



Department of Energy Recovery Act State Memos

Delaware



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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RECOVERY ACT SUCCESS STORIES – ENERGY EMPOWERS

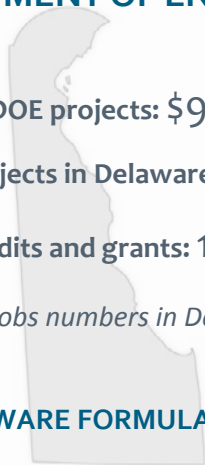
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American Recovery and Reinvestment Act



U.S. DEPARTMENT OF ENERGY • DELAWARE RECOVERY ACT SNAPSHOT



Funding for selected DOE projects: \$91.9 million

DOE Recovery Act projects in Delaware: 29

Clean energy tax credits and grants: 11

For total Recovery Act jobs numbers in Delaware go to www.recovery.gov

The American Recovery & Reinvestment Act (ARRA) is making a meaningful down payment on the nation's energy and environmental future. The Recovery Act investments in Delaware are supporting a broad range of clean energy projects, from energy efficiency and the electric grid to solar power and energy research. Through these investments, Delaware's businesses, universities, non-profits, and local governments are creating quality jobs today and positioning Delaware to play an important role in the new energy economy of the future.

EXAMPLES OF DELAWARE FORMULA GRANTS

Program	State Energy Program	Weatherization Assistance Program	Energy Efficiency Conservation Block Grants	Energy Efficiency Appliance Rebate Program
Award (in millions)	\$24.2	\$13.7	\$15.9	\$0.8
	The Delaware Department of Natural Resources and Environmental Control has received \$24.2 million in State Energy Program funds to invest in state-level energy efficiency and renewable energy priorities.	The State of Delaware has received \$13.7 million in Weatherization Assistance Program funds to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions, and saving money for Delaware's low-income families. Over the course of the Recovery Act, Delaware expects to weatherize more than 1,500 homes. The program also includes workforce training and education as part of the state's efforts to develop a green workforce.	Fourteen communities in Delaware received a total of \$15.9 million for Energy Efficiency and Conservation Block Grants (EECBG) to develop, promote, implement, and manage localized energy efficiency programs.	The Delaware Department of Natural Resources and Environmental Control has received \$838,000 for the Energy Efficient Appliance Rebate Program, which offers consumer rebates for purchasing certain ENERGY STAR® appliances. These energy efficient appliances reduce energy use and save money for families, while helping the environment and supporting the local economy.

EXAMPLES OF DELAWARE COMPETITIVE GRANTS AND TAX CREDITS

Award	\$529 million	\$22 million	\$11.9 million
	Fisker Automotive closed a \$529 million loan arrangement under the Department of Energy's Advanced Technology Vehicles Manufacturing program for the development and production of two lines of plug-in hybrid electric vehicles in Wilmington, Delaware. The company estimates the project will create about 2,000 jobs.	The University of Delaware in Newark was awarded \$17.5 million to establish an Energy Frontier Research Center focusing on the development of innovative catalytic technologies for the efficient conversion of biomass such as trees and grasses into chemicals, electricity, and fuels. The University of Delaware was also awarded an ARPA-E award of \$4.5 million to develop novel, high energy density, low rare-earth content permanent magnet materials.	E.I. du Pont de Nemours and Company in Wilmington was awarded \$8.9 million under the Advanced Research Projects Agency – Energy (ARPA-E) . The funds will be used to develop a commercially-viable process for the production of an advanced biofuel, isobutanol, from seaweed. The company was also awarded \$3 million to develop a continuous in-line manufacturing tool to produce a flexible ultra-moisture-barrier film to enable new thin-film flexible photovoltaic products.

