RE-Powering America's Land Initiative:
Benefits Matrix

February 2018

Through the RE-Powering America's Land Initiative, the U.S. Environmental Protection Agency (EPA) is encouraging the reuse of formerly contaminated lands, landfills, and mine sites for renewable energy development when such development is aligned with the community's vision for the site. Using publicly available information, RE-Powering maintains a list of completed renewable energy installations on contaminated sites and landfills. As part of its inventory, RE-Powering tracks benefits associated with completed sites, such as energy cost savings, increased revenue, and job creation.

To date, the RE-Powering Initiative has identified 253 renewable energy installations on 238 contaminated lands, landfills, and mine sites[1], with a cumulative installed capacity of 1,398 megawatts (MW) in a total of 40 U.S. states and territories. Although all renewable energy installations on contaminated sites likely have some extrinsic or intrinsic value to the developer or community, the specific benefits realized for any one project are not always touted publicly.

By researching an array of publicly available documents (including press releases, fact sheets, and case studies), RE-Powering has identified self-reported benefits for 204 of the total 253 renewable energy land installations that the Initiative is tracking throughout the United States. While the RE-Powering Benefits Matrix is not a comprehensive assessment of all benefits associated with completed renewable energy projects on contaminated lands, it represents the breadth and magnitude of benefits being realized across the country by those developing these types of installations.

Sources used to populate this document include other EPA resources (fact sheets, case studies, etc.) or statements by parties directly involved with their respective projects—e.g. the city, town, or county; site owners; developers; utilities; federal agencies; and/or financiers. Note that the benefits reported may have been calculated using different methods and/or expressed in different units; therefore, a cumulative expression of the total benefits achieved by renewable energy projects on contaminated lands is not possible from publicly available sources. In addition, the specific benefits of each project can vary due to a number of factors, including electricity prices, site clean-up status, incentives and policies such as renewable portfolio standards, development costs, availability of transmission and infrastructure, and renewable energy technology type and capacity. That said, the most commonly reported benefits from renewable energy on contaminated lands include revenues from land leases and taxes, electricity cost savings associated with the reduced need to purchase power from the grid, job creation, and reduced greenhouse gas emissions.

RE-Powering America's Land Initiative

To provide information on renewable energy on contaminated land projects not currently appearing in this document, email cleanenergy@epa.gov. To receive updates, newsletters, and other information about the RE-Powering program, click the banner below.

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EPA launched @EPAland on Twitter to help you learn what is being done to protect and clean up our land. Follow @EPAland to join the conversation.

1 In this document, *installation* and *project* refer to a single renewable energy technology installation, while *site* and *location* refer to a single contaminated property. A *site* or *location* may have more than one *installation* or *project*. For example, the former Dave Johnston Mine (one *site*) has three separate wind installations, two of which reported benefits that are highlighted here.

Office of Communications, Partnerships, and Analysis
Office of Land and Emergency Management

A Range of Benefits from RE on CL

Renewable energy installations on contaminated land can provide a range of benefits to municipalities, developers, businesses, and the environment. Some examples include:

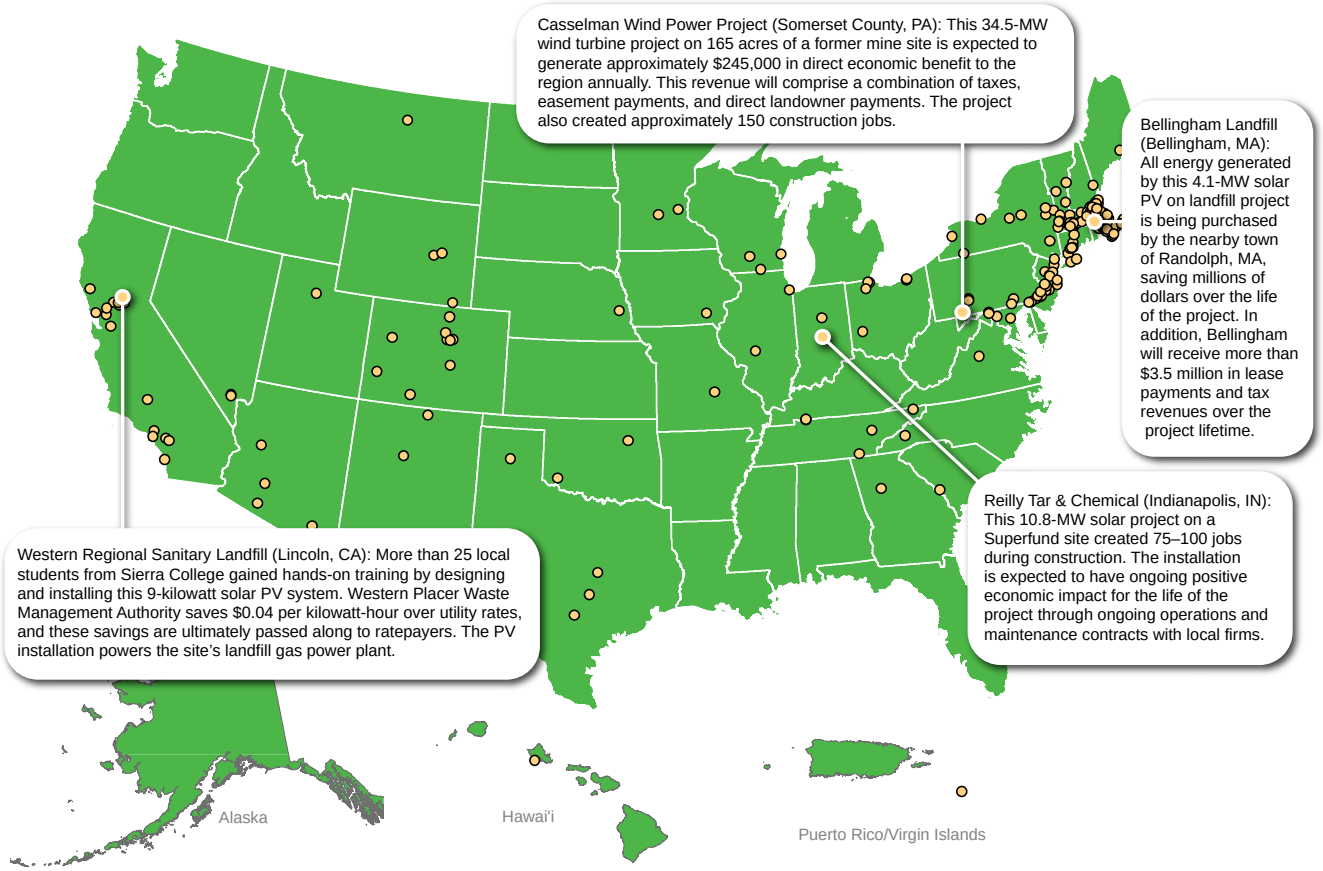
Boxford Landfill Solar *(Boxford, MA)*: The town of Boxford will receive economic benefits of ~$3 million over the next 20 years from this 1-MW solar photovoltaic (PV) installation on a capped municipal landfill. These combined benefits include (1) getting nearly all of the town's municipal annual electricity needs from the solar panels, at rates approximately 40% cheaper than the town's current power purchase rate; (2) receiving lease revenue from the solar project financier, SunRaise Investments, LLC, and GG Renewables, the long-term owner and operator of the project; and (3) receiving tax revenue for the life of the solar project. The project will also generate enough energy to power the equivalent of 200 homes.

Osgood Landing Solar *(North Andover, MA)*: The Power Purchase Agreement for this 6-MW solar PV installation on a former manufacturing and designated state brownfield site includes a 15% discount on electricity to the town of North Andover. Savings from the discount are estimated to reduce the town's energy bill by $160,000 in the first year. North Andover expects to accumulate over $6M in energy savings and payment in lieu of taxes (PILOT) revenue over the life of the solar project.

Owens Corning Landfill Solar *(Gloucester Township, NJ)*: This New Jersey community will realize $830,000 in revenue from this 3-MW solar PV project on 14 acres of the Owens Corning industrial landfill site. This revenue will come from lease payments made by solar project owner from Marina Energy over the life of the project.

Williamson Landfill *(Williamson, NY)*: This 1.5-MW solar PV system is expected to generate enough power to support all of Williamson's town facilities. The town anticipates up to $1.5 million in savings over the 25-year life of the solar panels.

204 Renewable Energy Projects with Reported Environmental and Economic Benefits



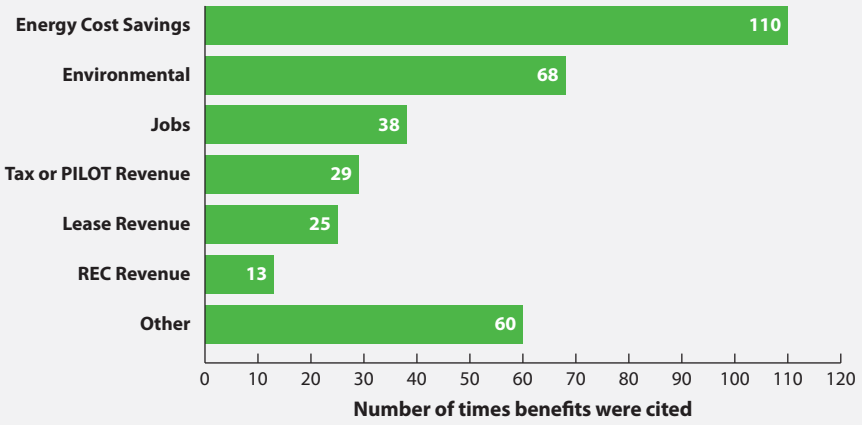
This map is for informational purposes only. The information was gathered from public announcements of renewable energy projects in the form of company press releases, news releases, and, in some cases, conversations with the parties involved. This map may not be a comprehensive representation of all completed renewable energy projects on contaminated lands. To provide information on additional projects, please email cleanenergy@epa.gov.

