff was highly supportive of the Division through this transition and worked closely to repurpose the funds for the new grant program. The MIEEP grants were made available in October 2018 and nine projects have been selected as finalists. The grants will be awarded after ASHRAE Level II energy audit reports are received and verified by the ENRD. This process is expected to be complete by mid-February 2019. ENRD is providing cost share for energy audits

According to the applications received, the five-year impact of these projects will result in a cumulative $2.9M in energy cost savings. These grants are expected to improve the working conditions for over 2,000 employees across a wide variety of manufacturers in Mississippi. Projects include lighting upgrades, compressed air system replacements and building envelope improvements that will impact nearly 2.6 million square feet of manufacturing space.

The funding announcement was released as a 50:50 cost-share grant, but it appears the final ratio will be 20:80 leverage. Approximately $415,000 in SEP funds will result in $1.99 million worth of energy efficiency projects.

Missouri

SEP Funding Supported Programs that Replace or Repair Low-Income Homeowners' Natural Gas Furnaces

In Missouri, the State Energy Office used SEP funding to encourage the development of the Red-Tag Repair Program. The program allows low-income customers to receive funding for minor repairs or replacements of gas appliances and/or piping. The gas utility implementing the program will provide up to $200,000 for credits to qualifying customers, and will replace older units with energy-efficient ones where possible.

Montana

SEP Supported the Launch of the SMART Schools Challenge in 46 Schools Throughout the State

46
Number of schools participating in SMART Schools Challenge

$100,000
Energy cost avoidance in inaugural year

31 tons
Waste diversion (inaugural year)

135 tons
Carbon offset through recycling (inaugural year)

In Montana, the State Energy Office, in coordination with the governor, launched a SMART Schools Challenge to encourage K-12 public schools to develop programs to increase energy and resource efficiency. The program is a huge success, and in its inaugural year, 46 schools participated, producing $100,000 in energy cost avoidance, 31 tons of waste diversion, and 135 tons of carbon offset through recycling.

Nebraska

SEP Funds Expanded the Longstanding Dollar and Energy Savings Loan Program, Now Totaling Over $317 Million

In Nebraska, the State Energy Office leveraged SEP funding to expand the *Dollar and Energy Saving Loan Program*. The program is a revolving loan fund that reduces the interest rate for energy-related projects meeting minimum efficiency standards. Active since 1990, it is one of the longest standing and highest volume energy efficiency loan programs in the country. To date, the program has financed 28,362 projects with low-interest loans, mainly in the residential sector, totaling more than $317 million from the energy office and participation by 267 lenders at more than 906 locations throughout the state. Over 25 years, the program's extraordinarily low write-off level is just $150,158.

28,362
Projects financed with low-interest loans

$317 million
Amount of loans provided since program's inception

267
Number of participating lenders

906
Locations throughout the state

Nevada

$25,000 in SEP Funds Leveraged $43,336 for Street Lighting Replacements

$25,000
Amount of SEP funds leveraged

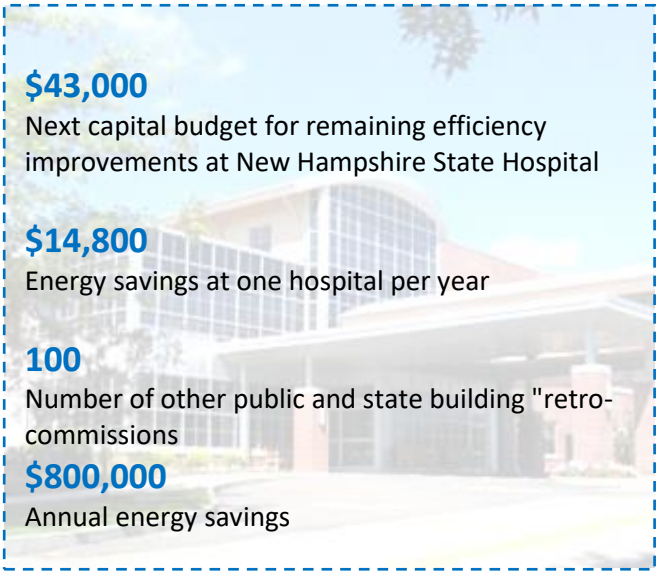
92
LED streetlights purchased

52%
Less energy used

In Nevada, the State Energy Office used $25,000 in SEP funds to leverage a total of $43,336 for Lincoln County Power District (LCPD), which provides electric power in east-central Nevada, to purchase 92 LED lights to replace the existing streetlights in the towns of Alamo and Panaca. The new LED streetlights use 52 percent less energy than the old streetlights, while providing the same lighting output. According to research conducted by the Pacific Northwest National Laboratory, LED lights have much longer life-spans and can be maintenance free for 10 years or longer.

