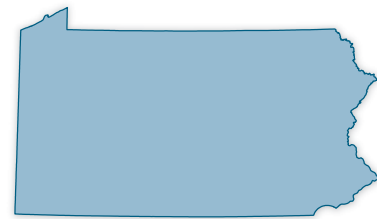




# Department of Energy Recovery Act State Memos

## Pennsylvania



For questions about DOE's Recovery Act activities, please contact the DOE Recovery Act Clearinghouse:  
1-888-DOE-RCVY (888-363-7289), Monday through Friday, 9 a.m. to 7 p.m. Eastern Time  
<https://recoveryclearinghouse.energy.gov/contactUs.htm>.

*All numbers and projects listed as of June 1, 2010*



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# American Recovery and Reinvestment Act



## U.S. DEPARTMENT OF ENERGY • PENNSYLVANIA RECOVERY ACT SNAPSHOT

Funding for selected DOE projects: **\$807.9** million

DOE Recovery Act projects in Pennsylvania: **86**

Clean energy tax credits and grants: **36**

For total Recovery Act jobs numbers in Pennsylvania go to [www.recovery.gov](http://www.recovery.gov)

Pennsylvania has substantial natural resources, including coal reserves, wind power and abundant hydropower. The **American Recovery and Reinvestment Act (ARRA)** is making a meaningful down payment on the nation's energy and environmental future. The Recovery Act investments in Pennsylvania are supporting a broad range of clean energy projects, from energy efficiency and the smart grid to wind and geothermal, hydro and biofuels. Through these investments, Pennsylvania's businesses, non-profits, and local governments are creating quality jobs today and positioning Pennsylvania to play an important role in the new energy economy of the future.

### EXAMPLES OF PENNSYLVANIA FORMULA GRANTS

Program	State Energy Program	Weatherization Assistance Program	Energy Efficiency Conservation Block Grants	Energy Efficiency Appliance Rebate Program
	<b>\$99.7</b>	<b>\$252.8</b>	<b>\$102.5</b>	<b>\$11.9</b>
Award (in millions)	The Pennsylvania Department of Environmental Protection has received \$99.7 million to invest in state-level energy efficiency and renewable energy priorities.	The Commonwealth of Pennsylvania has received \$252.8 million to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions and saving money for Pennsylvania's low-income families. Over the course of the Recovery Act, Pennsylvania expects to weatherize nearly 29,600 homes.	Forty-three communities in Pennsylvania received a total of \$102.5 million to develop, promote, implement, and manage local energy efficiency programs.	The Pennsylvania Department of Environmental Protection has received \$11.9 million to offer consumer rebates for purchasing certain ENERGY STAR® appliances, which reduce energy use and save money for families, while helping the environment and supporting the local economy.

### EXAMPLES OF PENNSYLVANIA COMPETITIVE GRANTS AND TAX CREDITS

Award	<b>\$211.6</b> million	<b>\$200</b> million	<b>\$32.5</b> million	<b>\$21</b> million
	Pennsylvania received <b>twenty-nine 1603 payments for renewable energy generation</b> totaling <b>\$211.6 million</b> , which include solar, wind biomass, and geothermal projects. For example <b>AES Armenia Mountain Wind LLC</b> received <b>\$69.5 million</b> for a wind facility.	<b>PECO Energy Company in Philadelphia</b> was awarded a <b>Smart Grid Investment Grant</b> for <b>\$200 million</b> . The funds will be used to deploy smart meters to the company's 600,000 customers and upgrade communications infrastructure on the state's electrical grid.	<b>East Penn Manufacturing Company</b> in Lyon Station was awarded <b>\$32.5 million</b> to construct a facility to produce 4.2 million advanced batteries for hybrid electric vehicles.	<b>Pennsylvania State University</b> was awarded <b>\$21 million</b> for an <b>Energy Frontier Research Center</b> to research the conversion of biomass into fuels.

## Funding Allocation Table (Figure 1)

Total dollar amounts in this document are accurate as of June 1, 2010. Please note that Recovery Act Programs are ongoing and the dollar amounts are subject to change. Recipient locations are based on project sites rather than recipients' headquarters locations.

Recovery Act Pillar	Flagship Program Names & Funding Type <sup>1</sup>	Number of Selections	Selected Amount (in millions) <sup>2</sup>
Energy Efficiency	<i>Weatherization Assistance Program (F)</i>	1	\$252.8
	<i>State Energy Program (F)</i>	1	\$99.7
	<i>Energy Efficiency and Conservation Block Grant (F)</i>	43	\$102.5
	<i>Energy Efficient Appliance Rebate (F)</i>	1	\$11.9
	<i>Building Energy Efficiency (CM)</i>	2	\$1.7
	<i>Industrial Energy Efficiency (CM)</i>	3	\$0.5
	<i>Additional Programs (CM &amp; C)</i>	1	\$1.7
	<b>TOTAL Energy Efficiency</b>	<b>52</b>	<b>\$470.8</b>
Renewable Energy	<i>Solar (CM)</i>	4	\$2.8
	<i>Wind (CM)</i>	1	\$0.8
	<i>Geothermal (CM)</i>	1	\$1.1
	<b>TOTAL Renewable Energy</b>	<b>6</b>	<b>\$4.7</b>
Electric Grid	<i>Smart Grid Investment and Demonstrations Project (CM)<sup>3</sup></i>	5	\$235.4
	<i>State and Local Energy Assurance and Regulatory Assistance (F)</i>	3	\$2.7
	<i>Smart Grid Workforce Training (CM)</i>	2	\$5.7
	<b>TOTAL Electric Grid</b>	<b>10</b>	<b>\$243.8</b>
Transportation	<i>Advanced Battery Manufacturing (CM)</i>	2	\$38.5
	<i>Advanced Fuels (CM)</i>	1	\$21.8
	<b>TOTAL Transportation</b>	<b>3</b>	<b>\$60.3</b>
Carbon Capture and Storage	<i>CCS Projects (CM)</i>	2	\$1.7
	<i>Research and Training (CM)</i>	2	\$0.6
	<b>TOTAL Carbon Capture and Storage</b>	<b>4</b>	<b>\$2.3</b>
Science and Innovation	<i>Advanced Research Projects Agency - Energy (ARPA-E) (CM)</i>	2	\$2.5
	<i>Energy Frontier Research Centers (CM)</i>	1	\$21.0
	<i>Small Business Research (SBIR/STTR) (CM)</i>	5	\$0.7
	<i>National Laboratory Facilities (C)</i>	1	\$0.3
	<i>Additional Programs</i>	2	\$1.5
	<b>TOTAL Science and Innovation</b>	<b>11</b>	<b>\$26.0</b>
<b>TOTAL - DOE Programs<sup>4</sup></b>		<b>86</b>	<b>\$807.9</b>
Tax Credits/ Grants <sup>5</sup>	<i>Payments for Renewable Energy Generation in Lieu of Tax Credits (1603)</i>	29	\$211.6
	<i>Clean Energy Manufacturing Tax Credits (48C)</i>	7	\$17.6
	<b>TOTAL Tax Incentives</b>	<b>36</b>	<b>\$229.2</b>
<b>TOTAL - DOE/Treasury + DOE</b>		<b>122</b>	<b>\$1,037.1</b>
<sup>1</sup> F=Formula Grant, CM=Competitive Grant, C=Contract			
<sup>2</sup> " Selected" indicates DOE has selected a potential funding recipient, which begins the process of negotiating an agreement. This does not necessarily indicate that a final agreement has been reached.			
<sup>3</sup> Projects may cross state boundaries, signifies HQ location.			
<sup>4</sup> Total does not include administrative funds.			
<sup>5</sup> Jointly administered by DOE and the U.S. Department of Treasury.			