February 2018

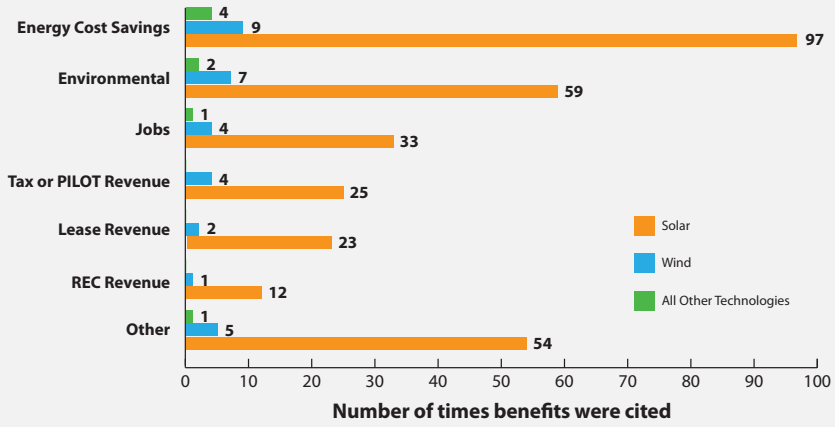
Inside the Numbers[2]

RE-Powering has documented benefits for 204 renewable energy on contaminated land installations currently tracked in the RE-Powering Tracking Matrix. Many installations publicly reported multiple benefits; as such, the RE-Powering Benefits Matrix includes citations of 345 total reported benefits. In addition to these, many expected benefits have not been publicly reported. Benefits are anticipated for every RE on CL project, including energy cost savings, revenue, greenhouse gas (GHG) reductions, or a combination of these. Although not comprehensive of all realized benefits, the following charts represent a snapshot of the types of benefits RE on CL project stakeholders are touting publicly as measures of success.

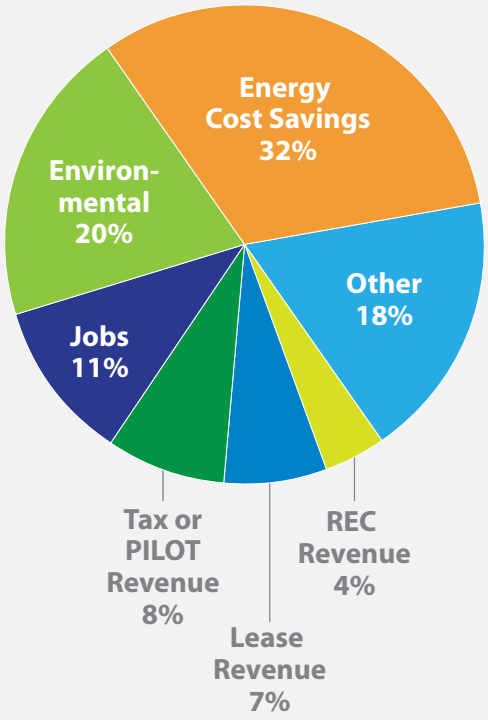
Types of Benefits Reported *(All Installations)*



Types of Benefits Reported *(by Technology)*



Percentage of How Frequently Benefits are Reported *(by Benefit Type to Date)*



2 The "Other" category in all charts includes offsets of conventional energy generation and/or provision of on-site electricity needs; green remediation; induced economic benefits to the community resulting from jobs created and/or construction activities (e.g., more customers for the local diner); secondary use of RE on CL installations as tools for learning and data gathering; and ability to use RE on CL installations for distributed generation.

3 Pie chart represents percentage of benefits across 345 total benefits identified within the 204 RE on CL sites with reported benefits.

4 "All other technologies" includes one combined wind/solar installation at St. Croix Alumina Plant in the U.S. Virgin Islands. This site highlights one (1) environmental and one (1) "other" benefit.

5 The lower number of wind-related benefits is due in part to the way benefits for wind energy projects are cited. The majority of wind energy projects tracked under RE-Powering are large, multiple-installation projects that tend to have benefits cited as a collective group. For example, the Dave Johnston Mine and Glenrock Wind I and III listings in the Benefit Matrix represent three co-located projects comprising a total of 276 MB, but the site owner has identified one primary benefit that applies to the total 276 MB.

ACROSS THE COUNTRY

All RE on CL sites realize benefits—from saving money, to creating new sources of revenue, to producing clean energy. EPA has reviewed developer and community source data to identify documented benefits for 204 of the 253 RE on CL sites in its Tracking Matrix. Stakeholders involved with these 204 sites note specific benefits in terms of **job creation, energy cost savings, tax or PILOT revenue, lease revenue, REC revenue, environmental benefits**, and others.

February 2018 Benefits Spotlight: Jobs from RE on CL Installations

One of the benefits often highlighted by stakeholders involved in renewable energy projects on contaminated properties is the jobs created to support the renewable energy systems. Such jobs include construction work during site preparation and renewable energy system installation, as well as longer-term jobs related to operation and maintenance of the renewable energy systems. In many cases, these jobs are filled by members of the local community.

Representatives from at least 38 of the installations in the RE-Powering Tracking Matrix have specifically touted job creation as a benefit of renewable energy on contaminated land projects. Examples include:

Greenwood Street Landfill Solar *(Concord, MA)*: Installation of this 8.1-MW solar project comprising over 28,000 solar panels created more than 150 jobs, including an electrical crew of more than 50 workers from the local International Brotherhood of Electrical Workers (IBEW) 96. The installation also produces 20% of the city's power needs, which is expected to result in energy credit revenue of about $10M in the system's first 10 years of operation, and will avoid producing 7,475 metric tons of carbon dioxide annually.

Nellis Air Force Base Solar Array II *(Las Vegas, NV)*: This 15-MW solar installation created approximately 150 jobs to support the renewable energy installation associated upgrades to the NV Energy grid system. In addition, the new substation and distribution lines provide a mission-critical redundant power source and protect the Base against power vulnerabilities.

Elizabeth Mine Solar *(Stafford, VT)*: The developer of this 7-MW solar project on a Superfund-designated former mining site used local civil, mechanical, and electrical contractors for the project, driving employment for local economies during installation. Grid upgrades completed during construction also benefited the community by upgrading the reliability of the entire electrical system. The project will avoid production of 6,000 tons of carbon dioxide and provide electricity sufficient to power 1,200 homes annually.

Falmouth Landfill Solar *(Falmouth, MA)*: A total of 50 jobs were created during construction of this 4-MW solar project on a former municipal solid waste landfill in Massachusetts. Total economic benefit to the community over the life of the project is projected to be over $14 million, and the installation avoids production of 4,000 tons of carbon dioxide emissions each year.

Clean Energy Company Partners with EPA Grant Recipient to Support Jobs for Brownfield Solar Project

A designated brownfield on a refinery site in Richmond, CA, will soon be home to a 10.5-MW ground-mounted solar photovoltaic (PV) installation. Marin Clean Energy (MCE) is developing the 60-acre project, called Solar One, on Chevron's Richmond Refinery property. Approximately 40 of the acres are a capped landfill, while the remaining 20 acres consist of filled and compacted fertilizer ponds.

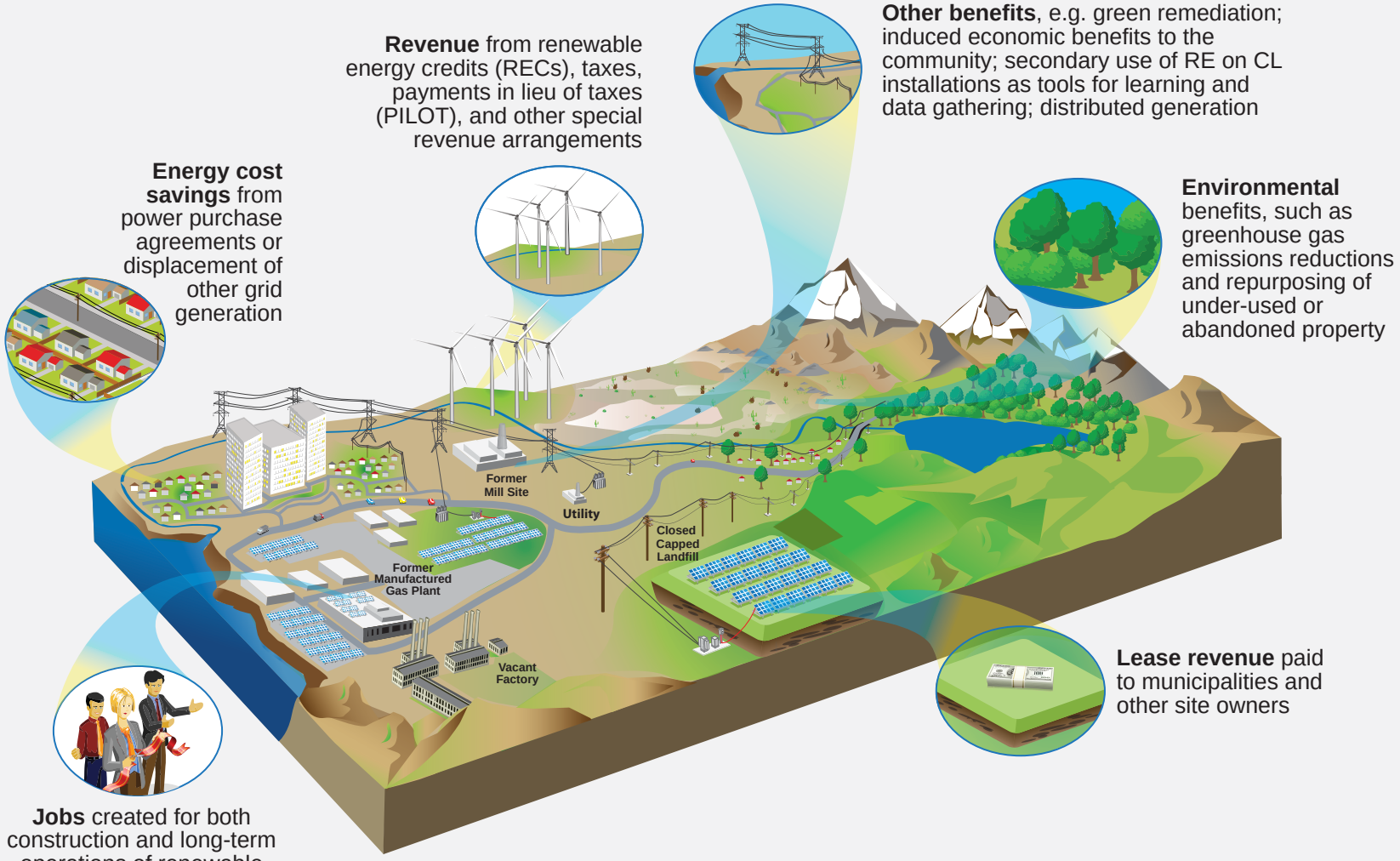
MCE partnered with RichmondBUILD, a public-private partnership that focuses on training for skilled construction and renewable energy jobs, to help fill some of the 341 jobs needed to construct Solar One. All RichmondBUILD participants come from low-income households, and more than 100 residents compete for the 35 available spots in each class. In 2015, EPA awarded RichmondBUILD a $192,300 environmental workforce development grant from EPA to train students and place graduates in jobs including solar energy installation and hazardous waste removal. The project is also being pursued under an innovative procurement approach called community choice energy, or CCE, in which a public agency offers citizens and businesses an alternative to the utility for purchasing their electricity.