New Hampshire

Used SEP Funds to Retrofit a State Hospital, Resulting in $14,800 in Annual Energy Savings



$43,000
Next capital budget for remaining efficiency improvements at New Hampshire State Hospital

$14,800
Energy savings at one hospital per year

100
Number of other public and state building "retro-commissions

$800,000
Annual energy savings

In New Hampshire, the State Energy Office utilizes SEP funds for a diverse range of important energy programs and projects. One example is the support of a "retro-commissioning" analysis of the New Hampshire State Hospital, which resulted in many simple changes that were easy to implement and low cost, and resulted in significant savings. Impressed by the results of that work, the New Hampshire Legislature included $43,000 in the capital budget to make the remaining suggested efficiency improvements. The result will be energy savings of $14,800 per year for the hospital. To date, New Hampshire has completed energy efficiency projects in over 100 buildings, producing annual savings of $800,000.

New Jersey

SEP Funds are Supporting the Development of a Microgrid Financing Guide for Local Governments

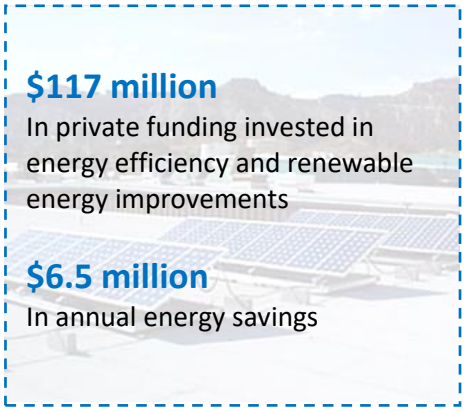
$300,000
In SEP funding utilized

1500 MW
In projected deployment of distributed generation and CHP resources

In New Jersey, the State Energy Office is utilizing $300,000 of SEP funds to provide guidance for local governments on how to maximize the economic and resiliency benefits of microgrids. The guide will provide robust guidance to understand the process of both procuring and financing microgrids in the state. BPU anticipates that this guide will help develop and deploy up to 1500 MW of distributed generation and CHP resources throughout the state where they can demonstrate environmental and economic benefits.

New Mexico

SEP Funds Leveraged to Support the Administration of GESPC Program



$117 million
In private funding invested in energy efficiency and renewable energy improvements

$6.5 million
In annual energy savings

In New Mexico, the State Energy Office used SEP funding to support the implementation and management of the state's Guaranteed Energy Savings Performance Contracting (GESPC) program. The Energy Conservation and Management Division (ECMD) of the Energy, Minerals and Natural Resources Department is required to review and certify the investment grade audits developed for potential projects to determine if the savings calculations are accurate and reasonable to be eligible for funding. In the last few years, ECMD has established guidelines for the oversight and combination of the review of these programs that resulted in state entities investing $117 million in energy efficiency and renewable energy infrastructure improvements and savings of $ 6.5 million per year in energy costs. SEP funding also provides support for third party reviews and for ECMD staffing of the ESPC review process.

New York

SEP Funding Supported the Development of an Offshore Wind Master Plan

In New York, the State Energy Office used SEP funds to support the development of the first-in-the-nation Offshore Wind Master Plan. This plan is serving as a comprehensive roadmap that both encourages the development of offshore wind in a responsible and cost-effective manner that is sensitive to environmental, maritime, economic, and social issues while also brings a new industry to the US by identifying and addressing barriers to market entry and pursuing strategies that will develop the resource at scale while aiming to lower costs.

2,400 MW
Amount of offshore wind added by 2030

20
Studies supported by SEP funding

55,640 kWh
Annual electricity production

New York has established a goal of realizing 2,400 MW of offshore wind energy generation by 2030, and the Master Plan sets forth the strategy to reach that goal. SEP funding was instrumental in advancing the 20 studies that supported the Master Plan. The Master Plan will now guide New York State decision-making and will serve as a resource for all governmental, industry, and local community stakeholders as the State pursues its energy goals.