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 ¹	Number of Selections	Selected Amount (in millions) ²
Energy Efficiency	<i>Weatherization Assistance Program (F)</i>	1	\$13.7
	<i>State Energy Program (F)</i>	1	\$24.2
	<i>Energy Efficiency and Conservation Block Grant (F)</i>	14	\$15.9
	<i>Energy Efficient Appliance Rebate (F)</i>	1	\$0.8
	<i>Building Energy Efficiency (CM)</i>	1	\$1.6
	<i>Industrial Energy Efficiency (CM)</i>	1	\$0.1
	TOTAL Energy Efficiency	19	\$56.3
Renewable Energy	<i>Solar (CM)</i>	1	\$3.0
	TOTAL Renewable Energy	1	\$3.0
Electric Grid	<i>State and Local Energy Assurance and Regulatory Assistance (F)</i>	2	\$1.1
	TOTAL Electric Grid	2	\$1.1
Science and Innovation	<i>Advanced Research Projects Agency - Energy (ARPA-E) (CM)</i>	2	\$13.4
	<i>Energy Frontier Research Centers (CM)</i>	1	\$17.5
	<i>Small Business Research (SBIR/STTR) (CM)</i>	4	\$0.6
	TOTAL Science and Innovation	7	\$31.5
TOTAL - DOE Programs³		29	\$91.9
Tax Credits/Payments ⁴	<i>Payments for Renewable Energy Generation in Lieu of Tax Credits (1603)</i>	11	\$0.7
	TOTAL Tax Incentives	11	\$0.7
TOTAL - DOE/Treasury + DOE		40	\$92.6
¹ F=Formula Grant, CM=Competitive Grant, C=Contract			
² "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.			
³ Total does not include administrative funds.			
⁴ Jointly administered by DOE and the U.S. Department of Treasury.			

ENERGY EFFICIENCY – 19 projects totaling \$56.3 million

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(s): \$13.7 million, Weatherization Assistance Program (WAP)

Location: Statewide

Delaware received \$13.7 million in Weatherization Assistance Program funds to scale-up existing weatherization efforts in the state, creating jobs, reducing carbon emissions and saving money for Delaware's low-income families. Over the course of the Recovery Act, Delaware expects to weatherize more than 1,500 homes. The program also includes workforce training and education as part of the state's efforts to develop a green workforce. This project is augmenting the existing weatherization program to achieve the nationwide goal of one million homes per year through workforce education, increased maximum per home expenditure, increased eligibility standards and increased funding for training programs and expansion into U.S. territories.

Award(s): \$24.2 million, State Energy Program (SEP)

Location: Statewide

The Delaware Department of Natural Resources and Environmental Control received \$24.2 million in State Energy Program funds to invest in state-level energy efficiency and renewable energy priorities. Delaware is using its Recovery Act SEP funding to enhance energy efficiency in residential, commercial and government sectors statewide. These funds are establishing a Home Performance Program that will defray costs of home energy audits and install energy-efficient equipment for families above the low-income eligibility threshold for the Weatherization Assistance Program. The state is also funding energy efficiency upgrades for small businesses, commercial establishments and manufacturing facilities. These upgrades will allow Delaware's businesses to remain competitive by reducing their energy consumption and energy costs, contributing to overall profitability. Recovery Act funds directed to this program will be leveraged with other state funds through the sale of allowances from the Regional Greenhouse Gas Initiative (RGGI).

Award(s): 14 totaling \$15.9 million, Energy Efficiency and Conservation Block Grant Program (EECBG)

Location: Statewide

Recipients: Delaware State Energy Office, New Castle County, Middletown, Smyrna, Elsmere, Seaford, Milford, New Castle, Georgetown, Newark, Dover, Kent County, Sussex County, Wilmington

Fourteen communities in Delaware received a total of \$15.9 million for the Energy Efficiency and Conservation Block Grants Program (EECBG) to develop, promote, implement and manage localized energy efficiency programs.

The project is funding programs that reduce fossil fuel emissions in a manner that is environmentally sustainable, maximizes cost savings, reduces the total energy use of the eligible entities and improves energy efficiency in the transportation, building and other appropriate sectors.

Award(s): \$838,000, Energy Efficient Appliance Rebate Programs

Location: Statewide

The Delaware Department of Natural Resources and Environmental Control received \$838,000 for the Energy Efficient Appliance Rebate Program, which offers consumer rebates for purchasing certain ENERGY STAR® appliances. These energy efficient appliances reduce energy use, save money for families, help the environment and support the local economy.

This project provides federal support for state-level rebate programs for residential ENERGY STAR appliance purchases by paying up to 50 percent of the administration costs of establishing and executing the rebate program. Though states and territories shall determine which appliances may apply, covered appliances typically include clothes washers, dishwashers, refrigerators, freezers, air conditioners and water heaters.

Award(s): \$125,000, Industrial Assessment Centers and Plant Best Practices

Location: Newark

The University of Delaware in Newark received \$125,000 to provide eligible small and medium-sized manufacturers with no-cost energy assessments and serve as a training ground for the next generation of energy-savvy engineers.

Award(s): \$1.6 million, Solid State Lighting

Location: Newark

Whiteoptics, LLC, in Newark received \$1.6 million for a program demonstrating a 98 percent or greater reflective, highly diffuse, low-cost composite material that is able to withstand 50,000 hours or greater luminaire operation under expected LED system thermal and environmental operating extremes.