## **ENERGY EFFICIENCY – 52 projects totaling \$470.8 million**

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*Helping millions of American families cut utility bills by making homes and appliances more energy efficient, expanding the home efficiency industry in sales and manufacturing. For more information, visit <http://www.energy.gov/recovery/energyefficiency.htm>.*

### **Award: \$252.8 million, Weatherization Assistance Program (WAP)**

#### **Location: Statewide**

The Commonwealth of Pennsylvania received \$252.8 million to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions and saving money for Pennsylvania's low-income families. Over the course of the Recovery Act, Pennsylvania's goal is to weatherize nearly 29,600 homes. These resources enable the commonwealth to achieve greater energy independence, put more Pennsylvanians to work by increasing demand for skilled weatherization professionals and provide long-term help to vulnerable residents by reducing their energy bills.

### **Award: \$99.7 million, State Energy Program (SEP)**

#### **Locations Statewide**

The Pennsylvania Department of Environmental Protection received \$99.7 million to invest in state-level energy efficiency and renewable energy priorities. Pennsylvania is using its Recovery Act SEP funding to provide grants and other support for energy efficiency and conservation efforts, with the goal of reducing dependence on fossil fuels and stimulating growth in renewable sectors. The statewide "Green Energy Works!" project will offer grants to businesses, non-profit organizations, universities, local governments and utilities to deploy efficient, environmentally sustainable and economically worthwhile energy projects across the state. Pennsylvania is also establishing a Green Development Loan Program. This revolving loan fund provides clean energy and energy efficiency financing for facilities projects, resource efficiency measures and advanced and renewable clean energy technologies. In addition to originating loans and leveraging private capital, this funding makes outright awards to cover the costs of project feasibility studies, energy audits or project design. These costs often present significant barriers to sustainable development investments.

### **Award(s): 43 totaling \$102.5 million, Energy Efficiency and Conservation Block Grant Program (EECBG)**

#### **Location: Statewide**

**Recipients:** Lancaster, Philadelphia, Harrisburg, Erie, Media, Carlisle, Chester County, Chester, Cheltenham, Doylestown, Bristol, Bethlehem, Altoona, Allentown, Allegheny County, Abington, Montgomery, York, Reading, Hempfield, Bensalem, York, Greensburg, Harrisburg, Penn Hills, Northampton, Easton, Montgomery County, Millcreek, Erie County, Middletown, Manheim, Wilkes-Barre, Lower Paxton, Lower Merion, Allentown, Lancaster, Washington County, Upper Darby, State College, Scranton, Pittsburgh, Haverford

Forty-three communities in Pennsylvania received a total of \$102.5 million for local energy efficiency programs. This project assists States, U.S. territories, Indian tribes, counties and cities to develop, promote, implement and manage localized energy efficiency programs through individual program grants. The project funds programs which reduce fossil fuel emissions in a manner that is environmentally sustainable and maximizes cost savings, reduces the total energy use of eligible entities and improves energy efficiency in the transportation, building and other appropriate sectors. Examples of EECBGs include:

- Pennsylvania State Energy Office, Statewide - \$23.6 million**

The State Energy Office of Pennsylvania received \$23.6 million to spur economic growth while accelerating the deployment of market-ready energy efficiency and renewable energy technologies in communities across the state. The state's Office of Energy and Technology Development is using Recovery Act funds to establish the PA Conservation Works! Program, which awards grants to local governments and non-profit entities that can demonstrate shovel-ready projects promising energy efficiency improvements of at least 25 percent. Eligible projects include installation of energy-efficient streetlights; retrofits of high-efficiency furnaces, boilers and air conditioners; efficiency upgrades at wastewater treatment plants and the deployment of renewable energy technologies on or in government buildings. At least 60 percent of the funding will be reserved for local cities and counties that are not eligible for direct EECBG grants from the Department of Energy. These Recovery Act-funded projects improve air quality and related environmental and health indicators, increase the security, resilience and reliability of Pennsylvania's energy infrastructure while generating or retaining over 200 green jobs statewide.
- City of Philadelphia - \$14.1 million**

The City of Philadelphia received \$14.1 million to support Philadelphia Greenworks, an innovative sustainability strategy implemented by Mayor Nutter. Funding for this strategy promotes energy efficiency in sectors such as transportation waste management and provides for up-to-date building restoration. EECBG funds support a set of grant programs in the city, including competitive matching grants to small businesses, which incentivize the private sector to pursue energy efficient retrofits, and funding to help commercialize nascent technologies and develop the infrastructure to support next-generation energy technologies.
- Allegheny County - \$8.1 million**