North Carolina

$280,000 in SEP Funding Helped Revamp State Integrated Resource Planning Process

$300,000
Initial DOE SEP funding

$10 billion
In projected reductions in economic output from grid disruptions

In North Carolina, the State Energy Office is utilizing $300,000 of State Energy Program dollars to revamp its Integrated Resource Plan (IRP) process to support more high-value investments on the state's electric grid to enhance its resiliency and maintain energy affordability. The state intends to work with Duke Energy to develop new metrics to better measure the benefits of grid resiliency, identify investments that the utility can make to save more than $10 billion in lost economic output from grid disruptions, and help 27 other states better incorporate grid outages into the IRP process. The state also will compare different non-wire alternatives scenarios utilizing Sandia Lab's methodology to value resilience.

North Dakota

SEP Funding Supported Energy Efficiency Training for 1,070 Workers

In North Dakota, the State Energy Office provided SEP funding to North Dakota State University Extension to hold 17 energy efficient grain drying and storage seminars and webinars that reached 1,070 people.

17
Seminars held on energy efficient grain drying and storage

1,070
Individuals trained

Ohio

SEP Funding Leveraged to Invest $24 Million in Manufacturing Sector

$24 million
Investment in Ohio's manufacturing sector

1,112,109 million BTUs
In annual energy savings

110,256 metric tons
Of annual greenhouse gas reduction

In Ohio, the State Energy Office utilized SEP funding to support the Energy Efficiency Program for Manufacturers. The program is enabling hundreds of Ohio's manufacturers to realize cost savings and improve the efficiency of their operations; ultimately putting these companies in a better position with their global competitors. To date, the program has invested more than $24 million in Ohio's manufacturing sector to reduce energy usage for a combined annual savings of 1,112,109 million British Thermal Units (gas, oil, other) and 79,256 megawatt hours. These savings translate into a greenhouse gas emission reduction of 110,256 metric tons per year.

Oklahoma

SEP Funding Supported Local Government Energy Efficiency Projects

$450,486
In SEP funding leveraged.

$166,034
In local funding leveraged.

1,359,040 kWh
In annual electricity savings

25-30 percent
In average annual energy consumption savings

In Oklahoma, the State Energy Office funded local governments for lighting and water-wastewater treatment facilities' energy efficiency projects. In FY 2018's program year, $450,485 in SEP funds with $166,034 leveraged by the local communities.

The communities will save an annual average of 30-percent in energy consumption, which is approximately 1,359,040 kWh. The program funded communities with the goal of increasing resiliency. In addition to efficiency projects, SEO's partnership with the Office of Secretary of Energy and Environment is working with the National Renewable Energy Laboratory (NREL) to develop an interactive model for expressing the value of Distributed Energy Resources (DER) based on users' inputs from a particular jurisdiction. This model includes assessment tools to provide an evaluation of the market for DER in Oklahoma. This will assist with identifying best practices for enhancing consumer protections, regulatory enforcement, legislative actions, and industry compliance in the DER market.

Oregon

SEP Funds Implemented Residential Tax Credit Program for Renewable and Energy Efficient Systems

In Oregon, the State Energy Office used SEP funding to implement the Residential Energy Tax Credit Program (RETC). The goal of the RETC is to promote energy savings or energy displacement and market transformation by providing incentives that encourage the purchase of energy efficient and renewable energy devices for homes in Oregon. RETC helped save 680,000 MBtu in natural gas usage from $23.9 million in incentives, and 574,167 MWh from a total of $158.6 million in incentives for electricity energy efficiency measures.

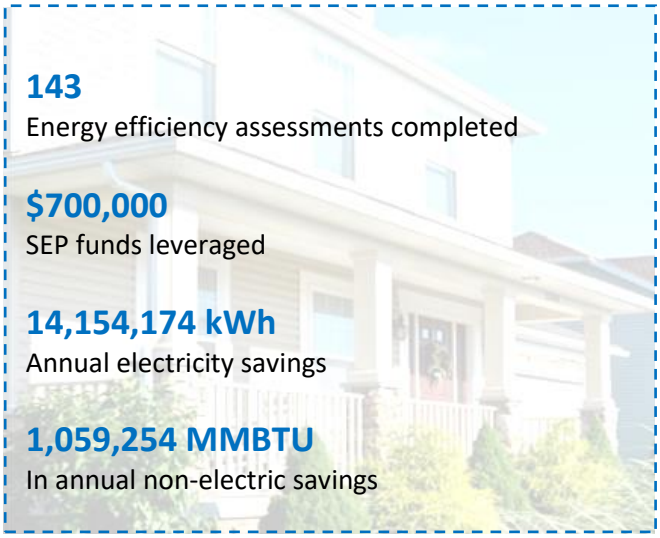
$3.8 million
In state tax credits leveraged