RENEWABLE ENERGY – 12 projects totaling \$3.7 million

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): 11 payments totaling \$681,000 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>

Delaware received eleven 1603 payments for renewable energy generation totaling \$681,000 which includes solar and wind projects.

- **Stonegates Retirement Community, Greenville - \$279,000**
Stonegates Retirement Community in Greenville received \$279,000 for a solar electricity project.
- **Delta Sales Corporation, Selbyville - \$92,000**
Delta Sales Corporation in Selbyville received \$92,000 for a solar electricity project.
- **Joseph T. Keenan and Sons, Inc., Middletown - \$75,000**
Joseph T. Keenan and Sons, Inc., in Middletown received \$75,000 for a solar electricity project.

- **Seaside Graphics, Selbyville - \$69,000**
Seaside Graphics in Selbyville received \$69,000 for a solar electricity project.
- **Seaside Country Store, Fenwick Island - \$52,000**
Seaside Country Store in Fenwick Island received \$52,000 for a solar electricity project.
- **The Bank of Delmarva, Rehoboth - \$34,000**
The Bank of Delmarva in Rehoboth received \$34,000 for a solar electricity project.
- **Nantucket's, Fenwick - \$24,000**
Nantucket's in Fenwick received \$24,000 for a solar electricity project.
- **Summer Place Hotel, Rehoboth - \$22,000**
Summer Place Hotel in Rehoboth received \$22,000 for a solar electricity project.
- **Independent Holdings, LLC, Newark - \$18,000**
Independent Holdings, LLC, in Newark received \$18,000 for a solar electricity project.
- **Theodore K. Toon, Rehoboth Beach - \$9,000**
Theodore K. Toon in Rehoboth Beach received \$9,000 for a solar electricity project.
- **Nantucket's, Fenwick - \$7,000**
Nantucket's in Fenwick received \$7,000 for a wind project.

Award(s): \$3 million, Photovoltaic (PV) Systems Development

Location: Wilmington

E.I. du Pont de Nemours and Company in Wilmington received \$3 million to expand and accelerate the amount of photovoltaic (PV) awards available under the current competitive funding opportunity. Companies are partnered with experts and capabilities at DOE's National Renewable Energy Laboratory, reducing project implementation risk and increasing the likelihood that performance and reliability objectives can be achieved. This project will develop a continuous in-line manufacturing tool using atomic layer deposition, producing a flexible ultra-moisture-barrier film and enabling new thin-film flexible PV products.

MODERNIZING THE ELECTRIC GRID – 2 projects totaling \$1.1 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): \$280,000, Enhancing State and Local Governments' Energy Assurance

Location: Dover

The Delaware Department of Natural Resources and Environmental Control in Dover received \$280,000 to focus on building regional energy assurance capabilities by enhancing inter- and intra-state coordination and cooperation during energy emergencies. This project is funding the development of State Energy Assurance Plans, incorporating new energy sources such as wind, renewables, biofuels, etc. as well as updating Energy Assurance Plans in local areas. The two sets of

funding will be used to hire or retrain staff to build in-house expertise in dealing with Smart Grid technologies, critical energy infrastructure interdependencies and cyber-security.

Award(s): \$772, 000, State Assistance on Electricity Policies

Location: Dover

Delaware Department of Administrative Services in Dover received \$772,000 to hire staff responsible for facilitating the review of the expected large number of time-sensitive requests approving electric utility expenditures undertaken as part of the Recovery Act.

TRANSPORTATION – 1 project totaling \$529 million

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): \$529 million from DOE / Treasury, Advanced Technology Vehicles Manufacturing Program

Location: Statewide

Fisker Automotive closed a \$529 million loan arrangement under the Department of Energy's Advanced Technology Vehicles Manufacturing program for the development and production of two lines of plug-in hybrid electric vehicles in Wilmington, Delaware. The company estimates the project will create about 2,000 jobs.

SCIENCE AND INNOVATION - 7 projects totaling \$31.5 million

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 \$13.4 million, Advanced Research Projects Agency - Energy (ARPA-E)

Location: Wilmington, Newark

This Recovery Act project funds organizations that proposed sophisticated R&D projects to translate scientific discoveries and cutting-edge innovations into technological innovations and accelerate transformational technological advances in areas that the industry unaided is unlikely to tackle due to high technical and financial risks.

