



RENEWABLE ENERGY RESOURCES PROGRAM REPORT

January through December 2014

**Illinois Department of Commerce and Economic Opportunity
Illinois Energy & Recycling Office
Renewable Energy Resources Program
500 East Monroe
Springfield, Illinois 62701**



**Illinois
Department of Commerce
& Economic Opportunity**

Bruce Rauner, Governor

Executive Summary

Since its inception, the Renewable Energy Resources Program (RERP) has successfully facilitated over \$382 million of total investment in renewable energy projects in Illinois through \$63 million in RERP grant and rebate expenditures (see figure below). In 2014, about \$6 million in incentives was provided to support over \$20.7 million in renewable energy projects. This consisted of about \$1.8 in solar and wind energy rebate incentives and about \$2.6 million in grants for larger solar and wind energy projects (projects over \$100,000 in total cost). DCEO also supported five other grants to support renewable energy education, training, and outreach, as well as support for a bulk solar purchase for several community colleges in Illinois.

Table 1: Projects Funded through the Renewable Energy Resources Program, 1999-2014.

Fiscal Year	Incentives Awarded (\$)	Total Project Cost (\$)	Number of Grants Issued	Number of Rebates Issued
1999	\$40,265	\$90,381	2	3
2000	\$2,520,831	\$10,276,563	14	20
2001	\$2,462,423	\$5,666,165	23	35
2002	\$8,109,613	\$66,009,091	25	37
2003	\$6,394,456	\$69,126,237	32	52
2004	\$5,175,936	\$104,660,966	16	65
2005	\$1,366,560	\$3,063,006	5	68
2006	\$568,870	\$1,617,687	0	110
2007	\$3,500,021	\$11,045,159	35	165
2008	\$2,307,895	\$3,719,918	2	164
2009	\$4,876,068	\$35,035,919	24	184
2010	\$6,121,781	\$13,028,846	3	222
2011	\$2,220,457	\$5,469,831	3	109
2012	\$6,176,409	\$19,092,036	23	178
2013	\$5,866,395	\$13,677,182	13	184
2014	\$5,862,993	\$20,752,652	20	232
2015*	\$72,909	\$289,019		20
TOTAL	\$63,643,882	\$382,620,658	240	1848

* FY 2015 projects funded by 12/31/14

The Department of Commerce and Economic Opportunity (the Department) finds that the facilitation of renewable energy projects in Illinois brings economic development benefits to the state including new income streams, new jobs, new investments and new property tax sources.

This investment has assisted in the development of over 24 MW of solar photovoltaic/distributed wind development and over 180 MW of wind farms (during early wind development in mid 2000s), as well as hundreds of solar thermal and biomass to electricity projects. The current annual value of the energy produced from the distributed renewable energy projects the Department has funded is estimated to be over \$4.5 million annually, and there is an additional \$28 million annually from the wind farms.

Renewable energy projects also have significant employment impacts. For example, several of the early wind farms in Illinois received support through the RERP. Today, Illinois is 5th wind energy development in the country and supports 2,412 jobs for the construction of the wind farms, 211 long-term jobs for the operations of the wind farm, and thousands of indirect jobs as a result of the millions of dollars invested throughout the state. Furthermore, a recent survey by the Clean Energy Trust found that there are over 20,000 renewable energy sector jobs in Illinois.

However, the issues with the Renewable Portfolio Standard (RPS), has led to a significant slowdown of wind energy development in Illinois. The current rules of the RPS have not allowed the Illinois Power Agency to procure renewable energy the last few years. This slowed renewable energy development had led to a contraction of employment in renewable energy by 0.2% in 2013. Creating a stronger RPS was identified by clean energy businesses as the most important factor in the future growth of their businesses.

Additionally, even though there is now a solar carve-out as part of the RPS, no solar capacity has been procured from the power agency and growth in solar has remained slow. The funding through the Renewable Energy Resources Program has supported the addition of 3-5 MW of distributed solar over the last few years.

To sustain a growing renewable energy industry in Illinois, it is vitally important that legislation to both fix and expand the RPS, and extend the sunset of the Renewable Energy Resources Program be enacted.