The solar PV project is expected to produce enough energy to power 3,417 homes and is the largest publicly-owned solar project in California's Bay Area to date. Pre-development costs for the installation were covered in part through Deep Green, MCE's voluntary 100% renewable energy utility program.

A video about the project's construction features RichmondBUILD graduate Surinder Sandhu, assistant crew chief of Solar One. Solar One is now complete, with an official ribbon-cutting expected in April.

RE-Powering America's Land

Benefits from Reusing Potentially Contaminated Land for Renewable Energy



Other benefits, e.g. green remediation; induced economic benefits to the community; secondary use of RE on CL installations as tools for learning and data gathering; distributed generation

Revenue from renewable energy credits (RECs), taxes, payments in lieu of taxes (PILOT), and other special revenue arrangements

Energy cost savings from power purchase agreements or displacement of other grid generation

Environmental benefits, such as greenhouse gas emissions reductions and repurposing of under-used or abandoned property

Lease revenue paid to municipalities and other site owners

Jobs created for both construction and long-term operations of renewable energy installations

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Site/Project Name	State	City	Type of Site	Site Ownership Type	RE Type	Project Capacity (MW)	Project Type	Completion Date	Summary of Benefits Identified in Publicly Available Sources	Energy Savings	Revenue	Environmental	Job Creation	Other
AZ - ARIZONA														
Ajo Solar Project	AZ	Ajo	Mine Lands	Private	Solar	5	Wholesale Electricity	2011	Half of the approximately 50 construction jobs went to local residents. The electricity generated onsite will be sold to Arizona Public Service (APS) under a 25-year power-purchasing agreement.				✓	✓
Apache Powder	AZ	Benson	Superfund	Private	Solar	0.0014	Onsite Use - Green Remediation	1997	The use of solar and wind energy to power cleanup reduces the 30-year groundwater cleanup cost from $25 million to approximately $2.5 million. The cost of solar PV system and windmill pump is three times less expensive than the cost to run power lines and pay for electricity at remote areas of the site.					✓
Bagdad Mine Solar	AZ	Bagdad (census-designated)	Mine Lands	Private	Solar	15	Wholesale Electricity	2011	Power generated by the solar is sold to Freeport-McMoRan at a set rate under the terms of a 25-year power purchase agreement. Generates 15 megawatts of electricity, enough to power about 3,000 homes.	✓		✓		
Desert Star Solar Plant	AZ	Buckeye	Landfill	Municipal	Solar	10	Wholesale Electricity	2015	Estimated $15,000,000 -$20,000,000 of direct and indirect investments were made to the local economy from this project. More than 100 construction jobs.				✓	✓
CA - CALIFORNIA														
Aerojet General Corporation Superfund Site	CA	Sacramento	Superfund	Private	Solar	6	Wholesale Electricity	2010	The project is anticipated to save more than $10 million in electricity over the cleanup project's 25-year life, due to the lower cost of electricity purchasing established by the PPA.	✓				
Camp Pendleton	CA	Camp Pendleton	Superfund	Federal	Solar	1.5	Wholesale Electricity	2011	The Naval Facilities Engineering Command anticipates the system will save the Marine Corps $336,000 yearly in electricity costs while more than tripling its previous solar energy capacity.	✓				
Cloverdale Landfill	CA	Cloverdale	Landfill	N/A	Solar	1.8	Wholesale Electricity	2014	The Cloverdale project is designed to generate over 2.7 million kilowatt hours of energy annually, the equivalent of more than 6,000,000 pounds of CO_2.			✓		
Fischer Properties: Depot Park	CA	Sacramento	Brownfield	Private	Solar	3	Wholesale Electricity	2010	The project provides more than 40% of the electricity load for the park during peak hours. That is equivalent to 6,335 barrels of oil, or removing 500 vehicles from the road.	✓				✓

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Frontier Fertilizer	CA	Davis	Superfund	Private	Solar	0.06888	Onsite Use - Green Remediation	2011	The system offsets up to 5% of the site's annual electricity use for pump and treat system operations, saving energy costs of approximately $1,500 per year.	✓				✓
Lawrence Livermore National Laboratory	CA	Livermore	Superfund	Federal	Solar	0.004	Onsite Use - Green Remediation	2009	The self-powered solar treatment units allow ground water treatment at remote areas of the 7,000-acre site without the installation of costly power lines or generators.					✓
Milliken Landfill	CA	Ontario	Landfill	Municipal	Solar	3.1	Wholesale Electricity	2017	Produces enough electricity to power 500 homes.			✓		
NASA Jet Propulsion Laboratory (JPL)	CA	Pasadena	Superfund	Federal	Solar	0.564	Rooftop	2011	Under a 20-year power purchase agreement, the PV system is expected to annually generate 869,158 kWh of energy (approximately 20% of the treatment system's electricity consumption, or the equivalent power used by 100 to 125 average Pasadena homes).	✓		✓		
Pemaco Superfund Site	CA	Maywood	Superfund	Municipal	Solar	0.006	Onsite Use - Green Remediation	2007	Annual electricity cost savings of $2,839.	✓				
PSEG Pittsburg Solar Energy Center	CA	Pittsburg	Landfill	Private	Solar	25.4	Wholesale Electricity	2015	Will help PG&E meet California's mandate that 33% of the energy sold by investor-owned utilities must come from renewable resources by 2020.			✓		
Regulus Solar Power Plant	CA	Bakersfield	Brownfield	N/A	Solar	82	Wholesale Electricity	2015	The project will contribute to the creation of 1,300 full time equivalent employee years, $6.1M in property taxes and $25.4M in sales generated for the county over 20-year life of project. It is anticipated to provide almost $184 million in revenue to local businesses, governments and households during the first 20 years of operation.	✓	✓		✓	✓
Sutter's Landing Landfill Solar	CA	Sacramento	Landfill	Municipal	Solar	1.5	Wholesale Electricity	2014	Revenue from the power generated for and consumed by residents and businesses, and from lease payments, will be re-invested to fund park preservation and maintenance. Lease payments to city of $15,000 per year.	✓	✓			✓
Tequesquite Landfill	CA	Riverside	Landfill	Municipal	Solar	7.5	Wholesale Electricity	2015	A 25-year PPA will help Riverside Public Utilities minimize the effect of rising electricity costs.	✓				

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Travis Air Force Base	CA	Near Fairfield	Superfund	Federal	Solar		Onsite Use - Green Remediation	2008	Brings Travis Air Force Base one step closer to shutting down its four groundwater treatment plants that currently cost about $7,000 a month in utilities to operate.					✓
West County Wastewater District	CA	Richmond	Brownfield	Municipal	Solar	1	Onsite Use - General	2008	West County Wastewater District will purchase energy at a fixed price over the next 20 years, providing a cost-saving. PG&E's Self Generation Incentive Program mitigated project cost. The PV system is estimated to produce 30% of the wastewater facility's electricity needs.	✓				
Western Regional Sanitary Landfill	CA	Lincoln	MSW Landfill	Private	Solar	0.009	Onsite Use - General	2017	WPWMA will be saving $.04 per kWh over what it would otherwise be paying PG&E—savings that are ultimately passed along to landfill ratepayers. More than 25 local students from Sierra College gained hands-on training for solar jobs by designing and installation the system. Solar powers the landfill's LFG power plant.	✓			✓	
CO - COLORADO														
Aurora/Arapahoe Solar Array	CO	Aurora	Brownfield	Public	Solar	0.5	Community Owned/ Subscription	2013	Lifetime Production 1,980,738 kWh, as of April 13, 2016. As of April 13, 2016, customer savings from energy production $725,004.	✓				
Belmar Mixed Use Development	CO	Lakewood	Brownfield	Other	Solar	1.7	Rooftop	2008	The system supplies all the electricity for the parking garages at the shopping mall, which is equivalent to 5% of Belmar's energy use. A PPA uses RECs in exchange for below-retail electricity rates. The system generates enough energy to power 350 homes.	✓	✓	✓		
Boulder Cowdery Meadows Solar Array	CO	Boulder	Superfund	Private	Solar	0.5	Community Owned / Subscription	2013	Lifetime Production 2,136,641 kWh, April 13, 2016. As of April 13, 2016, customer savings from energy production $462,168.	✓				
Dreher Pickle Plant	CO	Fort Collins	State Brownfield	Municipal	Solar	0.62	Wholesale Electricity	2015	Community solar project - Estimated that customers will receive a 6.9% payback on their solar panels in the first year and an average annual payback of 9.5% over the solar array's lifetime.	✓				
Fort Carson	CO	Fort Carson	RCRA	Federal	Solar	2	Wholesale Electricity	2008	Project expected to save Fort Carson $500,000 in energy costs over the life of its 20-year contract with the utility.	✓				