Allegheny County received \$8.1 million to undertake several initiatives to substantially improve energy efficiency, including an energy savings performance contracting program for county facilities. EECBG funds are being used to implement energy conservation measures prescribed by an Energy Service Company following an investment-grade energy audit of county buildings. This program accelerates the implementation of energy efficiency projects in county-owned facilities by using EECBG funds as up-front capital. Potential projects include lighting upgrades and occupancy sensors, HVAC controls improvements, water conservation and boiler replacements. With this Recovery Act funding, Allegheny County is working to significantly reduce the county's energy use while creating new jobs.
- Bucks County - \$3.9 million**

Bucks County received \$3.9 million towards paying for energy efficient retrofits to buildings located on the county's administration campus. The county will save approximately \$110,170 in annual electric costs and \$21,491 in annual natural gas costs as a result of the retrofits. These improvements include replacing the boiler and associated controls for the courthouse / administration building and replacing an old heating unit with an energy efficient system.
- Delaware County - \$3.7 million**

Delaware County received \$3.7 million for improving energy efficiency and expanding renewable energy use in the county. Among its EECBG activities, the County is installing a photovoltaic solar power generation system at the Government Center Complex in Media. This system decreases



the burden on the local utility and is intended to be a model project, spurring regional interest in alternative energy. Once finished, it will be the largest public solar energy project in the area. Recovery Act funding is also being used to establish a grant program for municipalities within the county that have requested assistance for energy efficiency projects but were ineligible for direct EECBG allocations. Municipalities are encouraged to partner with PECO, the electric utility serving Delaware County and the county expects its EECBG activities to create new jobs and produce substantial energy and cost savings.

- **Luzerne County - \$2.5 million**

Luzerne County received \$2.5 million to improve the energy efficiency of several facilities around the county, including the installation of new compact fluorescent lighting at the Luzerne County Parkade. The county is replacing 300 incandescent fixtures with compact fluorescent lighting, while also replacing “constant-on” elevator vestibule lighting with motion-sensor activated lighting. The county is also planning to replace the current incandescent emergency lighting with advanced LED lighting, if the budget allows. In another project, the county is replacing the current hydronic baseboard heating system in the county courthouse with a modern automatic temperature control system, allowing for thermostatic reductions during non-business hours.

**Award(s): \$11.9 million, Energy Efficient Appliance Rebate Programs**

**Location: Statewide**

The Pennsylvania Department of Environmental Protection received \$11.9 million to offer consumer rebates for purchasing certain ENERGY STAR® appliances, which reduce energy use and save money for families, while supporting the local economy. This funding assists state-level rebate programs by paying up to 50 percent of the administrative costs of establishing and executing these types of programs. Though States and territories determine the appliances which apply, eligible appliances typically include clothes washers, dishwashers, refrigerators, freezers, room air conditioners and water heaters.

**Award(s): \$25 million, BetterBuildings**

**Location: Philadelphia**

Philadelphia received \$25 million for its “Project Energy Smart: Transforming the High Performance Building Retrofit Market” in Southeastern Pennsylvania. This project will accelerate the creation of a robust private retrofit market in the greater Philadelphia region by retrofitting thousands of commercial and residential buildings. The project takes a region-based focus designed to help impact larger percentages of buildings within target areas. The project catalyzes growth in both the supply and the demand for high performance retrofits. The program also allows the expansion of the Expand Smart Rehab Program, which includes multi-family housing. The program is supported by a coordinated outreach and marketing campaign including a centralized one-stop shop for consumers. The project is creating partnerships intended to provide banks with loan performance data, vital to facilitating low-risk opportunities for banks to participate in energy efficiency retrofit loans.

**Award(s): \$14,000, Buildings and Appliance Market Transformation**

**Location: Statewide**

The Pittsburgh Foundry & Machine Co. received \$14,000 for Buildings and Appliance Market Transformation. The Buildings and Appliance Market Transformation project expands building codes, accelerates the pace of Appliance Standard test procedure development and improves the efficiency of commercial buildings’ operations by training building operators and commissioning agents.

**Award(s): 2 totaling \$30.2 million, Combined Heat and Power (CHP), District Energy Systems, Waste Heat Recovery Implementation and Deployment of Efficient Industrial Equipment**

**Location: Allentown**

- **Air Products and Chemicals, Inc., Allentown - \$30 million**  
Air Products and Chemicals, Inc., in Allentown received \$30 million for Combined Heat and Power (CHP), District Energy Systems, Waste Heat Recovery Implementation and Deployment of Efficient Industrial Equipment.
- **JAD Environmental - \$188,000**  
JAD Environmental in Pennsylvania received \$188,000 for Combined Heat and Power (CHP), District Energy Systems, Waste Heat Recovery Implementation and Deployment of Efficient Industrial Equipment.

**Award(s): \$1.7 million, Ground Source Heat Pumps**

**Location: Philadelphia**

1001 South 15th Street Associates in Philadelphia received \$1.7 million for retrofitting an historic train depot with a hybrid GHP system to reduce costs and improve cycle efficiency.

**Award(s): 2 totaling \$990,000, Industrial Assessment Centers and Plant Best Practices**

**Location: Harrisburg, Bethlehem**

- **Pennsylvania Department of Environmental Protection, Harrisburg - \$847,000**  
The Pennsylvania Department of Environmental Protection in Harrisburg received \$847,000 to allow the state to implement a comprehensive, proactive industrial energy efficiency program which provides technical assistance to manufacturers and funds activities to improve industrial energy efficiency across multiple sectors.
- **Lehigh University, Bethlehem - \$143,000**  
Lehigh University in Bethlehem received \$143,000 to provide eligible small and medium-sized manufacturers with no-cost energy assessments and act as a training ground for the next generation of energy-savvy engineers.

**Award(s): \$1.7 million, Solid State Lighting**

**Location: Cheswick**

PPG Industries' Glass R&D in Cheswick received \$1.7 million in funding to develop a new low-cost integrated substrate product suitable for organic light-emitting diode (OLED) lighting manufacture which is compatible with PPG's existing flat-glass and transparent-glass coating technologies and high-volume glass manufacturing methods. Through focused, short-term applied research on new electrode and light extraction coatings, PPG is developing the OLED lighting-integrated substrate using low-cost soda lime float glass plus transparent anode materials and light extraction layers.