This report contains four parts:

- Part I: Authorization and Funding Sources
- Part II: Report on the Renewable Energy Resource Base in Illinois
- Part III: Report on Program Implementation
- Part IV: Report on Legislative Recommendations

Part I:

Authorization and Funding Sources

Authorization

The Renewable Energy, Energy Efficiency, and Coal Resources Development Law (20 ILCS 687, “the Law”) of 1997 directs the Department of Commerce and Economic Opportunity (the Department) to administer the Renewable Energy Resources Program (RERP) and to provide grants, loans and other incentives to foster investment in, and the development and use of, renewable energy resources. The Law directs the Department to establish eligibility criteria for the incentives and to review them annually and adjust them as necessary. The provisions of this Law are repealed ten years after the effective date unless renewed by act of the General Assembly. The current sunset date is December 12, 2015.

The Law defines “renewable energy resources” to include energy from wind, solar thermal energy, photovoltaic cells and panels, dedicated crops grown for energy production and organic waste biomass, hydropower that does not involve new construction or significant expansion of hydropower dams and other such alternative sources of environmentally preferable energy. "Renewable energy resources" does not include, however, energy from the incineration, burning or heating of waste wood, tires, garbage, general household, institutional and commercial waste, industrial lunchroom or office waste, landscape waste, or construction or demolition debris.

Contributions to the Renewable Energy Resources Trust Fund

Funding for the Renewable Energy, Energy Efficiency, and Coal Resources Development Law is required by the Renewable Energy Resources and Coal Technology Development Assistance Charge as follows:

- 1) \$0.05 per month per residential electric service;
- 2) \$0.05 per month per residential gas service;
- 3) \$0.50 per month per nonresidential electric service taking less than 10MW of peak demand during the previous calendar year;
- 4) \$0.50 per month per nonresidential gas service taking less than four million therms of gas during the previous calendar year;
- 5) \$37.50 per month per nonresidential electric service taking 10MW or greater of peak demand during the previous calendar year;
- 6) \$37.50 per month per nonresidential gas service taking four million or more therms of gas during the previous calendar year.

Fifty percent of the moneys collected are deposited into the Renewable Energy Resources Trust Fund. The remaining fifty percent is deposited in the Coal Technology Development Assistance Fund for use under the Illinois Coal Technology Development Assistance Act. The Renewable Energy Resources Trust Fund receives approximately \$5,000,000 to \$6,500,000 per year to fund eligible projects.

Part II: Report on the Renewable Energy Resource Base in Illinois

The renewable energy resources in Illinois that have significant growth potential include biogas and biomass, solar and wind. The following sections discuss each of these renewable energy resources.

Wind Energy

Wind is a clean, inexhaustible energy resource and is one of the fastest-growing forms of electricity generation in the United States. The potential for wind energy development in Illinois is great. The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) estimates over 9,000 MW of commercial wind energy potential in the state. According to the American Wind Energy Association (AWEA), Illinois ranks 14th in the nation in potential wind resources. Modern wind generation investments, at current prices, can be competitive with more traditional sources of new electric generation and therefore a valuable hedge against higher electric costs that may result from over reliance on traditional energy resources. The federal production tax credit (or PTC, currently valued at 2.2 cents per kWh) was renewed late in the year through 2014; however, with the late renewal of the PTC and the uncertainty of the future of the PTC beyond 2014, wind farm development has slowed down nationally.

Illinois is a leader in the wind industry. Over 3,569 MW of wind energy capacity have been installed, ranking Illinois 5th in the country in wind power capacity. There is currently 523 MW of wind farm projects under construction and about another 3,000 MW of projects have been permitted (AWEA, <http://awea.files.cms-plus.com/FileDownloads/pdfs/Illinois.pdf> and Illinois Wind Working Group, <http://renewableenergy.illinoisstate.edu/downloads/databases/071714%20Permitted%20Wind%20Farms%20in%20IL.pdf>).