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New Rifle Mill	CO	Rifle	Other	Municipal	Solar	1.7	Onsite Use - General	2009	Siting the project on contaminated land already owned by the city saved taxpayers approx. $2 million.	✓				
Norwood Landfill Community Solar	CO	Norwood	Landfill	Municipal	Solar	0.2	Wholesale Electricity	2016	Will lower the electric bills of qualified low-income residents in SMPA's service territory.	✓				
Place Bridge Academy	CO	Denver	Landfill	Municipal	Solar	0.101	Onsite Use - General	2013	Schools are not required to pay up-front costs for the systems, and will realize an overall cost savings on their electricity bills. Schools will incorporate an education component. The following environmental benefits will also be realized: 142,274 kWh of electricity production; 291,377 pounds per year of annual CO_2 emissions reduced; 318,713 miles per year equivalent reduction in vehicle miles driven and equivalent 11,207 trees planted.	✓		✓		✓
Summitville Mine Superfund Site	CO	Del Norte	Superfund	Federal	Hydro	0.032	Onsite Use - Green Remediation	2011	Hydroelectric plant will generate approximately 145,000 kWh per year – enough to power about 20 households, and prevent 120 metric tons of carbon dioxide from being released into the atmosphere every year. It is anticipated that the hydroelectric plant will provide 15 to 20% of the electricity needed to operate the existing water treatment plant.	✓		✓		
CT - CONNECTICUT														
Bridgeport Landfill	CT	Bridgeport	MSW Landfill	Private	Solar	2.2	Wholesale Electricity	2016	Full energy park (2.2-MW solar and 2.8-MW fuel cell) expected to provide $7M to city in lease revenue over the course of the 20-year lease; create 92 jobs; and provide power for the equivalent of 5,000 homes annually		✓	✓	✓	
Derby Landfill	CT	Derby	Landfill	Municipal	Solar	0.55	Wholesale Electricity	2015	Energy from panels will be used to reduce town's electricity expenses by 15-20% over the next two decades.	✓				
Evansville Ave. Landfill Solar	CT	Meriden	Landfill	Municipal	Solar	1.1	Wholesale Electricity	2017	Solar project offsets power needs of co-located water pollution control facility. City will save anywhere from $31,708 to $106,222 annually, or $634,150 to $2.2 million over the 20-year contract term (depending on future cost of electricity). City will also receive annual tax payments over the 20-year contract totaling $235,923. No cost to the city for this project.	✓	✓			

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Hartford CT Landfill (Solar)	CT	Hartford	Landfill	Municipal	Solar	1	Wholesale Electricity	2014	The facility will sell excess electricity to the grid or, potentially, to the City of Hartford at a discounted rate that could save the City several hundred thousand dollars per year on its electricity bill. In addition, in 2012, Connecticut Light & Power selected the project to receive zero - emission renewable energy credits, or ZRECs. The ZRECs add 11 cents per kilowatt - hour to the price of electricity generated for sale by the solar collectors. The system will generate up to one megawatt of electricity, enough to power about 1,000 homes when operating at full capacity.	✓	✓	✓		
North Haven Landfill	CT	North Haven	Landfill	Municipal	Solar	0.384	On-site Use - General	2017	Powers on-site wastewater treatment facility.					✓
Wintergreen Ave. Landfill	CT	New Haven	MSW Landfill	Private	Solar	1	Wholesale Electricity	2016	Minimum savings [for the town] of $30,000 per year	✓				
DE - DELAWARE														
DuPont Newport	DE	Newport	Superfund	Private	Solar	0.5	Wholesale Electricity	2013	Construction created nearly 120 jobs.				✓	
McKees Solar Park	DE	Newark	Landfill	Municipal	Solar	0.23	Wholesale Electricity	2014	Funding model wherein residential electric users can contribute $50 in return for a $0.01 per kWh rebate on one (1) 100 kilowatt-hour block of power generated from the park per month, which will displace the first 100 kwh of household consumption. Residents can also make outright tax-deductible donations to the park.			✓		✓
FL - FLORIDA														
Lake Worth Landfill	FL	Lake Worth	MSW Landfill	Municipal	Solar	2	Wholesale Electricity	2017	Helps meet city's commitment to diversifying the city's energy to clean and renewable energy sources			✓		
GA - GEORGIA														
Hickory Ridge Landfill	GA	Atlanta	Landfill	Municipal	Solar	1	Wholesale Electricity	2011	Enough energy to meet the needs of 224 homes annually			✓		

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HI - HAWAII														
Kapolei Sustainable Energy Park	HI	Kapolei	RCRA	Private	Solar	1.2	Wholesale Electricity	2011	The system will produce enough electricity to power between 150 and 250 homes with clean, solar energy.			✓		
IA - IOWA														
Schaus-Vorhies Solar	IA	Fairfield	Brownfield	Private	Solar	0.5	Wholesale Electricity	2016	System will pay for itself within 5-6 years, and cover 100% of the company's electrical needs on a net-annual bases. Total energy production (over 25 years) will prevent 10,587 metric tons of CO_2 from entering the atmosphere, equivalent to about 11 million pounds of coal or 25 million miles driven in a typical passenger car.	✓		✓		
IL - ILLINOIS														
Exelon City Solar	IL	Chicago	Brownfield	Municipal	Solar	10	Wholesale Electricity	2010	During construction, the $60 million project created 200 jobs. The developers sourced much of its labor and building materials from local companies on Chicago's South Side. The system provides permanent work in the areas of operations, maintenance, and security. The project also expands the local tax base and generates revenues from the land lease.		✓		✓	✓
Gobnob Wind Turbine Project	IL	Farmersville	Brownfield	State	Wind	0.9	Wholesale Electricity	2009	The Rural Electric Convenience Cooperative signed a 20-year lease agreement with the Department of Natural Resources for $1,200 per year. The system will result in a reduction in GHG emissions of 1,997 tons of carbon dioxide annually.		✓	✓		
Kokomo Solar Park	IL	Kokomo	Superfund	Private	Solar	7	Wholesale Electricity	2016	Provides 7 MW of clean power capacity to the community and is located on a remediated Superfund parcel of land			✓		

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IN - INDIANA														
Reilly Tar & Chemical (Indianapolis)	IN	Indianapolis	Superfund	Private	Solar	10.8	Wholesale Electricity	2014	Under the 15-year PPA with Indianapolis Power and Light (IPL), developer Hanwha Q CELLS will sell electricity and environmental attributes from Maywood Solar Farm for 15 years. IPL will purchase 100% of the output at a set price ($.020/kWh) and will retain ownership of project RECs. The project created 75-100 jobs during construction and will continue to have a positive impact on the economy through ongoing operating and maintenance contracts with local firms during the 15- to 35-year operating period of the facility.	✓	✓		✓	
KY - KENTUCKY														
Fort Campbell Solar Phase One	KY	Fort Campbell	Landfill	Federal	Solar	1.9	Onsite Use	2015	Helps Fort Campbell meet federal directives outlined in the American Renewable Energy Act, requiring federal installations to obtain 25 percent of their energy by renewable means by 2025.			✓		
Fort Campbell Solar Phase Two	KY	Fort Campbell	Landfill	Federal	Solar	3.1	Wholesale Electricity	2017	Combined with Phase One of the installation, provides a total of 5 MW of solar to Fort Campbell. Expected to reduce the post's energy load on the power grid and help save money that will be repurposed toward training soldiers.	✓		✓		
MA - MASSACHUSETTS														
Acton Landfill	MA	Acton	Landfill	Municipal	Solar	1.6	Wholesale Electricity	2013	If the market rate for electricity remains at least one penny per kWh above the fixed contract rate, the predicted cost savings from the landfill solar system totals over $325,000 for the 20 year period (more than $15,000 per year). If the market rate stays at the Town's average 2013 rate or increases, Acton will save over $1,700,000 over the 20 year period, or $85,000 per year.	✓				
Aquinnah Landfill	MA	Aquinnah	Landfill	Municipal	Solar	0.05	Onsite Use - General	2012	The array will produce enough energy to power the Town's Municipal electrical load including the Town offices, police & fire stations, library, street lights, and public bathrooms and eventually save the town over $10,000 per year in electricity costs.	✓				
Barnstable Landfill	MA	Barnstable	Landfill	Municipal	Solar	4.2	Wholesale Electricity	2014	Estimated annual savings for the town of over $270,000	✓				

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Beech St. Landfill	MA	Rockland	Landfill	Municipal	Solar	3.2	Wholesale Electricity	2014	The town has 25-year PPA with NextSun and has locked in a rate of $0.0699/kWh for the first year and 2% increase in annual power rates after that versus original rates of $0.07887/kWh. A land lease will generate revenue of $50,000 per year. The project will save Rockland taxpayers through lower electricity prices, saved tax revenue, and provide a hedge against future energy rate hikes.	✓	✓			
Bellingham Landfill	MA	Bellingham	Landfill	Municipal	Solar	4.1	Wholesale Electricity	2017	Energy generated is being purchased by the town of Randolph, saving millions of dollars over the life of the project. Town will receive a total of over $3.5 million in lease payments and tax revenues for the project.	✓	✓			
Bent Mill Solar	MA	Gardner	Brownfield	Municipal	Solar	1	Wholesale Electricity	2014	City of Gardner benefits from the land lease and tax payments. Four local organizations are saving tens of thousands of dollars on their annual electricity bills, including GAAMHA, Inc., a non-profit provider of services for adults with disabilities. GAAMHA estimates they will see savings of at least $10,000 annually. (Financier source)	✓	✓			
Bolton Orchards	MA	Bolton	Brownfield	Private	Solar	6	Wholesale Electricity	2013	Chelmsford's Town Manager negotiated a 25-year Net Metering Power Sales Agreement (NMPSA) with Main Street Power, who owns and operates the facility. The Town of Chelmsford receives 25 years of discounted electricity rates for the energy produced by the solar facility under the NMPSA. The project will provide tax revenue to town of Bolton and power to town of Chelmsford (higher demand than Bolton).	✓	✓			
Boxford Landfill	MA	Boxford	Landfill	Municipal	Solar	1	Wholesale Electricity	2017	Town touts economic benefits of ~$3 million over the next 20 years, receiving: (1) nearly all of the town's municipal annual electricity needs from the solar project, using clean electricity that is approximately 40% cheaper than the town's current power purchase rate; (2) revenue in exchange for leasing the capped landfill to the solar project's owner and the partnership that acquired and constructed the project with plans to remain the long-term owner and operator; and (3) tax revenue for the life of the solar project. Solar will also power the equivalent of 200 homes.	✓	✓	✓		