## **RENEWABLE ENERGY – 42 projects totaling \$233.9 million**

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*Developing the clean renewable resources in order to double our supply of renewable energy and boost domestic renewable manufacturing capacity. For more information, visit <http://www.energy.gov/recovery/renewableenergy.htm>.*

**Award(s): 29 payments totaling \$211.6 million from DOE / Treasury, 1603 Payments for Renewable Energy Generation**

**Location: Statewide**

\*For current number of 1603 awards, see the weekly update at <http://www.treas.gov/recovery/1603.shtml>

Pennsylvania received twenty-nine 1603 Payments for Renewable Energy Generation totaling \$211.6 million, which include solar, wind biomass and solar thermal projects.

- **AES Armenia Mountain Wind, LLC, Sullivan - \$69.6 million**  
AES Armenia Mountain Wind, LLC, in Sullivan received \$69.6 million for a wind facility.
- **Locust Ridge II, LLC, Shenandoah - \$59.2 million**  
Locust Ridge II, LLC, in Shenandoah received \$59.2 million for a wind facility.
- **Krayn Wind, LLC, Salix - \$42.2 million**  
Krayn Wind, LLC, in Salix received \$42.2 million for a wind facility.
- **Evergreen Community Power, LLC, Reading - \$39.2 million**  
Evergreen Community Power, LLC, in Reading received \$39.2 million for a biomass project.
- **Power Sport Industries, Inc., New Berlinville - \$255,000**  
Power Sport Industries, Inc., in New Berlinville received \$255,000 for a solar electricity project.
- **Ely Pork Products, Newtown - \$183,000**  
Ely Pork Products in Newton received \$183,000 for a solar electricity project.
- **Laran Bronze, Inc., Chester - \$179,000**  
Laran Bronze, Inc., in Chester received \$179,000 for a solar electricity project.
- **BT Energy, LLC, Bedford - \$123,000**  
BT Energy, LLC, in Bedford received \$123,000 for a solar electricity project.
- **C K Investors, LLC, Willow Street - \$120,000**  
C K Investors, LLC, in Willow Street received \$120,000 for a solar electricity project.
- **Glenn Weber, Mohnton - \$108,000**  
Glenn Weber in Mohnton received \$108,000 for a solar electricity project.
- **Community Energy, St. Davids - \$84,000**  
Community Energy in St. Davids received \$84,000 for a solar electricity project.

- **Probes Unlimited, Inc., Lansdale - \$76,000**  
Probes Unlimited, Inc., in Lansdale received \$76,000 for a solar electricity project.
- **SunnySlope Farm, Inc., New Hope - \$54,000**  
SunnySlope Farm, Inc., in New Hope received \$54,000 for a solar electricity project.
- **Royco Packaging, Inc., Huntingdon Valley - \$53,000**  
Royco Packaging, Inc., in Huntingdon Valley received \$53,000 for a solar electricity project.
- **Grothouse Lumber, Germansville - \$37,000**  
Grothouse Lumber in Germansville received \$37,000 for a solar electricity project.
- **Lindy Property Management Co., Philadelphia - \$33,000**  
Lindy Property Management Co., in Philadelphia received \$33,000 for a solar thermal project.
- **Solutions In Human Resources, Inc, Bedford (3) - \$32,000**  
Solutions In Human Resources, Inc., in Bedford received three awards totaling \$32,000 for wind facilities.
- **Pepe-Sherman Assoc. Inc., Harleysville - \$31,000**  
Pepe-Sherman Assoc. Inc., in Harleysville received \$31,000 for a solar electricity project.
- **Pfaff Bros. Construction, Glenolden - \$30,000**  
Pfaff Bros. Construction in Glenolden received \$30,000 for a solar electricity project.
- **Quinby Management, Upper Black Eddy - \$27,000**  
Quinby Management in Upper Black Eddy received \$27,000 for a solar electricity project.
- **Galman Rose Court, LP, Philadelphia - \$25,000**  
Galman Rose Court, LP, in Philadelphia received \$25,000 for a wind facility.
- **Cooke Tavern Soups, Spring Mills - \$23,000**  
Cooke Tavern Soups in Spring Mills received \$23,000 for a wind facility.
- **Maude Alley, Honesdale - \$12,000**  
Maude Alley in Honesdale received \$12,000 for a wind facility.
- **Hostetter Enterprises, Ltd., Quarryville - \$6,000**  
Hostetter Enterprises, Ltd., in Quarryville received \$6,000 for a wind facility.
- **Adam Electric and Heating Inc., Bridgeville - \$5,000**  
Adam Electric and Heating Inc., in Bridgeville received \$5,000 for a wind facility.
- **Church & Murdock Electric, Inc, Erie - \$4,000**  
Church & Murdock Electric, Inc., in Erie received \$4,000 for a wind facility.

- **Weber Electric Supply, Inc., Erie - \$3,000**  
Weber Electric Supply, Inc., in Erie received \$3,000 for a wind facility.

**Award(s): 7 totaling \$17.6 million from DOE / Treasury, Clean Energy Manufacturing Tax Credit (48C)**

**Location: Statewide**

- **Flabeg Solar U.S. Corporation, Clinton - \$10.2 million**  
Flabeg Solar U.S. Corporation in Clinton received \$10.2 million for the production of high-temperature solar thermal mirrors for concentrating solar power. The facility is producing both bent and flat mirrors for parabolic trough and power tower solar plants.
- **Solar Power Industries, Inc., Belle Vernon - \$5.4 million**  
Solar Power Industries, Inc., in Belle Vernon received \$5.4 million for production of multicrystalline cells, which will be integrated into solar modules. Additionally, the company is focusing processes on high-purity silicon ingot casting, slicing and cell processing operations to produce silicon bricks, wafers, solar power systems and solar module components. The resulting product aids the domestic solar energy industry.
- **Solar Strategies, Inc., Middleburg - \$1.6 million**  
Solar Strategies, Inc., in Middleburg received \$1.6 million to re-equip a modular home facility to produce net zero-energy homes. By combining energy conservation techniques, energy producing technologies, smart metering, ENERGY STAR qualified appliances and energy management systems, the company will produce thousands of solar modular homes generating more power than they consume over the course of a year. The resulting homes promote energy efficiency in the residential construction industry.
- **PPG Industries, Inc., Mt. Zion and Carlisle - \$417,000**  
PPG Industries, Inc., in Mt. Zion and Carlisle received \$417,000 to manufacture a Transparent Conductive Oxide (TCO) coating for glass to be used as a substrate to construct photovoltaic solar cells, as well as a double anti-reflective coating for glass permitting increased light transmittance in solar modules. The result aids competitive domestic solar PV panel manufacturing.
- **Ductmate Industries, Inc., Monongahela - \$83,000**  
Ductmate Industries, Inc., in Monongahela received \$83,000 to expand manufacturing and tooling capabilities for the production of energy efficient HVAC ductwork featuring self-sealing fixtures.