17,843 million
Btus saved

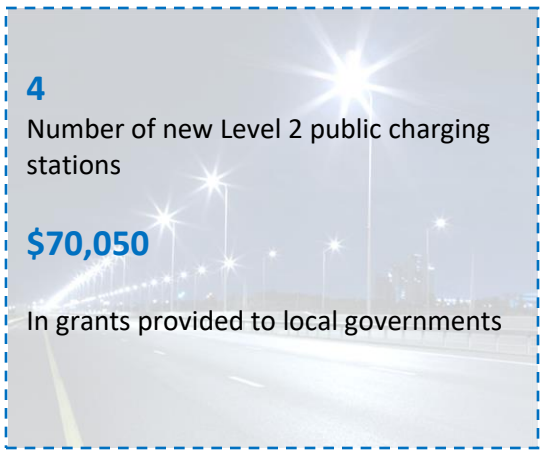
$144
In investments made for every
$1
Of SEP funds expended

Pennsylvania

SEP Funding Helped Small to Mid-Sized Manufacturing and Agricultural Businesses Save $1.46 Million Each Year in Energy Costs



In Pennsylvania, the State Energy Office leveraged SEP funding to support the Manufacturing/Agricultural Energy Efficiency Assessment Program from June 1, 2013 – July 31, 2017. Energy efficiency assessments have been completed on 143 manufacturing and agricultural businesses statewide. These assessments included engagement of 226 next-generation engineering students as a workforce education and training component of the program. Approximately, $700,000 of SEP funds were leveraged with $500,000 of non-DEP funds to perform EE assessments on lighting, compressed air, boiler/steam, process heating, process cooling, motors, pumps, fan systems, HVAC systems and building envelope improvements. Additionally, a total of 98 energy workshops and webinars were held throughout the state which attracted over 1,400 attendees. Actual on-site energy savings from the businesses that implemented the measures resulted in 14,154,174kWh of electricity savings per year, and 1,059,254 MMBTU per year of non-electric savings. The total savings, if all measures that were recommended from the assessments were implemented, would have resulted in be $2.9M per year in energy costs, 38,329,170 kWh per year of electricity, and 1,554,989 MMBTU per year of non-electric energy savings.



Rhode Island

SEP Supported Public Sector Vehicle Electrification Programs

In Rhode Island, the State Energy Office SEP funds support energy office oversight of projects such as the Charge Up! Public Sector Vehicle Electrification Program.

Under this program, the Town of Burrillville has opened four new electric vehicle charging stations, which are free and open to the public. The level 2 charging stations are installed along the Blackstone Valley Bike Path and the Clocktower playground and provide eight new charging ports for local drivers. The town received a grant of $70,500. Burrillville also leased a Nissan Leaf for three years. Because of this program, the town now plans to investigate replacing other fleet vehicles with electric vehicles

South Carolina

SEP Funds Utilized for Energy Projects in the State and Local Government Sectors

In South Carolina, the State Energy Office used SEP funding through the ConserFund Loan program to implement a suite of energy retrofits and install a roof top solar photovoltaic array on the Town Hall in Saluda, South Carolina. Energy efficiency measures installed include LED lighting and occupancy sensors throughout the Town Hall, Fire Station, and Sanitation Department and are expected to save the Town approximately $6,000 annually. The solar array was designed following consideration of these energy efficiency upgrades, resulting in an appropriately sized system and increased energy security for the town. To date, the 36 MWh of electricity produced by the system has generated approximately $8,000 in additional revenue for the town. Saluda's success was documented in the Municipal Association of South Carolina's Uptown newsletter with a special mention of the ConserFund program.