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Braintree Landfill	MA	Braintree	Landfill	Municipal	Solar	1.26	Wholesale Electricity	2014	The Braintree Electric Light Department has an agreement to buy the electricity that the site produces at a competitive rate of 6.5 cents per kilowatt (from Braintree Electric Light Department general manager William Bottiggi). Over the course of a year the project is expected to generate 1,645,000 kilowatt-hours of electricity—enough to power to more than 200 homes.	✓		✓		
Brewster Landfill	MA	Brewster	Landfill	Municipal	Solar	1.23	Wholesale Electricity	2014	The project is expected to save town $75,685 in the first year.	✓				
Bridge Street Landfill	MA	Fairhaven	Landfill	Municipal	Solar	1.8	Wholesale Electricity	2013	The town is expected to save $1.5M over 30 years. A PPA allows town to avoid costs associated with solar system ownership.	✓				
Brockton Brightfield	MA	Brockton	Brownfield	Municipal	Solar	0.46	Wholesale Electricity	2006	Generates nearly $145,000 in annual revenue for the city, which goes towards paying off the cost to build and maintain the brightfield. It is estimated that the loan will be paid off in full by 2026, and the city will begin to directly profit from the sale of RECs and electricity. The brightfield has a module warranty of 20 years, and with an expected system life of 30-50 years, the city should see profits for 10 to 30 years.		✓			
Cedar Street Landfill	MA	Cohasset	Landfill	Municipal	Solar	0.42	Wholesale Electricity	2017	Town could net as much as $1.6 million in energy cost savings over the 20-year contract, depending on net metering credit rates. Solar will produce power equal to approximately 16% of the town's annual electric load.	✓				
Charles George Landfill	MA	Tyngsboro/ Dunstable	Landfill	Private	Solar	3.56	Wholesale Electricity	2017	Produces nearly 4,600,000 kWh of electricity per year, enough to power approximately 460 New England homes and avoid the release of over 3,500 tons of carbon dioxide annually from non-renewable power plants.			✓		
Chatham Landfill	MA	Chatham	Landfill	Municipal	Solar	1.8	Wholesale Electricity	2014	Estimated to save town $120,446 in the first year and more than $3.5M by the end of the 20-year PPA.	✓				
Chicopee Elks Landfill	MA	Chicopee	Landfill	Private	Solar	2.1	Wholesale Electricity	2015	Power sold to Chicopee Electric & Light at a discount, saving ratepayers money on their utility bill. 55 jobs created.	✓			✓	
Chilmark Landfill	MA	Chilmark	Landfill	Municipal	Solar	0.099	Wholesale Electricity	2014	System offsets 60% of town's historical energy usage. In first year of operation, saved town $2,374 from net metering (as of Sept 2015).	✓				

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Concord Landfill Phase I	MA	Concord	Landfill	Private	Solar	1.7	Wholesale Electricity	2014	Total installation (full 2.9 MW) expected to produce 2% of town's electricity needs. Enough energy to provide almost 400 homes with their annual energy needs.	✓		✓		
Cottage Street Landfill	MA	Springfield	Landfill	Municipal	Solar	3.9	Wholesale Electricity	2014	Estimated to have brought $22 million of construction revenue to the region.				✓	✓
Cowles Gravel Solar	MA	Westfield	Brownfield	Private	Solar	2.6	Wholesale Electricity	2016	Solar development will provide lease revenue to the town. Developer made several site improvements, including grinding an existing stockpile on the site of more than 56,000 tons of asphalt from roads and other demolition and construction debris to grade the site for solar and erecting a fence to deter off-road vehicles from entering (which was a prior issue in the community).		✓			✓
Dorchester Solar Power Project	MA	Dorchester	Brownfield	Private	Solar	1.3	Wholesale Electricity	2012	Over a 30 year period, this system is expected to save approximately 4,000 pounds of sulfur dioxide, 1,800 pounds of nitrous oxide, and 1.8 million pounds of carbon dioxide. This is equivalent to the emissions produced in generating electricity for 260 average household.			✓		
Dover Landfill	MA	Dover	Landfill	Private	Solar	1.4	Wholesale Electricity	2017	Will allow Dover and Boston metro residents to enjoy local clean energy at no cost to join, while saving them 10 percent on their electricity bills. Expected to avoid approximately 1,300 metric tons of CO_2 each year, equivalent to removing 270 cars from the roads. Created local jobs. Helped Dover achieve Green Community status, which will allow the town to apply for additional grant money from the state.	✓		✓	✓	✓
Duxbury Landfill	MA	Duxbury	Landfill	Municipal	Solar	0.585	Wholesale Electricity	2014	The system should meet 15% of town's electricity needs and save $45,000 per year. The project will generate enough electricity for over 100 homes.	✓		✓		
Eastham Landfill	MA	Eastham	Landfill	Municipal	Solar	0.59	Wholesale Electricity	2014	Savings from the system are estimated to be $34,010 in first year. The 627 kW array will provide green energy to the Town of Eastham, decreasing their carbon footprint and their utility bills.	✓		✓		
Everett Solar Power Project	MA	Everett	Brownfield	Private	Solar	0.605	Wholesale Electricity	2010	The project provides added tax revenue for Everett and helps National Grid temporarily offset customer demand as the load in the area steadily increases		✓			

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Fairhaven Sanitary Landfill (Canton)	MA	Canton	Landfill	Municipal	Solar	5.6	Wholesale Electricity	2012	The electricity produced by the solar system is expected to save the town approximately $1.5 million over the course of the 30 year contract.	✓				
Falmouth Landfill	MA	Falmouth	Landfill	Municipal	Solar	4	Wholesale Electricity	2017	Total economic benefit to the community over the life of the project is projected to be over $14 million. Installation avoids the equivalent of 4,000 tons of CO_2 emissions each year. Fifty (50) jobs created during construction.	✓		✓	✓	
Former Grasso Landfill	MA	Agawam	Landfill	Municipal	Solar	1.98	Wholesale Electricity	2013	Makes the nearby, energy-intensive Hood plant more competitive in today's challenging business environment, while providing new tax revenue to Agawam.		✓			✓
Greenfield Solar Farm	MA	Greenfield	Landfill	Municipal	Solar	2	Wholesale Electricity	2012	The system is projected to save city $250,000 in first year of operation and created 50 local jobs.	✓			✓	
Greenwood St. Landfill	MA	Worcester	Landfill	Municipal	Solar	8.1	Wholesale Electricity	2017	Created 150+ jobs, including an electrical crew of 50+ workers from the local IBEW 96. Produces 20% of city's power needs. Expected energy savings of up to $2M and revenue from energy credits in first 10 years valued at $10M. Will avoid 7,475 metric tons of CO_2 annually, equivalent to the amount emitted from driving ~18,000,000 miles.	✓	✓	✓	✓	
Groton Landfill Solar	MA	Groton	Landfill	Municipal	Solar	2.93	Wholesale Electricity	2016	Will provide 25% of Groton Electric Light Department's required electricity during the middle of the day in the spring and fall	✓				
Harwich Municipal Landfill	MA	Harwich	Landfill	Municipal	Solar	1.5	Wholesale Electricity	2014	The project is expected to save the town about $300,000 per year.	✓				
Haverhill Solar Power Project	MA	Haverhill	Brownfield	Private	Solar	1	Wholesale Electricity	2010	Site serves to conduct load switching with neighboring feeders, providing National Grid with additional flexibility in serving customers in this area.					✓
Hill Street Landfill	MA	Norton	Landfill	Municipal	Solar	2	Wholesale Electricity	2016	Enough energy to power approximately 280 homes in New England and prevent the annual release of over 2,000 tons of carbon dioxide from non-renewable power plants. Created 50 construction jobs.			✓	✓	

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Hull Wind II	MA	Hull	Landfill	Municipal	Wind	1.8	Wholesale Electricity	2006	Combined, Hull Wind I (not on CL) and Hull Wind II produce approximately 11% of the town's electricity. Harvard University purchases 100% of the RECs for Hull Wind II, equal to about $1.5 million in revenue for Hull.	✓	✓			
Hunt Road Landfill	MA	Amesbury	Landfill	Municipal	Solar	6	Wholesale Electricity	2016	Allowed this unused landfill with little development potential to produce energy, tax revenue, and local construction jobs. Provides the city with discounted electricity rates as well as tax revenues. Produces enough electricity to power approximately 800 New England homes and avoid the release of over 6,000 tons of CO_2 annually from non-renewable power plants.		✓	✓	✓	
Huntington Avenue Landfill	MA	Metheun	Landfill	Municipal	Solar	1.3	Wholesale Electricity	2013	Methuen will see nearly $100,000 in energy savings per year by reducing the town's price per kWh by 40%. Under the terms of the PPA, Borrego Solar secured financing for the design, construction, and ongoing maintenance of the solar project, and will sell the power in the form of energy credits through National Grid Utility, produced by the project at $0.085 per kilowatt-hour, roughly $0.06 lower than the current rate.	✓	✓			
Indian Orchard Solar Facility	MA	Springfield	Brownfield	Other	Solar	2.3	Wholesale Electricity	2011	The project will generate $400,000 in annual property tax revenue to city of Springfield.		✓			
Iron Horse Park / Dow Solar	MA	Billerica	Superfund	Private	Solar	3.68	Wholesale Electricity	2016	Will generate energy for four school systems and one local government through virtual net metering. Will supply an average of 20% of the offtakers' energy needs.	✓				
Kingston Landfill (wind)	MA	Kingston	Landfill	Municipal	Wind	2	Wholesale Electricity	2012	The project is expected to produce more than 100% of the electricity consumed by the municipal electric load of the Town of Kingston.	✓				
Lancaster Landfill	MA	Lancaster	Landfill	Municipal	Solar	0.5	Wholesale Electricity	2013	Energy generated is net metered to offset municipal building electricity needs, saving the town approximately $75,000 annually	✓				
Lee Landfill	MA	Lee	Landfill	Municipal	Solar	2.6	Wholesale Electricity	2017	20-year PPA provides long-term offtaker of electricity for developer and long-term energy price assurance for towns (project serves both Lee and Lenox, MA)	✓				