- **E.I. du Pont de Nemours and Company, Wilmington - \$8.9 million**

E.I. du Pont de Nemours and Company in Wilmington was awarded \$8.9 million under the Advanced Research Projects Agency – Energy (ARPA-E). The funds are being used to develop a commercially-viable process for the production of an advanced biofuel, isobutanol, from seaweed. The company also received \$3 million to develop a continuous in-line manufacturing tool to produce a flexible ultra-moisture-barrier film, creating new thin-film flexible photovoltaic products.

- **University of Delaware, Newark - \$4.5 million**

The University of Delaware in Newark received an ARPA-E award of \$4.5 million to develop novel, high energy density, low rare-earth content permanent magnet materials.

Award(s): \$17.5 million, Energy Frontier Research Centers

Location: Newark

The University of Delaware in Newark received \$17.5 million to design and characterize novel catalysts for the efficient conversion of the complex molecules comprising biomass into chemicals and fuels.

Award(s): 4 totalling \$600,000, Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) Round 1

Location: Wilmington

Compact Membrane Systems, Inc., in Wilmington received \$600,000 for four projects to support Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) programs. DOE is striving to maintain a strong and appropriately balanced core research program by supporting R&D at universities, the DOE national laboratories and small businesses. America's small businesses continue to make valuable contributions to advancing the Department's missions.

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/Delaware



The Karma is a sleek electric car produced by Fisker Automotive, a company that is reopening a closed GM factory in Delaware to produce a new mass-market electric sedan codenamed Project NINA. | Photo courtesy Fisker Automotive

WILMINGTON

Electric cars coming to former Delaware GM plant

If a company's cars are luxurious enough for the Crown Prince of Denmark, then just imagine how the vehicles — which have a 50-mile, emission-free range on a single electric charge — might be received by folks in the U.S. The prince drove Fisker Automotive's Karma to the U.N. Climate Conference in Copenhagen in December. Only a couple weeks before, Fisker had announced it will reopen a shuttered former General Motors factory back in America.

The factory in Wilmington, Del., will produce long-range, plug-in, electric hybrid vehicles. The company selected the plant as its primary production facility based on size, production capacity and its access to shipping ports, rail lines and a skilled workforce. Production will begin in 2012. Until then, the company is working to refurbish and retool the plant for its new model that will be produced there, codenamed Project NINA, a mass-market plug-in sedan.

"While some wanted to write off America's auto industry, we said 'no.' We knew that we needed to do something different — in Delaware and all across the nation," Vice President Joe Biden said in a news release. "We understood a new chapter had to be written, a new chapter in which we strengthen American manufacturing by investing in innovation."

The plant plans to build 115,000 to 125,000 cars per year when it hits full production around 2014, putting about 2,000 people back to work and creating roughly 5,000 jobs nationwide for parts suppliers and related industries. About half of the vehicles will be exported.

"The plant was recently closed by GM and in very good condition with great equipment there that we can use such as a newly installed paint facility that would've cost us more than we paid for the entire

plant to put in ourselves," Russell Datz, director of public relations for Fisker, says. "Another reason we chose the site is because it can be very difficult and expensive to train workers to build world-class cars. The team over there had won several awards, so we're going to put many of those people back to work."

Jobs are right around the corner for the Wilmington area, and so is affordable plug-in hybrid technology for all Americans.

Delaware is first state to launch Appliance Rebate Program

On December 1, 2009, Delaware became the first state in the nation to launch a State Energy Efficient Appliance Rebate Program, just one day after federal funds were approved by the Department of Energy. Delaware's program, run by the non-profit Sustainable Energy Utility (SEU), provides consumer rebates on ENERGY STAR qualified room air conditioners, clothes washers, dishwashers, freezers, refrigerators, and gas water heaters. Rebates range from \$25 to \$200. Rebates for refrigerators and freezers closed on January 31, 2010.

"The strong response to the SEU's appliance rebate program demonstrates Delawareans' interest in cutting waste and saving money," says Senator Harris McDowell, co-chair of the SEU board of directors. "The appliance program really represents the front door to a host of savings opportunities to come." SEU provides a one-stop resource to help Delaware residents and businesses save money, create new jobs, and improve the environment.

To date, more than 7,170 appliance rebates have been processed, saving 871,000 kWh of electricity, 8,850 therms of natural gas, more than \$150,000, and 1,700,000 pounds of CO₂ a year.

Low E brings high savings in Newark, Del.

When city workers stood near four giant aluminum-framed picture windows in Newark, Del.'s municipal building, the sun streamed through with such intensity that it made staffers sweat from its glare.