Wind energy has a significant economic impact on the state. According to the most recent study conducted by the Center for Renewable Energy at Illinois State University (<http://renewableenergy.illinoisstate.edu/wind/pubs.shtml>), the wind industry has supported 2,412 jobs for the construction of the wind farms and 211 long-term jobs for the operations of the wind farm. The wind farm developments also provide indirect and induced economic impacts to the communities they are built in, supporting about 19,047 jobs during the construction phases and 814 long-term jobs. Furthermore, these wind farms have provided \$13 million per year in lease payments to landowners, and provide over \$28.5 annually in property taxes to local governments.

Illinois is also a leader in wind turbine manufacturing with major wind industry manufacturers such as Trinity Structural Towers and gearbox manufacturer Winergy. Over 30 other companies in Illinois involved in some component of the wind energy supply chain, and there are also eight wind project developers with North American headquarters in Chicago. According to AWEA, there are 37 wind-related manufacturing facilities in Illinois with over 1,000 employees.

Table 3: Wind Farms in Illinois, Source: Illinois Wind Working Group

Wind Projects	Location (County)	Capacity (MW)	Year Online
Mendota Hills	Lee County	52	2003
Crescent Ridge	Bureau County	54	2005
Twin Groves Wind Farm I	McLean County	198	2007
GSG 1 Wind Farm	Lee (19 turbines) and LaSalle (21) Counties	80	2007
Camp Grove Wind Farm	Marshall (60) and Stark (40) Counties	150	2007
Twin Groves Wind Farm II	McLean County	198	2007-2008
Grand Ridge Energy Center Phase I	LaSalle County	99	2008
Providence Heights	Bureau County	72	2008
EcoGrove Wind Farm Phase I	Stephenson County	101	2009
Rail Splitter Wind Farm	Logan (29) and Tazewell (38) Counties	101	2009
Top Crop Wind Farm Phase I	LaSalle County	102	2009
Grand Ridge Energy Center Phases II, III, and IV	LaSalle County	111	2009
Lee-DeKalb Wind Energy Center	DeKalb (126) and Lee (19) Counties	218	2009
Stearator Cayuga Ridge South Wind Farm	Livingston County	300	2010
Top Crop Wind Farm Phase II (Blackstone Wind Farm II)	Grundy County	198	2010
Big Sky Wind Farm	Bureau (56) and Lee (58) Counties	239	2011
White Oak Energy Center	McLean County	150	2011
Shady Oaks Wind Farm	Lee County	110	2011
Bishop Hill I Wind Farm	Henry County	211	2012
Bishop Hill II Wind Farm	Henry County	81	2012
Settlers Trail	Iroquois County	150	2012
Pioneer Trail	Iroquois County (17) and Ford County (77)	150	2012
California Ridge Wind Farm	Vermillion (104) and Champaign (30) Counties	217	2012

There is also interest in small-scale and community-scale wind turbines in Illinois. DCEO has provided rebates for small wind energy systems under 100 kW, and has done several grant for projects ranging from 100 kW to 1.5 MW.

Solar Energy

Solar technologies use energy from the sun to provide heat, light, hot water, electricity and even cooling, for homes, businesses, and industry. Illinois has a significant solar energy resource and installations of thermal and photovoltaic (electric) systems are vastly increasing, but the ability to truly capitalize on the potential development of this industry is stymied by state policy uncertainty.

With the new requirements for solar under the renewable portfolio standard (enacted in 2010), Illinois started to see the development of solar farms. Two solar farms received long-term contracts through the Illinois Power Agency in 2011 to help meet the requirements of the Renewable Portfolio Standard. Invenergy developed a 20 MW solar farm in LaSalle County. Rockford Solar Partners was also selected by the Illinois Power Agency to provide solar energy, completed the installation of a 3 MW solar farm at the end of 2012. There has also been significant development of large distributed solar energy projects to meet the needs of large

energy users such as retailers, manufacturing facilities, and governmental agencies and non-profit entities. For example, over the last three years, DCEO has committed funds to 43 large solar and wind distributed energy systems that will add about 5 MW of solar in the state. With this significant development of solar in the last few years, there is now about 55 MW of solar photovoltaic systems spread throughout the state of Illinois.