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Ludlow Landfill	MA	Ludlow	Landfill	Municipal	Solar	2.7	Wholesale Electricity	2013	Without a capital expenditure from the city or its taxpayers, Ludlow can purchase the energy produced by the solar energy system at a rate of $0.05 per kilowatt-hour, much less than the $0.09 per kilowatt-hour charged by the local utility. Depending on the solar system's efficiency, the town of Ludlow will save approximately $100,000–$140,000 a year on energy bills. Ludlow signed a 20-year contract to lease 17 acres of the old town landfill. In return for leasing the land, Borrego Solar secured private funds to finance the engineering, procurement, construction, and ongoing maintenance and operation costs associated with the project.	✓	✓			
Mashpee Solar	MA	Mashpee	Landfill	Private	Solar	2.1	Wholesale Electricity	2014	The total anticipated cost savings over the 25-year Power Purchase Agreement is anticipated at over $7 million. The system will generate sufficient electricity to offset a large portion of the electrical needs of the town at a substantial reduction in cost from current retail electricity rates. It will generate enough electricity to satisfy the needs of over 300 homes.	✓		✓		
Massachusetts Military Reservation (Otis)	MA	Sagamore	Superfund	Federal	Wind	4.5	Onsite Use - Green Remediation	2011	The turbines are used to offset electrical costs for powering numerous groundwater cleanup systems at the site.	✓				✓
Mount Tom Solar	MA	Holyoke	Brownfield	Private	Solar	5.76	Wholesale Electricity	2017	Enough electricity to power 1,800 homes for a year and reduce GHG emissions by 3,000 metric tons.			✓		
Needham Landfill	MA	Needham	Landfill	Municipal	Solar	3.7	Wholesale Electricity	2016	Expected to provide first year revenues from net metering (~$487,000), PILOT (~$93,600), and land lease (~$50,000)		✓			
New Bedford High School Solar	MA	New Bedford	Brownfield	Municipal	Solar	0.5	Wholesale Electricity	2012	Project will improve science education through the installation of an interactive digital "kiosk" and other tools so teachers at the High School and other schools can incorporate the solar project into their science lessons					✓
North Adams Landfill	MA	North Adams	Landfill	Municipal	Solar	1.5	Wholesale Electricity	2015	In total across this installation plus three other solar sites in the city, North Adams receives nearly 100 % of municipal power from solar. The landfill installation represents the largest portion of this (~40%).	✓				

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Oliver Street Landfill	MA	Easthampton	Landfill	Municipal	Solar	2.3	Wholesale Electricity	2012	The system was constructed at no cost to city. Borrego leases land for $1 and sells Easthampton electricity. For the duration of the 10 year PPA term, Easthampton will pay $0.06/kWh and has the option to extend the contract, purchase the solar power installation, or have it removed at year 11. The reduced cost per kWh of energy is estimated to save Easthampton over $1.4 million dollars in 10 years.	✓	✓			
Osgood Landing Solar	MA	North Andover	State Brownfield	Private	Solar	6	Wholesale Electricity	2017	Power purchase agreement includes a 15% discount on electricity that is estimated to reduce the town's energy bill by $160,000 in the first year. Town will accumulate over $6M in energy savings and PILOT revenue over life of the project.	✓	✓			
Owens Corning Landfill	MA	Gloucester Township	Landfill	Private	Solar	3	Wholesale Electricity	2017	Will bring in $830,000 in revenue for Gloucester Twp. from lease payments made by Marina Energy.		✓			
Palmer Metropolitan Airfield Solar	MA	Palmer	State Brownfield	Private	Solar	6	Wholesale Electricity	2016	Town of Palmer will receive real and personal property tax revenue of approximately $2 million over the 20-year project term; three public entities – the Town of Leicester, the Town of Spencer, and Worcester State University, will together purchase all of the net metering credits from the energy generated by the project, resulting in millions of dollars in energy savings for these entities over the 20-year term of the energy agreements. Land owner, JenJill LLC of Wilbraham, Mass., which purchased the site and paid for its cleanup, will benefit from the long-term ground lease.		✓			
Philips Lightolier Wind	MA	Fall River	Brownfield	Private	Wind	2	Wholesale Electricity	2012	Will offset the production of nearly 30,000 tons of carbon dioxide over the lifetime of the project, supporting the state's GHG reduction goals; part of Philips Lightolier's plan to create a net zero energy manufacturing facility (State Government source)			✓		
Pittsfield Municipal Landfill Solar	MA	Pittsfield	Landfill	Municipal	Solar	2.91	Wholesale Electricity	2017	Expected to save the city about $140,000 annually in energy costs.	✓				
Prospect Street Landfill	MA	Easton	Landfill	Municipal	Solar	1.9	Wholesale Electricity	2014	The project will save the town approximately $200,000 annually and nearly $4,500,000 over the course of the 20-year contract. The system will produce the equivalent quantity of electricity consumed by 235 homes in one year.	✓		✓		

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Quaboag Landfill Solar	MA	Brookfield	Landfill	Municipal	Solar	0.434	Wholesale Electricity	2013	The installation will earn approximately $800,000 over 20 years for town through lease payments, PILOT, and reduced electricity costs. The electricity will power nearly all municipal functions, including schools, emergency response, street lighting and the Town Hall. This is equivalent to the total annual electrical usage of almost 100 average single-family homes.	✓	✓	✓		
Randolph Landfill Solar	MA	Randolph	Landfill	Municipal	Solar	4.8	Wholesale Electricity	2017	Project will provide PILOT revenue of ~$90,000 per year, plus lease revenues.		✓			
Ravenbrook Farms Landfill Solar	MA	North Carver	Landfill	Municipal	Solar	6	Wholesale Electricity	2014	Developer negotiated to allow town to collect more than $200k in back taxes owed via added land lease payments. Town will also collect tax revenue on installation going forward.		✓			
Re-Solve Superfund Solar	MA	Dartmouth	Superfund		Solar	0.15	Onsite Use - Green Remediation	2012	System to generate 90 percent of electricity for the groundwater treatment system; about 186,000 KWH/yr.	✓				
Revere Solar Power Project	MA	Revere	Brownfield	Private	Solar	0.75	Wholesale Electricity	2010	Located next to an active substation on Railroad Street that has encountered loading issues; solar project is designed to help alleviate this excessive loading.					✓
Rising Paper Solar	MA	Great Barrington	Brownfield	Private	Solar	3.2	Wholesale Electricity	2016	Will produce enough clean energy to power the electrical needs of a local school district and the Town of Great Barrington's municipal buildings. Net economic benefit of more than $200,000 in just the first year. Project also allows for the preservation of wetlands and riverfront buffers on the site.	✓		✓		
Russells Mills Road Landfill	MA	Dartmouth	Landfill	Municipal	Solar	1.45	Wholesale Electricity	2013	The savings generated from the landfill solar energy system are approximately $3 million over the 20-year life of the PPA term. It generates tax revenue from the solar project as it is constructed within the town limits.	✓	✓			
Scituate Landfill	MA	Scituate	Landfill	Municipal	Solar	3	Wholesale Electricity	2013	The system is expected to save town $200,000 per year from discounted energy rates. The Town pays Scituate Solar $0.084/ hour ($0.145/hr. to National Grid). Revenue to pay for municipal building energy costs. City paid nothing up front except legal fees of approximately $9,000. Project qualified for 1603 Treasury Grant and the SREC I program administered by the Massachusetts Department of Energy Resources.	✓	✓			

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Shaffer Landfill (Iron Horse Park)	MA	Billerica	Superfund	Municipal	Solar	6	Wholesale Electricity	2014	The installation provides the town with certainty and predictability with respect to the revenue stream to be generated from the subject property over its 20 year term. The facility allows Billerica to reduce dependence on fossil fuels.	✓		✓		
Silver Lake Solar Photovoltaic Facility	MA	Pittsfield	Brownfield	Other	Solar	1.8	Wholesale Electricity	2010	The installation contributes approximately $220,000 of annual property tax revenues to the City of Pittsfield.		✓			
South Hadley Landfill	MA	South Hadley	Landfill	Municipal	Solar	0.08	Onsite Use - General	2012	Electricity generated partially offsets electrical consumption from the adjacent South Hadley Department of Public Works (~50%).					✓
Stow Brownfield Solar	MA	Stow	Brownfield	Private	Solar	2.5	Wholesale Electricity	2013	The project pays the town of Stow $12,000 per year as payment in lieu of taxes, plus the property taxes as determined by the assessment, an amount that now comes in at a little less than $8,000 annually for the twelve acres.		✓			
Sudbury Landfill Solar	MA	Sudbury	Sudbury	Municipal	Solar	1.5	Wholesale Electricity	2013	Expected to save the equivalent of 1,310 metric tons of CO_2 per year.			✓		
Sullivan's Ledge	MA	New Bedford	Superfund	Municipal	Solar	1.8	Wholesale Electricity	2014	The system is expected to save city $2.7 million over 20 years. Used a local (MA-based) capital firm, BlueWave, for development.	✓			✓	
Theophilus Smith Landfill	MA	Dennis	Landfill	Municipal	Solar	6	Wholesale Electricity	2014	The Dennis-Yarmouth School District and Dennis Water District will share approximately $500,000 to 695,000 in annual savings from installation. The town agrees to purchase the energy at a reduced rate and sell excess to the Dennis-Yarmouth Regional School District and the Dennis Water District at a reduced rate. Clean Focus owns and operates system at no cost to town.	✓				
W.R. Grace Solar	MA	Acton/ Concord	Superfund	Municipal	Solar	5.6	Wholesale Electricity	2016	Will provide the town more than $700,000 in PILOT revenue over 20 years. Offsets approx. 4,503 metric tons of carbon dioxide per year.		✓	✓		
Waltham Street Landfill	MA	Maynard	Landfill	Municipal	Solar	1.2	Wholesale Electricity	2013	Lease payments $2,500 per MW annually. Electricity generated by the panels goes into the regional grid; in return the utility (NSTAR) provides energy credits to the town.		✓	✓		