Now, after the June installation of 76 low-emissivity (Low-E) windows throughout the building, the Delaware workers are keeping cool.

To fund these improvements, Newark applied for and received a \$147,800 Energy Efficiency and Conservation Block Grant from the U.S. Department of Energy. The grant will reimburse the labor and material costs of purchasing and installing more efficient windows and lights. The city expects to see annual energy savings of approximately 125,920 kilowatt hours and \$12,592.

"Employees are more comfortable in their offices," says Carol Houck, assistant to the city manager. "But most importantly, there's

- City replaced 76 windows with low emissivity, double pane, fiberglass

- Windows to save estimated 125,920 kilowatt hours yearly

- City projects savings of \$12,500 annually through lighting and window upgrades



Low emissivity, double pane, fiberglass windows in Newark, Del.'s municipal building. I Photo courtesy of Carol Houck

- Lighting retrofits and overhead switch-mounted occupancy sensor installations are expected to yield energy savings of approximately 125,920 kilowatts a year and cost savings of \$12,592.

- Low-E coatings are microscopically thin and are applied to the surface of glass panes. The coatings control heat transfer through windows and can reduce energy loss by up to 50%.

less heat and cooling loss so our facility is more efficient.”

Buying domestically

For the windows, the city sought an option that maintained the proper temperature indoors, lowered energy costs and contributed to a productive work environment—all delivered by American manufacturers.

Tim Vollentine, a sales representative for AeroSeal Contracting, a commercial exterior vendor, helped the city find the best replacement for its old single pane, aluminum windows: the choice – low-E, double pane, fiberglass windows by Marvin.

A 30 year window industry veteran, Vollentine sees upside as more organizations look to save money through energy conservation efforts.

“When the government made the stimulus funds available and tied the requirements to thermal efficiency and energy savings, fiberglass windows became a more viable option,” he says. “When someone’s concerned about energy efficiency, it’s a challenge because you’re trying to achieve the best possible performance at the best price with multiple considerations to balance.”

Newark is looking at other project with energy efficient lighting retrofits are next. Graybar Electric, a components, equipment and materials distributor, will supply the occupancy sensors. HD Supply, an infrastructure and energy product distributor, will provide the Universal Voltage Ballasts, electrical devices that regulate lighting. Tecot Electric will deliver the lamps.

Emissivity

One term that many buyers don’t understand is emissivity -- a measurement of how well something radiates absorbed energy. The more reflective something is, the less emissivity it has.

“Windows coated in low-Emissivity materials, help control the temperature inside a building,” Vollentine says. “Low-E glass reflects radiant energy from the inside, keeping heat inside rather than allowing it to be lost through the windows. It also reflects radiant energy from the outside, keeping the building cool in summer.”

The exact amount of energy and cost savings from the window replacements won’t be known until the city compares year-over-year bills, but Newark’s Houck expects it to be substantial because employees no longer feel compelled to adjust the heat and cooling system.

WILMINGTON

DuPont to develop ultra-thin protective film for photovoltaic panels

Delaware-based DuPont is working to develop ultra-thin moisture protective films for photovoltaic panels — so thin they’re about 1,000 times thinner than a human hair.

This new photovoltaic technology will let manufacturers of copper indium gallium selenide, or CIGS, solar cells and organic light emitting diodes, or OLED, protect products with thin layers of ceramic and polymer material instead of glass. These ultra-thin protective films could help prevent deterioration from moisture.

Because of their potential to reduce the cost of producing solar energy, “thin-film PV modules are projected to be the fastest-growing segment of the solar module industry,” says Marc Doyle, global business director at DuPont Photovoltaic Solutions.

CIGS are very sensitive to moisture, according to DuPont. While glass serves as a good moisture barrier, DuPont believes the industry needs to explore other materials.

In order to develop this product, DuPont will go through two program phases. The first focuses on the development of a prototype for high-speed production, while the second works to design a pilot-scale facility.

“This three-year program will enable panels to be made with flexible plastic instead of glass that can be bent and wrapped, offering greater versatility and easier integration into the roofing, windows or siding of a commercial or residential building,” Marc says.

With help from Recovery Act funds, DuPont hopes the product will be available for sampling in 2012 and commercialization in 2014.

“Addressing energy security is a monumental challenge that takes collaborations and partnerships — no one sector or organization can do it alone,” Marc says.

If the program is successful, flexible CIGS modules could help bring down installation costs and enable faster and more-efficient manufacturing. Also, the lighter materials would reduce the overall weight of the panels, which would cut shipping costs.

In addition, the flexibility of the material could help expand options for installation.