**Award(s): \$1.1 million, Enhanced Geothermal Systems (EGS) Technology R&D**

**Location: University Park**

Pennsylvania State University in University Park received \$1.1 million to develop an integrated reservoir model to assist in EGS reservoir research. This addresses presently insufficient modeling and validation capabilities to effectively integrate fluid flow, geochemistry and thermal-mechanical phenomena for stimulation prediction and reservoir simulation. The ability to routinely develop long-lived, high-volume, low-impedance and high-heat-transfer-area reservoirs at-will and at-depth is central to the viability of EGS as a low-carbon energy source.

### **Award(s): \$907,000, High-Penetration Solar Deployment**

#### **Location: University Park**

Pennsylvania State University's Mid-Atlantic Solar Regional Training Center (SRTC) in University Park received \$907,000 to support a comprehensive training infrastructure for sales, design, installation, commissioning and service of both PV and SHC technologies. The professional development activities provided by the Mid-Atlantic SRTC rely on a variety of educational delivery methods, including online learning opportunities, classrooms and hands-on workshop learning programs. Training programs are designed to serve a diverse audience of existing solar instructors, designers, engineers, program administrators, contractors, code officials, inspectors and business development agencies and will be distributed through a regional network of solar learning communities including community colleges, vocational technology schools and local union training centers.

### **Award(s): 3 totaling \$1.9 million, Photovoltaic (PV) Systems Development**

#### **Location: Allentown, Lancaster, Allison Park**

- **Air Products and Chemicals, Inc., Allentown - \$1.6 million**  
Air Products and Chemicals, Inc., in Allentown received \$1.6 million to develop an advanced radio frequency plasma chemical vapor deposition process with new gas-phase additives to achieve deposition for thin film silicon solar cells at increased growth rates and reactant utilization.
- **Advanced Cooling Technologies, Inc., Lancaster - \$150,000**  
Advanced Cooling Technologies, Inc., in Lancaster received \$150,000 to develop a new bonded copper thermal interface for high concentration PV that experiences rapid thermal cycles with a design targeting lower thermal stress and resistance.
- **PPG Industries, Allison Park - \$147,000**  
PPG Industries in Allison Park received \$147,000 to develop coatings that can be applied in a continuous automated process at a lower temperature and labor intensity than current PV protective materials.

### **Award(s): \$750,000, Wind Technology R&D and Training**

#### **Location: Pittsburgh**

Bayer Material Science in Pittsburgh received \$750,000 to research carbon nanotube-reinforced polyurethane composites for wind turbine blades.

## **MODERNIZING THE ELECTRIC GRID – 10 projects totaling \$243.8 million**

*Harnessing clean energy sources and integrating them onto a modernized electric grid, while giving consumers better choices and more control over their energy use. For more information, visit <http://www.energy.gov/recovery/smartgrid.htm>.*

### **Award(s): 2 totaling \$1.6 million, Enhancing State and Local Governments' Energy Assurance**

#### **Location: Harrisburg, Philadelphia**

- **Pennsylvania Department of Environmental Protection, Harrisburg - \$1.3 million**  
The Pennsylvania Department of Environmental Protection in Harrisburg received \$1.3 million to improve state emergency preparedness plans and ensure quick recovery and restoration from any energy supply disruptions. This project funds states to update and develop State Energy

Assurance Plans that incorporate new energy portfolios such as wind, renewables, biofuels, etc. This program also funds cities updating and developing Energy Assurance Plans within local areas. The two sets of funding are being used to hire or retrain staff in building in-house expertise in the areas of Smart Grids, critical energy infrastructure interdependencies and cyber-security.

- **City of Philadelphia - \$300,000**

The City of Philadelphia received \$300,000 in funding for the Low Income Energy Assistance Program (LEAP). Funds allow local governments to hire and train staff and expand their capabilities to respond to a variety of energy emergencies such as blackouts, hurricanes, floods, ice storms, or possible terrorist attacks. Each community identifies and assesses energy supply disruption scenarios; trains personnel on energy infrastructure and supply systems; and increases their knowledge of local energy interdependencies to reduce their response, restoration and recovery time. Additionally, the LEAP funding facilitates information sharing and coordination between States, local jurisdictions and industry, reducing redundancies and decreasing the time required to recover and restore the energy infrastructure.

**Award(s): 4 totaling \$233.2 million, Smart Grid Investment Grant Program (EISA 1306)**

**Location: Statewide**

- **PECO Energy Company, Philadelphia - \$200 million**

PECO Energy Company in Philadelphia received \$200 million for a Smart Grid Investment Grant to deploy smart meters to the company's 600,000 customers and upgrade communications infrastructure on the state's electrical grid.

- **PPL Electric Utilities, Allentown - \$19.1 million**

PPL Electric Utilities in Allentown received \$ 19.1 million to deploy a distribution management system and Smart Grid technologies to monitor and control the grid in real-time, improve system reliability and energy resource optimization, and provide the infrastructure for distributed generation and broader energy efficiency efforts.

- **PJM Interconnection, LLC, Norristown - \$13.7 million**

PJM Interconnection, LLC, in Norristown received \$13.7 million to deploy over 90 phasor measurement units and other digital monitoring and analysis technologies across 10 states that provide real-time data on the operating conditions of the transmission system, improving reliability and reducing congestion.