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West Boylston Landfill	MA	West Boylston	Landfill	Municipal	Solar	1.5	Wholesale Electricity	2016	Net savings of about $1.8 million for the community over the life of the array	✓				
West Tisbury Landfill	MA	West Tisbury	MSW Landfill	Private	Solar	0.884	Wholesale Electricity	2015	10-year PPA with extension options provides long-term energy cost assurance and savings for the town of up to $45,000 over the first 10 years of the PPA.	✓				
Westfield Landfill	MA	Westfield	Landfill	Municipal	Solar	2.5	Wholesale Electricity	2015	The city receives benefits from lease payments, payment in lieu of taxes (PILOT), and operational savings. The power is purchased by the Municipal Light Board, which provides electricity to municipal facilities at a reduced rate.	✓	✓			
Westford St. Landfill	MA	Lowell	Landfill	Private	Solar	1.5	Wholesale Electricity	2014	The city is expected to save $1.5-$2.5 million a year, installed at no upfront cost to the city.	✓				
Weston Landfill	MA	Weston	Landfill	Municipal	Solar	2.27	Wholesale Electricity	2016	Town will receive 1 net metering credit for each kilowatt-hour of electricity generated by the solar array and received by Eversource (Nstar) over the course of the 20 year lease. These credits are applied to the electric bill received by the Town, thereby reducing how much money is spent on electricity used by the municipality and saving tax dollars.	✓				
Woburn Landfill	MA	Woburn	Landfill	Municipal	Solar	3.4	Wholesale Electricity	2017	Expected to generate more than $370,000 a year in savings for the city.	✓				
MD - MARYLAND														
Former Ellicott City Landfill	MD	Ellicott City	Landfill	Private	Solar	1.2	Wholesale Electricity	2011	Provides ~90% of the annual electricity needs of Worthington Elementary School; SunEdison provided solar curricula for the Howard County Board of Education to use during classroom discussions of environmental sustainability and renewable energy					✓
Fort Detrick	MD	Frederick	SUperfund	Federal	Solar	18.6	Onsite Use - General	2016	Expected to provide nearly $3 million in cost avoidance over the duration of the 25-year electricity purchase agreement the Army has with the project's private developer and owner.	✓				

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Forty West Landfill	MD	Hagerstown	Landfill	Private	Solar	2	Wholesale Electricity	2015	Across all EPG Solar installations (including 2 non-CL projects), the County will receive more than $375,000 a year in rent and revenue with an estimated $100,000 in energy cost savings. (For ALL sites in the plan, not just Forty West Landfill.)	✓	✓			
Washington County Rubble Landfill	MD	Williamsport	Landfill	Municipal	Solar	2.5	Wholesale Electricity	2015	The county will receive more than $375,000 a year in rent and revenue with an estimated $100,000 in energy cost savings. (For ALL sites in the plan, not just Rubble Landfill.)	✓	✓			
ME - MAINE														
Belfast Landfill	ME	Belfast	Landfill	Municipal	Solar	0.122	Wholesale Electricity	2015	The system provides nearly 20% of the electricity load for the city's 11 municipal buildings. It is expected to generate $21,000 a year and pay for itself within 15 years.	✓				
MN - MINNESOTA														
Fridley Plant Solar	MN	N/A	Superfund	Private	Solar	0.147	Onsite Use - Green Remediation	2009	Solar panels provide 30 percent of the electrical energy needed for the remediation system on the southern side of the site. The amount of energy produced per year would supply enough power for four average-sized homes. The use of solar energy at the site reduces carbon dioxide equivalent emissions by 41,000 pounds per year.			✓		✓
Hutchinson Landfill	MN	Hutchinson	Landfill	Private	Solar	0.4	Onsite Use - General	2015	Used local companies for the installation (tenKSolar, Bloomington-based solar company who supplied the hardware and 975 panels and Hunt Electric - the contractor that installed the panels). Generates 15% of power needed for WWTP (next door).	✓				✓
MO - MISSOURI														
Busy Bee's Laundry	MO	Rolla	Brownfield	Private	Solar	0.56	Onsite Use - Green Remediation	2011	System installed to produce electricity needed for operating one 400-watt surface-mounted piston pump. Extracted more than 1,800 gallon of groundwater during the first four weeks of operation, at an average rate of 100-160 gallons per day, for ex situ treatment. The PV system is supplying an energy quantity within the range predicted in the project design phase.			✓		✓

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MT - MONTANA														
Zortman-Landusky Mine	MT	N/A	Mine Lands	Federal/ Municipal	Wind	0.225	Onsite Use - Green Remediation	2012	Wind turbine offsets some of the $300,000 in annual power costs for long-term water treatment and monitoring at the site.	✓				✓
NC - NORTH CAROLINA														
Evergreen Packaging Landfill	NC	Haywood County	Landfill	Private	Solar	0.55	Wholesale Electricity	2010	Developer savings on land lease via 20-year agreement at $1/ year.					✓
NE - NEBRASKA														
Former Nebraska Ordnance Plant	NE	Mead	Superfund	Private	Wind	0.01	Onsite Use - Green Remediation	2004	Wind turbine provides sufficient renewable energy for continued trichloroethene removal and explosives destruction by the aboveground treatment system during grid inter-tie operation. Provides electricity cost savings expected to total more than $40,000 over the next 15 years of treatment, based on an electricity rate of $0.0546/kWh at the time of wind turbine startup. Reduces consumption of utility electricity by 26%. Decreases CO_2 emissions by 24-32% during off-grid operation of the system's 230-volt submersible pump. Returns surplus electricity to the grid for other consumer use. Provides educational opportunities for Missouri University of Science and Technology students evaluating renewable energy, remediation, and electronic system technologies.	✓		✓		✓
NH - NEW HAMPSHIRE														
Milton Landfill Solar Garden	NH	Milton	MSW Landfill	Private	Solar	1	Wholesale Electricity	2016	Community solar model allows those who can't otherwise install solar to have access to solar energy; town has signed PPA, which provides energy cost savings.	✓				✓
NJ - NEW JERSEY														
Bernards Township Landfill	NJ	Bernards Township	Landfill	Municipal	Solar	3.68	Wholesale Electricity	2016	Will generate more than $500,000 in revenue for the town via land lease and energy cost savings	✓	✓			
Brick Township Landfill	NJ	Brick Township	Superfund	Municipal	Solar	7	Wholesale Electricity	2014	The township estimates that the solar array will save about $13 million through discounted energy prices over the course of 15 years.	✓				

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Clean Harbors	NJ	Bridgeport	Landfill	Municipal	Solar	1.5	Onsite Use - Green Remediation	2011	The system reduces the $250,000 annual electric bill for cleanup by 90%. The revenue from the solar installation will fund continued groundwater treatment.	✓				✓
FedEx Ground Distribution Hub	NJ	Woodbridge	Brownfield	Private	Solar	2.42	Wholesale Electricity	2009	Generates 30% of the hub's electricity needs; annual reduction of approximately 1,867 metric tons of CO_2 emissions			✓		✓
Fort Dix Solar	NJ	Pemberton Township	Landfill	Federal	Solar	16.5	Wholesale Electricity	2017	Will produce enough energy to power 1,500 homes, avoiding more than 15,000 metric tons of CO_2 emissions--the equivalent of removing 3,000 cars from the road.			✓		
Hackensack Solar Farm	NJ	Hackensack	Brownfield	Other	Solar	1.06	Wholesale Electricity	2012	Created construction and permanent jobs (number not specified).				✓	
Industrial Land Reclaiming Landfill	NJ	Edison	MSW Landfill	Private	Solar	21	Wholesale Electricity	2017	Adds to state's renewable energy resources without reducing the state's open space			✓		
Kinsley Landfill	NJ	Deptford Township	Landfill	Municipal	Solar	11.18	Wholesale Electricity	2014	PSE&G's largest solar project to date; transformed 35 acres of unused landfill into solar field			✓		
L&D Landfill	NJ	Eastampton, Lumberton, Mount Holly	Landfill	Private	Solar	12.93	Wholesale Electricity	2016	The system created 190 construction jobs. It also generates enough electricity to power 2,000 average NJ homes annually.			✓	✓	
Linden Solar Farm	NJ	Linden	Brownfield	Other	Solar	3.2	Wholesale Electricity	2011	Created construction and permanent jobs (number not specified).				✓	
Parklands Solar Farm	NJ	Bordentown Township	Landfill	Private	Solar	10.4	Wholesale Electricity	2015	PSE&G estimates that at the height of construction, there were approximately 100 people onsite working on the project in a range of jobs, including electricians, engineers, heavy equipment operators, ironworkers, laborers, and truck drivers.				✓	
Paulsboro Terminal Landfill	NJ	Paulsboro	Brownfield	Private	Solar	0.276	Onsite Use - Green Remediation	2002	Solar to generate 350,000 kWh/year and will power approximately 30% of demand for remediation of the terminal. Avoids 571,000 pounds of CO_2 gases per year.			✓		✓
Pennsauken Landfill Renewable Energy Park-Solar	NJ	Pennsauken	Landfill	Other	Solar	2.6	Onsite Use - General	2008	All power from the installation sold to Aluminum Shapes aluminum company.					✓