Since 1999, approximately 20 MW of photovoltaic systems and over \$23 million in solar thermal systems have been supported with over \$29 million in grants and rebates through the Renewable Energy Resources Program. While the price of solar photovoltaic systems have declined over 50% in the last few years, financial support through the Renewable Energy Resources Program is necessary, to continue to encourage the development of solar energy resources throughout Illinois. Solar energy is becoming more cost competitive, however, since the retail prices of electricity and natural gas have also fallen in recent years, there is still a ways to go before solar will be a cheaper source of energy.

Illinois is also trailing much of the country in solar development. Though Illinois has the fifth highest potential for rooftop solar PV in the country (estimated at 26,000 MW), according to the Solar Energy Industries Association, Illinois ranks 24th in solar development. Illinois is considerably behind states ranked in the top 10 of solar development; for example, Illinois has a total solar capacity over 53 MW, while Massachusetts installed about 85 MW just in the 3rd quarter of 2014 alone.

There are several reasons for the lag in Illinois' solar market. In 2011, the State legislated a solar carve out as part of the Renewable Portfolio Standard in 2011 that requires that 1.5% of the state's eligible retail load come from solar energy by 2025. However, given the way the law was written, and with so many municipalities in the state deciding to provide aggregation services and purchasing electric power for their residence, the Illinois Power Agency customer base (which includes the ComEd and Ameren retail customers) has shrank to the point that they have not needed to procure renewable energy to meet the renewable portfolio standard. Also, now that a majority of electric customers in Illinois are now purchasing power from alternative retail electric service companies (ARES) these ARES must provide compliance payments that goes into a renewable energy fund. However, due to a problem in the existing legislation, to date, none of these renewable energy funds have yet to be used to purchases renewable energy, either through renewable energy credits or long-term power purchase agreements.