$1.75 million
SEP funding utilized in 2018

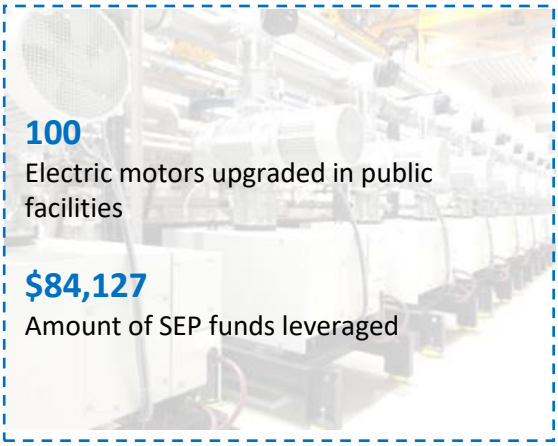
$541,232
Amount of loan awarded to one of nine projects to date (focusing on energy efficiency and renewable energy for a town in rural South Carolina)

36 MWh
Of electricity produced by the project in 2018

$6,000
In annual energy savings

South Dakota

SEP Funding Leveraged $84,127 to Upgrade Electric Motors in Public Facilities



100
Electric motors upgraded in public facilities

$84,127
Amount of SEP funds leveraged

In South Dakota, the State Energy Office leveraged $84,127 in SEP funding combined with $79,328 in additional funding, to implement a program to provide matching funds to replace older inefficient electric motors with new National Electric Manufacturers Association certified premium motors. The program was offered to all state campuses, including higher education facilities. One-hundred motors were upgraded through this program. Variable speed drives were included in the upgrades to increase operating efficiency.

Tennessee

SEP Funds Used to Maintain Utility Data Management Software Platform

In Tennessee, the State Energy Office leverages SEP funding to configure and maintain a utility data management (UDM) software platform for all State-owned and operated facilities, representing more than ~103 million square feet across 72 state agencies and higher education campuses. The state will complete a utility consumption and cost baselining effort in Q2 2019 and anticipates addressing consumption reduction goals in the following fiscal year. Preliminary baseline data shows that the state's annual utility costs are ~$197 million. The typical potential savings to be achieved from acting on baselines is ~10%. The UDM platform provides easy access to historical and ongoing utility consumption, cost, and rate data captured from the state's +10,000 monthly utility bills from +350 utility providers and features automatic auditing capabilities and alerts regarding bill anomalies, consumption spikes, etc. Agencies and campuses now have a tool that will aid in the identification of high performing facilities and measures to improve the efficiency of their facilities and lower utility costs.

103,000,000 sq ft
Of building utility data managed

72
State agencies and higher education campuses represented

10%
Potential savings from acting on reported baselines

Texas

$330,000
U.S. SEP funds leveraged

$5.2 million
Private and non-federal funds to support clean energy technology

$10.6 million
Economic impact to support clean energy technology

322
Private sector jobs created

$239,000 in SEP Funds Leveraged $7 Million for Clean Tech Start-Ups

In Texas, the State Energy Office supported continued operations of Clean Energy Business Incubators with $330,000 of SEP funding. These incubators supported clean energy technologies startup company development. These companies attracted $5.2 million (16:1) in direct investments, an economic impact of $10.6 million (32:1) to the state of Texas. 322 jobs were created throughout the state from this support. Since 2001, the successful Texas Industries of the Future Program has had great success in supporting manufacturers to decrease the energy and water intensity of their Texas operations. The City Efficiency Leadership Council and Property Assessed Clean Energy (PACE) Training provides targeted assistance and outreach to Texas cities, specifically related to building energy code adoption and compliance.

Utah

SEP Funds Leveraged Energy Education Efforts for Middle and High School STEM Students

$14,750
In private funding leveraged for the event.

24
Industry partners

12,000
Attendees reached

In Utah, the State Energy Office organized the energy and minerals section of STEM Fest to promote STEM opportunities for middle and high school students in Utah. The dedicated section was established to help educate young students about the thriving energy and minerals industry that continues to power Utah's economy and high quality of life. The OED team talked with parents, teachers, and students about Utah's energy and minerals landscape, conducted hands-on activities for energy efficiency, and promoted scholarship opportunities for students in their senior year. OED served as the lead for the event organizer (Utah STEM Action Center) in engaging energy and minerals companies and driving sponsorship from industry, totaling $14,750 in private investment for the event. STEM Fest hosted upwards of 12,000 attendees and featured 24 industry partners.