- **Wellsboro Electric Company, Wellsboro - \$432,000**

The Wellsboro Electric Company in Wellsboro received \$432,000 to implement the Smart Choices project, which deploys smart meter network systems throughout the utility's service territory.

**Award(s): \$2.2 million, Smart Grid Regional and Energy Storage Demonstration Projects (EISA 1304)**

**Location: Lyon Station**

The East Penn Manufacturing Co., in Lyon Station received \$2.2 million to demonstrate the economic and technical viability of a grid-scale, advanced energy storage system using the UltraBattery technology within frequency regulation ancillary services and demand management services.

**Award(s): 2 totaling \$5.7 million, Smart Grid Workforce Training**  
**Location: University Park, Bethlehem**

This project focuses on building regional energy assurance capability by enhancing inter- and intra-state coordination and cooperation during energy emergencies. The project funds states to update or develop State Energy Assurance Plans incorporating new energy portfolios such as wind, renewables and biofuels. The project also funds cities to update or develop Local Energy Assurance Plans. The two sets of funding are used to hire or retrain staff to build in-house expertise in dealing with Smart Grid technologies, critical energy infrastructure interdependencies and cyber-security.

- **Pennsylvania State University, University Park - \$5 million**  
Pennsylvania State University in University Park received \$5 million in funding to provide system-based continuing education and “train-the-trainer” programs in advanced power systems design, energy economics, cyber-security, distributed energy generation and building-vehicle-grid systems. System experts are working closely with manufacturing and technology partners to deliver high-quality education and training programs on Smart Grid topics.
- **Lehigh University, Bethlehem - \$748,000**  
Lehigh University in Bethlehem received \$748,000 in funding for the establishment of a network of graduate Smart Grid "Fellows" who will educate the workforce charged with building the intelligent grid system. The project "trains-the-trainers" by recruiting professors at community colleges, high school teachers from the Mid-Atlantic and western Great Lakes regions and engineers in the workforce who are interested in modifying their career path to focus on being future trainers of electric power sector workers.

**Award(s): \$1.1 million, State Assistance on Electricity Policies**  
**Location: Harrisburg**

Pennsylvania Public Utility Commission (PUC) in Harrisburg received \$1.1 million to address its Recovery Act electricity workload. PUC is hiring new staff and retraining existing employees to ensure they have the capacity to quickly and effectively review proposed electricity projects. The funds help accelerate reviews of the large number of electric utility requests that are expected under the Recovery Act. The PUC is reviewing electric utility investments in projects such as energy efficiency, renewable energy, carbon capture and storage, transmission lines, energy storage, Smart Grid, demand response equipment and electric and hybrid-electric vehicles.

**TRANSPORTATION – 3 projects totaling \$60.3 million**

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*Investing in a new generation of advanced fuels and vehicles to reduce our dependence on foreign oil and revitalize domestic manufacturing. For more information, visit <http://www.energy.gov/recovery/vehicles.htm>.*

**Award(s): 2 totaling \$38.5 million, Advanced Battery Manufacturing**  
**Location: Lyon Station, Youngwood**

- **East Penn Manufacturing Company, Lyon Station - \$32.5 million**  
East Penn Manufacturing Company in Lyon Station received \$32.5 million to construct a facility to produce 4.2 million advanced batteries for hybrid electric vehicles.



- **Powerex, Inc., Youngwood - \$6 million**  
Powerex, Inc., in Youngwood received \$6 million to create an electric drive semiconductor development, qualification and production center. This new automated production center is capable of producing silicon and silicon carbide modules used in inverters for the electric vehicle, aerospace and industrial marketplaces. This project is creating an estimated 42 new manufacturing and technical jobs as the center ramps-up to full production.

**Award(s): \$6.1 million, Enabling Fuel Cell Market Transformation**

**Location: Pittsburgh**

Genco Infrastructure Solutions, Inc., in Pittsburgh received \$6.1 million for fuel cell lift truck deployment across several States.

**Award(s): \$21.8 million, Modify Integrated Biorefinery Solicitation Program for Pilot and Demonstration Scale Biorefineries**

**Location: Riverside**

Solazyme, Inc., received \$21.8 million to produce algae oil that can be converted to oil-based fuels. The project will validate the projected economics of a commercial scale biorefinery producing multiple advanced biofuels.

**CARBON CAPTURE & STORAGE – 4 projects totaling \$2.3 million**

*Developing clean coal technologies so we can utilize America’s coal resources sustainably. For more information, visit <http://www.energy.gov/recovery/ccs.htm>.*

**Award(s): 2 totaling \$600,000, Geologic Sequestration Training and Research Grant Program**

**Location: Pittsburgh, Bethlehem**

- **University of Pittsburgh, Pittsburgh - \$300,000**  
The University of Pittsburgh in Pittsburgh received \$300,000 to develop carbon dioxide sensors and instruments for measuring and monitoring carbon dioxide emissions for geological sequestration sites in a continuous mode, while providing training opportunities to two graduate students in the areas of acoustic wave sensors, nanomaterials and geological sequestration of carbon dioxide.
- **Lehigh University, Bethlehem - \$300,000**  
Lehigh University in Bethlehem received \$300,000 to determine the effects of utilizing heat rejected by carbon dioxide compressors to improve power plant efficiency and increase net power output of coal-fired power plants with carbon capture. Researchers are using first principle engineering analyses and computer simulations to determine the potential for thermal integration of the various compression processes with the carbon capture system, boiler and turbine cycle. This project supports at least two graduate students during the research effort.

**Award(s): 2 totaling \$1.7 million, Industrial Carbon Capture and Storage Applications**

**Location: Alcoa Center, Allentown**

- **Alcoa, Inc., Alcoa Center - \$1 million**  
Alcoa, Inc. and its partners, U.S. Nels, CO2 Solutions, Inc. and Strategic Solutions, Inc., in Alcoa Center received \$1 million to capture and convert carbon dioxide into mineral carbonates for

reuse. Flue gas will be treated in a sodium alkali scrubber design, coupled with a carbonic anhydrase-based enzyme catalyst, to convert alkaline clay to carbonate-enhanced clay for soil remediation.