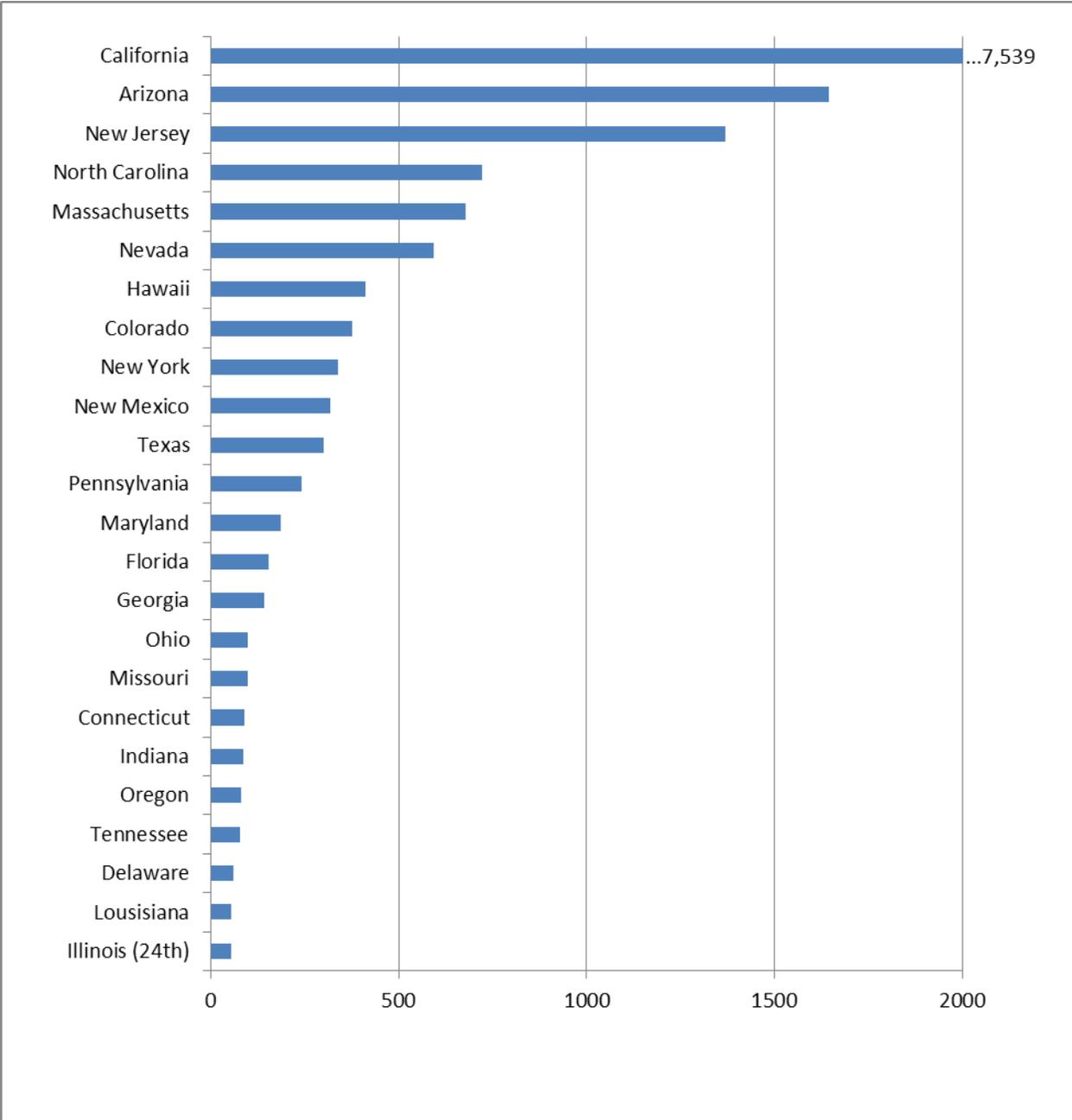


Figure 1: Cumulative Solar Capacity by State Thru 3rd Quarter 2014, Source: Solar Energy Industry Association.

Despite these challenges, recent developments indicate that the Illinois solar market could grow significantly in the next two years. In 2014, the Illinois Power Agency Act was amended (Public Act 098-0672) to authorize the Illinois Power Agency to spend up to \$30 million of the stranded compliance payment dollars, for a one-time procurement of Solar Renewable Energy Credits (SRECs). This \$30 million will be done over three different procurement events, beginning in June 2015 and ending with the third event in March 2016. The IPA will also procure, on behalf of the utilities, SRECs from new and existing systems, through two energy procurement events in 2015 (starting in April). This procurement was triggered by the need to purchase standard electricity for Ameren. Whenever, the IPA purchases conventional power for the utilities they

are also required to purchase renewable energy. The IPA has elected to focus the 2015 procurement solely on solar asset procurement and will not be purchasing wind RECs in the plan. There will be \$28 million in funds for SRECs under this energy procurement.

Consequently, in 2015-16, the Illinois Power Agency will invest \$58 million in SRECs, which will spur huge growth in the solar photovoltaic market in Illinois. Questions remain on whether the SREC market will continue beyond 2016. Unless further legislation is passed to fix the Renewable Portfolio Standard, this SREC procurement may not be available beyond early 2016, and the solar market in Illinois will go from boom to bust. A bill (HB2607/SB1485) was introduced in February 2015 to extend and ramp up the state's renewable standard by requiring 35 percent of energy consumed in Illinois to be generated by renewable sources by 2030. This bill would also:

- make technical fixes to the RPS so that funding to procure renewable energy would be available each year,
- allow the Illinois Power Agency to create a long-term plan for procuring renewable energy,
- create programs for low-income and community solar, and solar farm development in brownfields,
- fund solar job training programs,
- and have the Illinois EPA create a market-based auction system for CO₂ allowances, and use those funds towards more energy efficiency and renewable energy.

Furthermore, the Renewable Energy Trust Fund that supports the DCEO Renewable Energy Programs is set to expire in December 2015. Unless legislation is passed to extend this sunset date, the Department will no longer be able to offer programs to promote the renewable energy industry. Senate Bill 51, introduced in January 2015, would extend the sunset of the program to December 2020.