Vermont

Leveraged $200,000 of SEP Funds to Support Residential and Commercial Building Energy Standards

$200,000
Leveraged SEP funding

73%
Technical compliance rate for residential energy codes

88%
Technical compliance rate for commercial energy codes

In Vermont, the State Energy Office has leveraged nearly $200,000 of SEP funds to support Vermont's residential and commercial building energy standards. SEP funds assisted Vermont in the energy code updating process by providing technical support for updating the standards as well as assisting with the public stakeholder process; provided training to builders, architects, and realtors; and purchased energy code training materials. Vermont has measured compliance with RBES and CBES in market assessments. The technical compliance rate for residential was 74 percent and 88 percent commercial. Vermont is well on the way to achieving 90 percent compliance with energy codes by 2017 and partially credits the statewide training, availability of code materials, as well as energy efficiency new construction programs, for these compliance rates.

Virginia

$2.6 Million in SEP Funding Leveraged to Provide $1.6 Million in Loans and Create 46 Jobs

$12 million
Private source financing leveraged by portfolio firms

$1.6 million
Commonwealth Energy Fund loans

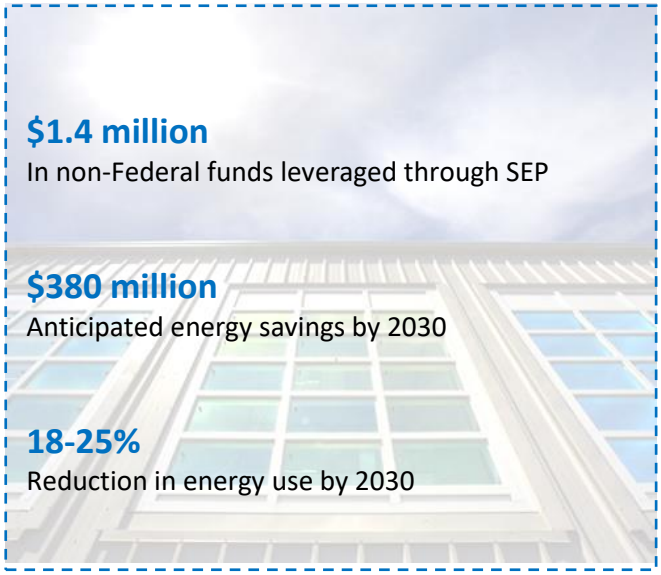
46
Number of jobs created

In Virginia, the State Energy Office leveraged SEP funding and in partnership with The Center for Innovative Technology (CIT), launched the Commonwealth Energy Fund (CEF) to make loans to high-growth potential early stage Virginia companies capable of creating jobs, reducing energy usage, increasing energy generation from renewable resources, and reducing greenhouse gas emissions. The State Energy Office capitalized the Fund with $2.6 million in SEP funds, which leveraged $12 million of private financing associated with the firms in the portfolio. Forty-six jobs were reported created or retained by the companies and several of the businesses have expanded over the past several years.

Washington

SEP Funds Leveraged $1.4 Million for Energy Efficiency Programs

In Washington, the State Energy Office has leveraged SEP funding to develop the technical standards, economic analysis, and participation in the Washington State Energy Code's (WSEC) technical advisory group. The first two code cycles have resulted in an 18-25 percent reduction in energy use and are anticipated to save $380 million in annual energy savings by 2030. In 2015, the Washington State Energy Office is proposing code changes that will provide an additional 8-17 percent in total building energy use compared to the 2012 WSEC. Overall, SEP funding has helped the state leverage more than $1.4 million in non-Federal funds for a variety of programs.



West Virginia

SEP Funds Used to Train Student Engineers to Provide No-Cost Technical Assistance to Private-Sector Clients

In West Virginia, the State Energy Office, through partnership with three programs in WVU"s College of Mechanical and Aerospace Engineering, provides several no-cost energy efficiency training, services and technical assistance options to businesses, municipalities, schools and nonprofits throughout the state using senior and graduate-level engineering students. Since 2010 this partnership has provided:

- Training to over 500 engineering students
- Technical assistance to 300 public and private sector clients
- 16.3 Million KWh and $18 Million in Identified Potential Energy Savings