- **Air Products And Chemicals, Inc., Allentown - \$721,000**  
Air Products and Chemicals, Inc., in Allentown received \$721,000 for the demonstration of carbon capture and sequestration for steam methane reforming process gas for large scale production.

## **SCIENCE AND INNOVATION – 11 projects totaling \$26 million**

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*Renewing our commitment to science and innovation to ensure global competitiveness in the future. For more information, visit <http://www.energy.gov/recovery/innovation.htm>.*

**Award(s): 2 totaling \$2.5 million, Advanced Research Projects Agency - Energy (ARPA-E)**  
**Location: University Park, Bethlehem**

- **Pennsylvania State University, University Park - \$1.9 million**  
Pennsylvania State University in University Park received \$1.9 million to develop a novel process in which sunlight, carbon dioxide and water vapor are combined to create hydrocarbon fuels that can be used within the current energy infrastructure. Using natural outdoor sunlight, Penn State has achieved efficient solar conversion of carbon dioxide and water vapor to methane and other more complex hydrocarbons. The University is now working to convert approximately two percent of sunlight to a liquid chemical fuel which can be stored or transported as needed. If successful, this project could increase domestic production of renewable transportation fuels, thus reducing the country's dependence on foreign sources of fossil fuels.
- **Lehigh University, Bethlehem - \$561,000**  
Lehigh University in Bethlehem received \$561,000 to develop a novel approach to separate carbon dioxide from other gases in the smokestacks of coal-fired power plants. Lehigh University is using electric fields to reversibly and selectively enhance the affinity of certain high-surface-area, solid, absorbent materials for carbon dioxide. By flicking a switch, coal-fired power plants could control whether the materials absorb carbon dioxide or release it for collection. ARPA-E funding is used to develop appropriate materials and optimize the absorption process. If successful, this technology would significantly reduce the time and energy required for carbon capture.

**Award(s): \$326,000, DIII-D Facility Upgrades**  
**Location: Bethlehem**

Lehigh University in Bethlehem received \$326,000 to provide a one-time infrastructure upgrade and modernization program for the DIII-D National Fusion Facility, located at General Atomics (GA) in San Diego, CA. The project upgrades the auxiliary heating systems, power systems, core and edge diagnostics and supports new short term postdoctoral research positions for the added diagnostic capability. The additional research capabilities enabled by this project accelerate the advancement of understanding in plasma science, fusion science and fusion technology - the knowledge base needed for an economically and environmentally attractive fusion energy source.

**Award(s): \$21 million, Energy Frontier Research Center**

**Location: University Park**

Pennsylvania State University in University Park received \$21 million to increase fundamental knowledge of the physical structure of biopolymers in plant cell walls to provide a basis for improved methods for converting biomass into fuels.

**Award(s): 2 totaling \$1.5 million, Energy Sciences Fellowships and Early Career Research Program**

**Location: Pittsburgh**

- **University of Pittsburgh, Pittsburgh - \$750,000**  
University of Pittsburgh in Pittsburgh received \$750,000 to support overcoming photometric redshift systematics in dark energy experiments.
- **Carnegie Mellon University, Pittsburgh - \$750,000**  
Carnegie Mellon University in Pittsburgh received \$750,000 to support multifunctional oxygen evolution electrocatalyst design and synthesis at the University of Pittsburgh and Carnegie Mellon University.

**Award(s): 5 totaling \$748,000, Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) Round 1**

**Location: Pittsburgh, King of Prussia, State College**

- **Plextronics, Inc., Pittsburgh - \$150,000**  
Plextronics, Inc., in collaboration with Solarmer Energy, Inc., received \$150,000 to develop high performing, low-cost solar cells based on organic photovoltaic technology, which is expected to have tremendous potential as a low-cost renewable energy source.
- **Media And Process Technology, Inc., Pittsburgh - \$150,000**  
Media And Process Technology, Inc., in Pittsburgh received \$150,000 to research Transport Membrane Condenser technology. Heat and water vapor losses in industrial gas exhaust streams are estimated to be on the order of 1,800 trillion BTU / year. This new technology potentially saves about 25 percent of this energy while simultaneously recovering several 100 million gallons of water per year.
- **Media And Process Technology, Inc., Pittsburgh - \$150,000**  
Media And Process Technology, Inc., in Pittsburgh received \$150,000 to research a new technology which will deliver on-spec biodiesel, replace energy intensive distillation, save biodiesel producers hundreds of millions of dollars per year and promote job growth in this green industry.
- **Y-carbon, Inc., King of Prussia - \$150,000**  
Y-carbon, Inc., in King of Prussia received \$150,000 to conduct large scale manufacturing of advanced nanomaterials developed by Y-Carbon. This is anticipated to be less expensive to manufacture than currently used materials while offering breakthrough performance. Nanomanufacturing of such tunable nanoporous carbon is expected to have a major impact on fields ranging from electrical energy storage to medicine and water desalination.

- **Strategic Polymer Sciences, Inc., State College - \$148,000**  
Strategic Polymer Sciences, Inc., in State College received \$148,000 to develop and design high efficiency, low cost and environmentally friendly refrigeration systems using ECE materials. The technology can be used in various refrigeration systems for building air conditioning, food preservation and cryogenic equipment

ENERGYEMPOWERS.GOV

# Recovery Act Success Stories

Energy Empowers is a U.S. Department of Energy clean energy information service. Our team produces stories featuring the people and businesses that are fueling the energy transformation and economic recovery in America. For more stories from your state, go to [energyempowers.gov/Pennsylvania](http://energyempowers.gov/Pennsylvania)

## Wind projects providing hope for Pa. workers

The Recovery Act made three large-scale wind projects possible in Pennsylvania, and employees at Gamesa Wind are back to work filling orders for them.

\$22.8 million in stimulus grants are putting 79 laid-off employees back on the job and making it possible for Gamesa to hire 50 additional workers at its other Pennsylvania locations.

Gov. Edward Rendell has also announced that 257 jobs will be created at three wind farms across Pennsylvania. In that state, as well as many across the country, the Recovery Act helped avoid massive layoffs, provided relief to families in need, trained people for green jobs and enabled employers to hire workers doing jobs that are vital to the future of the American economy.