Biogas and Biomass

Biogas refers to the methane produced by livestock manures and wastes, municipal waste water sludge, and segregated organic wastes. Biogas produced by anaerobic digestion is a potential source of energy, and can destroy disease causing pathogens and reduce the volume of disposed waste products. Biomass refers to plant and plant-derived material that can be used either as a source of energy or for its chemical components and includes dedicated crops grown for energy production as well as agricultural residues. Biomass commonly refers to organic material grown to produce biofuels but also includes organic materials combusted to produce heat energy.

Although much of the resource is highly cost-constrained for electric generation in the near future (though not for transportation fuels, e.g., ethanol), the economics of biogas and biomass to energy systems are improving. Gasification and co-firing technologies with combined heat and power are technologically feasible for large-scale electric generation in Illinois. While such systems would likely create new markets for farmers, and reduce pollution levels for all traditional power plant pollutants, the economic feasibility of the systems, particularly in competition with other renewable energy resources such as wind energy, will hinge on further improvements that reduce collection and transportation costs.

Created in 2010, the Illinois Biomass Working Group (IBWG) continues to help link farmers businesses, universities, and public agencies to share information and collaborate to advance biomass energy in Illinois. The working group is managed by the Value Added Sustainable Development Center at the Illinois Institute for Rural Affairs at Western Illinois University. The IBWG has periodic meetings and field visits to biomass-related businesses, and has also created a website for the working group to share information.

The continued support through the Renewable Energy Resources Program and other state and federal incentives, as well as research and development support through the Department of Agriculture and Illinois’ universities will be crucial in the further development of biogas and biomass resources in Illinois.

Part III: Report on Program Implementation

RERP Implementation Summary, January 1997 to December 2014

With the passage of the Law in December 1997, the Department developed draft grant and rebate program guidelines and established eligibility criteria. The Department developed final program guidelines and released the program in November of 1998 with the first RERP grants and rebates awarded in March of the following year. As of December 2014 the Renewable Energy Resources Program has awarded a total of 240 grants and over 1848 rebates totaling more than \$54 million in incentives for renewable energy projects in Illinois.

2014 Renewable Energy Resources Program

Solar and Wind Energy Rebate Program

Demand for the Solar and Wind Energy Rebate Program continued to be very strong in 2014; the Department received about \$3 million in rebate request in the six weeks the program was opened in FY 2014. Two hundred thirty-two projects were funded for the installation of solar thermal, solar photovoltaic (electric), or wind turbine projects in FY 2014, compared to 176 projects in 2013 and 197 projects in 2012.

Table 4: FY2014 Solar and Wind Rebate Program Results

Type of System	Number of Projects	Rebate Amount	System Capacity (kW)
PV	194	\$1,577,245	2,270
ST	35	\$188,033	----
Wind	3	\$31,200	26

Even with incentives lowered two years ago, there is still very strong demand for rebate funds. The program received over 320 applications in 2014, and for FY2015 (accepted applications from August to mid-October 2014) DCEO received a record number of over 600 rebate applications. However, in January 2015 an executive order was issue to freeze “non-essential” state spending as a result of the existing state budget crisis, including freezing the funds for the Solar and Wind Rebate program. A lengthy delay in processing rebates and the uncertainty of

when the spending freeze will be lifted, may significantly diminish the number of solar and wind projects in FY 2015.