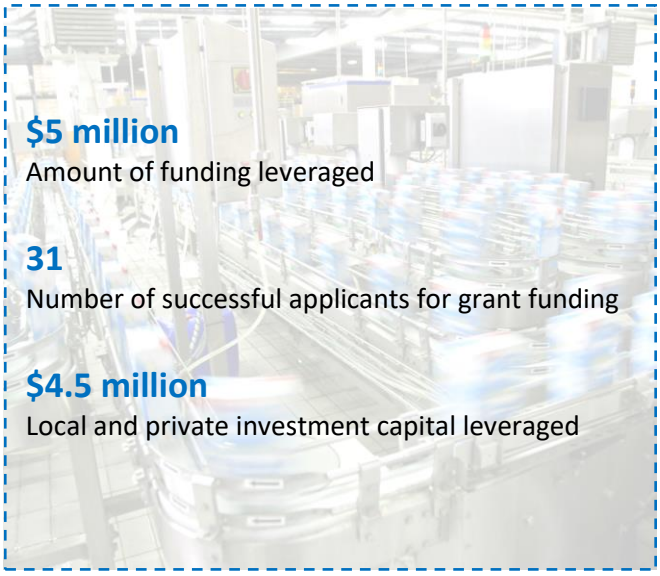
500
Number of engineering students trained

300
Number of public and private sector clients assisted

$18 million
In energy cost savings identified

16.3 Million kWh
In energy savings identified

Wisconsin



SEP Funds Helped Create an Energy Innovation Grant Program totaling over $25 million

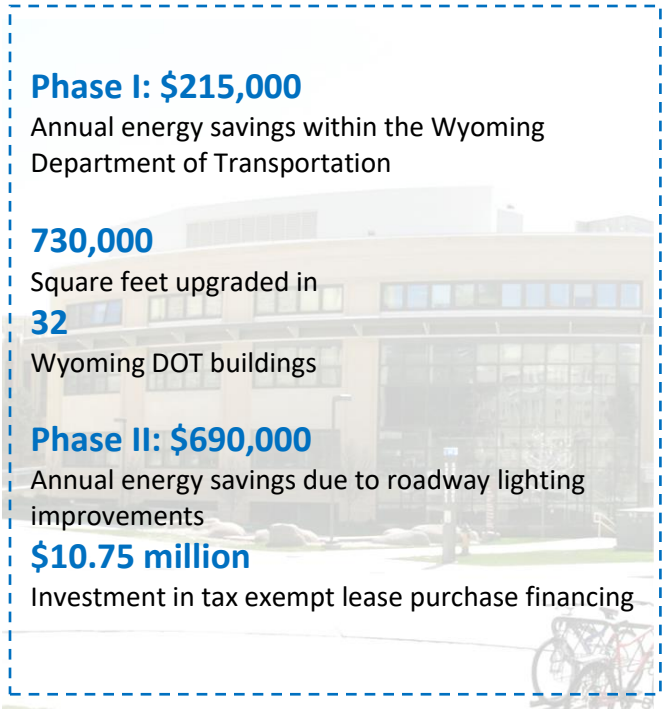
In Wisconsin, the State Energy Office implemented a grant program for manufacturers, municipalities, tribes, universities, k-12 school districts, and hospitals. The program will reduce energy consumption, increase the use of renewable energy and transportation technologies, bolster preparedness and resiliency in the energy system, and ensure that comprehensive energy planning is at the forefront of these efforts. In 2018, $5 million was made available for the 31 successful applicants that leveraged Focus on Energy rate-payer funded incentive programs and an additional $4.5 million in local and private investments.

Through EIGP, Wisconsin will track energy use and cost savings, emission reductions, renewable energy generation, job creation, and the impact of education and training on the workforce.

Wyoming

SEP Funds Reduced Energy Costs in 32 Public Buildings, in Addition to Roadway Lighting Upgrades

In Wyoming, the State Energy Office leveraged SEP funding to reduce energy costs in public buildings by providing consulting services, procurement support and third-party contract verification for energy savings performance contracts. With this support, public agencies are able to redirect utility payments and maintenance budgets into infrastructure improvements. For example, the Wyoming Department of Transportation is saving $215,000 annually by having upgraded 730,000 square feet in 32 buildings in Phase I of a project. Phase II is underway to upgrade additional buildings with lighting and mechanical improvements and to improve all roadway lighting across the state using LED fixtures and lamps which will result in $690,000 in annual savings for an investment of $10.75 million in Tax Exempt Lease Purchase financing.



Phase I: $215,000
Annual energy savings within the Wyoming Department of Transportation

730,000
Square feet upgraded in

32
Wyoming DOT buildings

Phase II: $690,000
Annual energy savings due to roadway lighting improvements

$10.75 million
Investment in tax exempt lease purchase financing