One such success story comes from Eric Sheesley of Nanty Glo. Eric is a quality inspector who was laid off just before the holidays and a father of two young children. Because of the stimulus funds and the projects for which Gamesa is now providing turbines, he's back on the job.

After living off of his unemployment compensation and the extra hours his wife was able to pick up at her receptionist job, Eric's happy to be back in this exciting industry that is now a priority across the country.

"I love what I do, and working in renewable energy is very rewarding because I know the impact it's going to have in the future locally and across the country and the whole world — I'm doing my share," Eric says. "It was rough when I was laid off, kind of a scary time."

Eric's brothers also work for Gamesa, and they were all wondering if they would have jobs again when they were laid off.

"It was a financial stressor for all of us, and the only good part was being able to spend more time with my kids," he says. "We were waiting for something to come around, and the stimulus money came and had a huge impact, putting everybody back to work — we're working hard and glad to be doing it."

Gamesa will install 19 wind turbines in Cambria and Blair counties, creating 85 jobs. Additionally, wind company Iberdrola will use stimulus funds to install 23 turbines in Fayette County, creating 129 jobs, and the installation of eight turbines at the Broad Mountain Wind Energy Center is expected to create 43 jobs.

Gamesa specializes in sustainable energy technologies, primarily wind power, and employs more than 800 people in Pennsylvania in partnership with the United Steelworkers of America union.



Pennsylvania now ranks third in the growth of green jobs, just behind Texas and California, according to the Pew Center.

### SCRANTON

## Pennsylvania college trains weatherization workers

In Northeastern Pennsylvania, an area hard hit by recession, good jobs and careers can be hard to come by.

"Lots of people have been out of work for months. It's a manufacturing area and there were a lot of layoffs in the past year," notes Liz Brobst, program coordinator for Johnson College, a private two-year technical college founded in 1912. The unemployment rate in the Scranton/Wilkes-Barre area rose to 9.7 percent in December, and closed out 2009 near a 17-year high.

But opportunities for new careers are emerging through the Department of Energy's weatherization assistance network, which is in need of skilled workers to handle projects funded by the Recovery Act.

In early March, 12 students will graduate from one of the first weatherization training courses offered by Johnson College.

Of the twelve students, eight were new to weatherization and four were already working in the industry but needed certifications for their work with local service providers, according to Brobst.

"Graduates can go to a WAP-funded provider or go into private industry," Brobst says. The program's benefit "is that the students need no additional training once they finish the program and pass

*"Graduates can go to a WAP-funded provider or go into private industry," Liz Brobst says. The program's benefit "is that the students need no additional training once they finish the program and pass the tests."*

the tests,” she says.

Johnson College is proactively working with local service providers Scranton-Lackawanna Human Development Agency (SLDHA), Luzerne County’s Commission on Economic Opportunity, Monroe County Redevelopment Authority, Wayne County Redevelopment Authority and Trehab on the program designed to provide training for new hires and augment training for current staff.

SLDHA hired 7 new employees in November as part of the ramp up for the Recovery Act, according to Tony Harding, the agency’s weatherization program manager. “We got our first funds on November 4 and did our first [Recovery Act funded] job on November 9.” Harding says the agency plans to hire four of the students.

SLDHA currently has 21 employees in the warehouse where jobs range from installers, crew chiefs, auditors, furnace and other equipment specialists. Operations supervisor Joe Haddock runs the warehouse and has been with the SLHDA Weatherization Program since its federal inception in 1976. SLHDA are at 200 percent of their budgeted units, according to Harding.

Johnson College received a \$132,000 training grant from the Pennsylvania Department of Labor and Industry and the Department of Community and Economic Development

#### BENSALEM

### Window company booming from retrofits

Don’t try telling John Haddon’s family that Friday the 13th is unlucky. They have more reason to believe in divine intervention than luck. After buying Accu-Weld Feb. 13, 2009 — a windows and doors company that laid off 70 employees in 2008 — the business is doing great, thanks to the family’s commitment to energy efficiency and the Recovery Act, signed into law just four days later. John didn’t know much about the Recovery Act then, but now he’s convinced the stimulus has dramatically improved profits.

“The Recovery Act coming on board shortly after we purchased the company has been a boost to our business and window makers in general,” John says about Accu-Weld, which is based in Bensalem, Pa. “The good news is not only that we’re selling more windows and people are getting tax credits, but also they’re getting windows that are energy efficient in the long term.”

When the stimulus passed, creating incentives for energy-efficient

home-building products, Accu-Weld was already producing windows that exceed many of the standards for tax credit eligibility. The surge in weatherization improvements in homes across the country has allowed the company to increase its almost 150 employees’ hours from 32 to 45 each week. Employees make as much as \$22 an hour, more than triple the minimum wage in Pennsylvania, as they work to meet the needs of dealers who are demanding more-efficient products.

The company also integrates green practices in its own operations, as Accu-Weld recycles its leftover vinyl, glass and cardboard at its plant.

“Running our plant with an eye on recycling spills over to the rest of the company,” John says. “Considering recycled materials is at the top of our minds, and being able to recycle things that are being produced in mass quantity is a good thing on all fronts.”

Homeowners with metal-framed windows or windows with just a single pane of glass stand to gain the most savings by upgrading to vinyl energy-efficient windows, John says. And they should experience an increase in overall comfort in terms of temperature and noise reduction, he adds. John expects these benefits, along with the tax credit, to keep Accu-Weld moving upward.

“We’re optimistic about an increase in sales in 2010 as the economy turns around and there is a continuation of the tax credit through the year,” he says. “People are happy about the fact that we’re a family-run business that has come in and has been successful. We’re instilling confidence because we have an interest in growing the business, meaning everyone will have additional opportunities going forward.”

And the company’s employees appreciate those opportunities and the stability that developing green products has brought to Accu-Weld.

“When I began working in the window industry 31 years ago, I never thought that windows would be such a large part of the energy savings goals of the future,” Mel Blount, facility manager, says. “It’s been a steady progression to more energy efficiency.”

American taxpayers can benefit from the Residential Energy Property Credit (Section 1121) that increases the energy tax credit for homeowners’ energy-efficient improvements to their existing homes. The new law under the Recovery Act increases the tax credit to 30 percent of the cost of qualifying improvements up to \$1,500 through 2010.