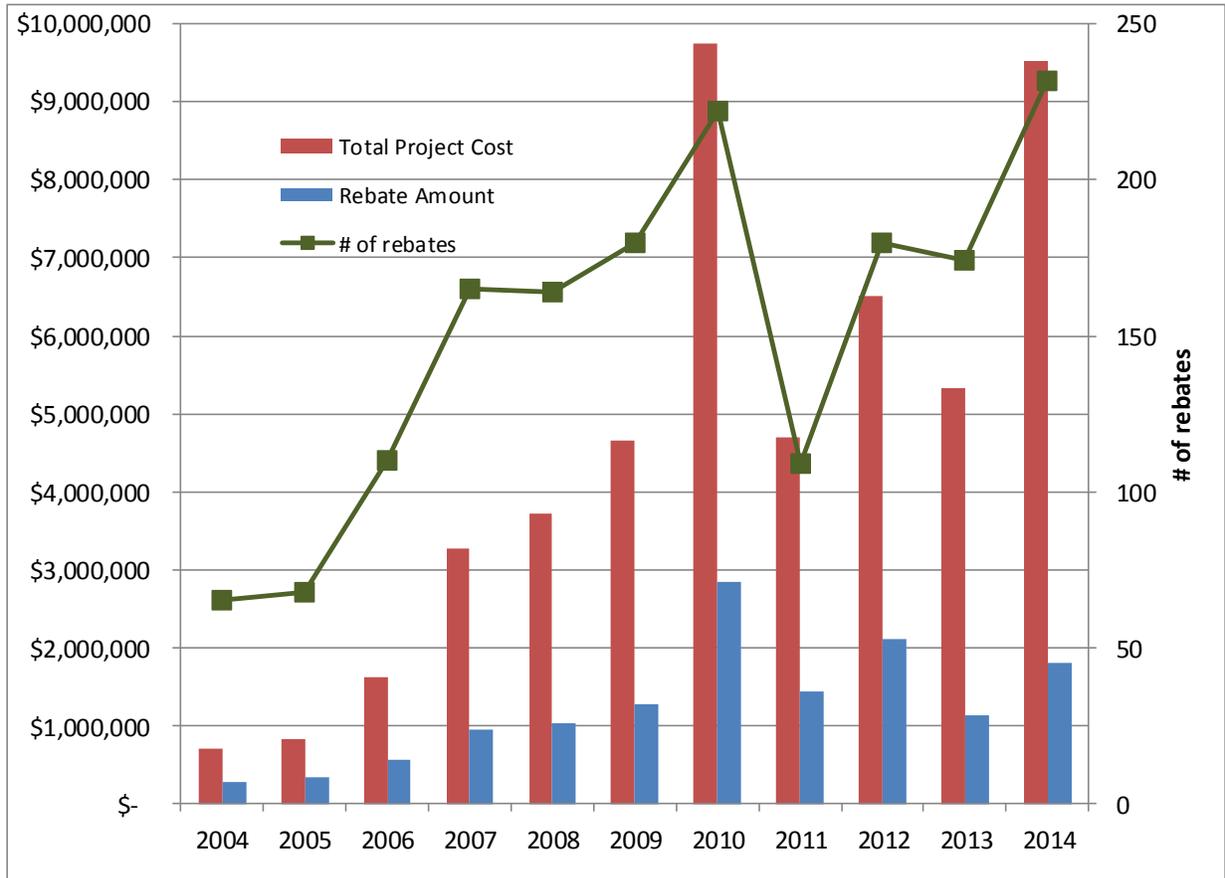


Figure 2: DCEO Solar and Wind Rebates Distributed by State Fiscal Year

Beginning in FY 2010, DCEO started providing rebates for wind turbines less than 100 kW. Three rebates were paid to support about 26 kW of small wind projects in 2014. DCEO also provided three grants for the installation of a 710 kW of wind energy in 2014.

Large Distributed Solar and Wind Grant Program

The Department issued a Request for Applications (RFA) in September 2013 for Community Solar and Wind projects. The program offers incentives to businesses, non-profit organizations, and public sector entities interested in solar or wind energy systems to meet a portion of their energy needs. Businesses are eligible for incentives up to 30% of total project cost, and non-profit and public sector entities are eligible for incentives for up to 50% of the total project cost.



NGS Printing had a 189 kW solar photovoltaic system installed on the roof of their facility in 2014.

The Department received 22 applications requesting \$3.5 million in incentives in FY 2014. The Department selected 15 projects (all solar PV) for about \$2.5 million in support. These projects are expected to support the development of over 2.6 MW of solar photovoltaic projects and will cost about \$10 million to complete. As of the end of 2014, three of these projects (.53 MW) were installed and operating.

Year	Number of Projects	Grant Amount	Total Project Cost	System Capacity (MW)
2012	16	\$2,487,462	\$7,583,834	1.41
2013	11	\$1,087,097	\$4,158,475	0.95
2014	15	\$2,566,377	\$9,603,770	2.62

In August 2014, DCEO issued the Request for Applications for FY 2015 Solar and Wind Grants. The Department received a record number of grant applications (44) requesting almost \$7 million in grant funds. Given the program budget was limited to \$2.3 million, 12 applications were selected for funding.

Renewable Energy Business Development Program

In 2014, DCEO provided five grants to promote the utilization of renewable energy in Illinois through research, education, outreach, and training programs. These grants include projects for K-12 renewable energy education through the Renewable Energy Center at Illinois State University, outreach and training programs by the Illinois Solar Energy Association, and smart grid research and education at the University of Illinois. DCEO also provided a grant to the

Illinois Green Economy Network, to conduct a bulk solar purchase for community colleges interested in having solar energy installed on their campus.

Biogas and Biomass to Energy Grant Program

In 2013, a two-year grant was initiated with the Energy Resources Center (ERC) at the University of Illinois at Chicago, to administer the biogas and biomass to energy grant program. Over \$300,000 of funding was initially available for grants to applicants interested in installing a biomass or biogas to energy system. ERC selected two projects for funding feasibility studies, but no projects were installed during 2014.

Future of Renewable Energy Resources Program

Assuming legislation is enacted to continue the Renewable Energy Resources Program, the Department may consider several changes to the program offerings, depending what happens with the implementation of the Solar Renewable Energy Credits and the proposed legislation to fix and expand the RPS. The Department may consider different incentive levels for rebate and grant programs, changes to the renewable energy business development program, options for offering loan products to further leverage funds, and a focus on specific market segments (low-income housing and public sector) that may need stronger incentives than other segments.

Part IV: Report on Legislative Recommendations

Demand for funds through the Department's Renewable Energy Resources Program has continually grown, especially over the last five years. For example, the FY2015 Solar and Wind Energy Rebate Program (open in September 2014) received over 600 applications requesting more than \$4 million in incentives within a six week period. Due to limited funding, we will likely only be able to consider funding about 2/3 of these applications. In each of the last five program years, the rebate program has had overwhelming demand for the limited program funds.

There are three actions that would help the State to encourage further development of renewable energy in Illinois. First, since the Renewable Energy Resources Trust Fund is set to expire in December in 2015, legislation to extend the program to December 2020 should be considered. While solar and wind energy is becoming more cost competitive, it is not at price parity in Illinois with conventional sources of electric generation such as coal or nuclear power. Another barrier to solar and wind development for homeowners and businesses is the large upfront cost of purchasing a system. It is believed that as technology improves and prices continue to decline for solar and wind, that there will be less of a need to incentivize renewable energy development in the future.

Second, a prohibition of "borrowing" from the renewable energy fund for the state general fund would allow for program continuity and lessen the disruptions in the renewable energy markets in Illinois that the lack of funding has caused over the last few years. Many renewable energy projects are put on hold or cancelled when the state goes several months without funds available for the RERP.

Third, an increase in the annual RERP funding would encourage the long term growth of renewable energy and supporting economic development in the state of Illinois. An increase in the Renewable Energy Resources and Coal Technology Development Assistance Charge would provide additional funding with little cost to ratepayers. For example, a doubling of the charge would only increase a residential customer's electrical service bill by \$0.60 per year, while increasing the funding to the RERP programs.

These changes to the Renewable Energy Resources Program would allow the Department to provide more stable and consistent program funding over the next five years, and to encourage continued renewable energy development and job creation in Illinois.

Further action to fix and expand the Renewable Portfolio Standard is also necessary to create significant growth in the industry that will position Illinois to address the approaching requirements of the EPA's Clean Power Plan (Clean Air Act Section 111(d)). Expanding the development of renewable energy and energy efficiency will play a critical role in complying with the proposed 33% CO₂ emission reductions required under these new rules.