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Silver Lake Solar Farm	NJ	Edison	Brownfield	Private	Solar	2.02	Wholesale Electricity	2010	PSE&G used a NJ contractor to build Silver Lake Solar Farm.				✓	
Tinton Falls Solar	NJ	Tinton Falls	Mine Lands	Private	Solar	20	Wholesale Electricity	2013	Provided "hundreds" of highly skilled union and professional jobs during construction.				✓	
Trenton Solar Farm	NJ	Trenton	Brownfield	Other	Solar	1.3	Wholesale Electricity	2010	Creation of green jobs.				✓	
NM - NEW MEXICO														
Chevron Questa	NM	Questa	Superfund	Private	Solar	1	Wholesale Electricity	2011	The village of Questa has seen economic benefits from the project. Chevron worked with several local companies, adding close to $3 million to the local economy and an additional $2.5 million with other contractors in the New Mexico area.				✓	✓
Emcore Eubank Landfill	NM	Albuquerque	Landfill	Municipal	Solar	2	On-site Use - General	2013	Project development employed up to 16 engineers at various stages, over a dozen electrical contractors, and over 30 construction workers, laborers, equipment operators and truck drivers. Additional contractors included UL Engineers and Inspectors, and labor for fencing/signs and electrical enclosures made locally. The solar farm which will supply approximately 20 percent of the power requirements for EMCORE's Albuquerque facilities.				✓	✓
NV - NEVADA														
Nellis Air Force Base	NV	Las Vegas	RCRA	Federal	Solar	14.2	Onsite Use - General	2007	The system saves the USAF an estimated $1 million annually.	✓				
Nellis Solar Array II Generating Station	NV	Las Vegas	RCRA	Federal	Solar	15	Onsite Use - General	2016	Created ~150 jobs for site installation and NV Energy upgrades; new substation and distribution lines help provide system redundancy and protect AFB against power vulnerabilities; expected to provide emissions reductions of 27,000 tons annually.			✓	✓	✓

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NY - NEW YORK														
Bethlehem Steel Winds (combined, two installations)	NY	Hamburg / Lackawanna	RCRA	Private	Wind	35	Wholesale Electricity	2007/2012	The project created approximately $190,000 in annual tax revenues for local communities and school districts. Created five permanent green jobs and 140 construction jobs in an area with high unemployment.		✓		✓	
Clifton Park Solar	NY	Clifton Park	Landfill	Municipal	Solar	1	Wholesale Electricity	2017	Energy generated is estimated to be the equivalent of 90% of the town's energy usage. Town will realize savings via remote net metering credits for this generation.	✓				
Former Ferdula Landfill	NY	Frankfurt	Landfill		Wind		Onsite Use - Green Remediation	1998	Avoids air emissions associated with consumption of grid electricity during soil treatment. Capitalizes on wind intermittency to provide the pulsed effect that is typically effective in venting operations. Recovered $14,000 in capital/ installation costs for the wind system within one year due to avoided electricity. Accrues annual O&M costs below $500, in contrast to potential $75,000 for a conventional soil vapor extraction (SVE) system.			✓		✓
Hoosick Falls Landfill Solar Garden	NY	Village of Hoosick Falls	Landfill	Private	Solar	0.592	Wholesale Electricity	2015	In conjunction with the other structure-mounted installations on village-owned buildings, installation will save the Village $40,000 in the first full year of operation, and over $1,300,000 over 20 years.	✓				
Islip Municipal Town Landfill	NY	Hauppauge	Landfill	Municipal	Solar	0.05	Wholesale Electricity	2011	Used an estimated 30 skilled craftsman on the job. Solar panels are "Buy America Act" qualified				✓	✓
Long Island Solar Farm at Brookhaven National Laboratory	NY	Upton	Superfund	Federal	Solar	32	Wholesale Electricity	2011	Created 200 plus full time equivalent jobs during construction, 2 full-time operational jobs. The system also provides price stability for electricity customers of Long Island Public Authority.				✓	✓
Madison County Agriculture and Renewable Energy Park	NY	Lincoln	Landfill	Municipal	Solar	0.05	Onsite Use - General	2011	Produces enough energy to offset 50% of the material recycling facility demand. Low cost land. Improvements are taxable and jobs were created. Any excess-electricity generated through the solar modules will be net-metered to the grid.		✓		✓	✓

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Olean Gateway "Solean"	NY	Olean	State Brownfield	Private	Solar	4	Wholesale Electricity	2017	Through arrangement with National Grid and Olean Gateway LLC, St. Bonaventure University will save an estimated $100,000 or more a year on its electric bill based on credits from the solar installation. The solar will also reduce the university's carbon footprint.	✓		✓		
Weibel Ave. Landfill	NY	Saratoga	Landfill	Municipal	Solar	4.2	Wholesale Electricity	2017	Expected to generate 40% of city's overall electricity needs and to avoid emissions of approximately 1,605 metric tons of CO_2.			✓		✓
West Nyack Landfill	NY	Clarkstown	Landfill	Municipal	Solar	2.634	Wholesale Electricity	2014	The town expects to save about $4M over life of system (30 years).	✓				
West Park Landfill (Floyd Ackert Rd.)	NY	Esopus	Landfill	Municipal	Solar	0.6	Wholesale Electricity	2017	Project will generate revenue by selling net metering credits.	✓				
Williamson Landfill	NY	Williamson	Landfill	Municipal	Solar	1.5	Wholesale Electricity	2014	The system is expected to generate enough power for all town facilities. The town anticipates $27,000 in savings in 2015 and up to $1.5 million in savings over the course of 25 years.	✓				
OH - OHIO														
Cuyahoga Metropolitan Housing Authority	OH	Cleveland	Brownfield	Municipal	Solar	1.1	Wholesale Electricity	2013	Cuyahoga Metropolitan Housing Authority will save several million dollars over the life of the solar panels.	✓				
Dayton Tech Town	OH	Dayton	Brownfield		Geothermal		Onsite Use - General	2010	Expected annual savings are over $66,000 and 300,000 kwH/ year related to sustainable building and geothermal system combined.	✓				
Medical Center Company Solar	OH	Cleveland	Brownfield		Solar	1.5	Wholesale Electricity	2014	Partnered with Case Western Reserve University's Solar Durability and Lifetime Extension research Center to assist with their research and data collection goals.					✓
Pilkington North America	OH	Northwood	Brownfield	Private	Solar	0.25	On-site Use - General	2011	Solar array supplies approximately 12% of the R&D center's power requirements. A feasibility study determined a 2MW system would be built in phases to maximize funding stream and lessen the financial burden through the sale of RECs.		✓			✓
Toledo Zoo	OH	Toledo	Brownfield	Private	Solar	2.1	Onsite Use - General	2014	The zoo estimates energy savings to be in the range of $200,000. Installation provides power to Toledo Zoo (about 30% of zoo's total electricity needs).	✓				

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Wood County Landfill	OH	Bowling Green	Landfill	Municipal	Wind	7.2	Wholesale Electricity	2004	The system supports municipal utility and reduces the amount of power they have to purchase from other generators; provides enough electricity to power ~2,500 residential customers.			✓		✓
OK - OKLAHOMA														
Altus Air Force Base	OK	Altus	RCRA	Federal	Solar	0.0002	Onsite Use - Green Remediation	2007	Relying on an off-grid, 200-watt PV array to power a submersible pump used for recirculation of water through the bioreactor. During initial operations (2003-2005), the system recirculated groundwater at a rate ranging from approximately 600 to 1,650 gallons per day (gpd), at an average of 922 gpd. Use of the onsite solar energy also avoided significant consumption of materials and other resources (including project funds) otherwise needed to connect to the electricity grid.			✓		✓
Guthrie Green	OK	Tulsa	Brownfield	Foundation	Geothermal w/solar		Onsite Use - General	2012	A geothermal exchange well field circulates water that feeds ground source heat pumps in the neighboring Tulsa Paper Company building and the Hardesty Visual Arts Center, reducing their heating and cooling costs by approximately 60%. Using the innovative Rygan technology, the well field has a capacity of 600 tons of heating and cooling.	✓				
PA - PENNSYLVANIA														
Casselman Wind Power Project	PA	Traverses Summit, Black, and Addison	Mine Lands	Private	Wind	35	Wholesale Electricity	2008	Expected to generate approximately $245,000 in direct economic benefit to region annually, through combo of taxes, easement payments, and direct landowner payments. Up to 150 construction jobs created.		✓		✓	
Frey Farm Landfill	PA	Conestoga	Landfill	Municipal	Wind	3.2	Wholesale Electricity	2011	Turbines provide 21-25% of power needs for nearby Turkey Hill Dairy (enough to make five million gallons of ice cream). Will reduce the dairy's annual greenhouse gas emissions by roughly 5,900 tons, the equivalent of ~1,000 cars, or decreasing demand for foreign oil by 12,000 barrels. Turbines provide energy diversification and reduced electrical costs.	✓		✓		
Highland North Wind Farm	PA	Cambria County	Mine Lands	Private	Wind	75	Wholesale Electricity	2012	Approximately $5.5 million in tax revenue to the state, local townships and Forest Hills School District over the life of the project; over $3 million in local goods and services for operation and maintenance over the life of the project.		✓			

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Highland Wind Farm	PA	Cambria County	Mine Lands	Private	Wind	62.5	Wholesale Electricity	2009	The system will generate approximately $4 million in local goods and services for operation and maintenance over the life of the project. Creates $4.5 million in tax revenue to state, local townships and school districts over the life of the project and 9 full-time O&M staff.		✓		✓	✓
York County Landfill Solar	PA		Landfill	Municipal	Solar	0.3	Onsite Use - Green Remediation	2014	The system generates about 300,000 kWh of electricity each year and reduces the facility's dependence on fossil fuels. Generates power for the site's general energy needs, including ongoing management of groundwater treatment systems and office buildings.			✓		✓
RI - RHODE ISLAND														
East Providence Landfill Solar Farm	RI	East Providence	RCRA	Municipal	Solar	2.25	Wholesale Electricity	2014	City leases land for $40,000 per year for 18 acres (installation may be expanded in the future). Property tax to city is $30,600 per year, based on the 20% of full valuation of tangible equipment per the corresponding PILOT agreement.		✓		✓	
SC - SOUTH CAROLINA														
Savannah River's Biomass Steam Plant	SC	Hopewell Township	Superfund	Federal	Biomass	20	Onsite Use - General	2008	Energy savings of more than $34.4 million annually. Created more than 27 full-time jobs on-site, with over 600,000 hours of construction and operational labor in construction period (30 months).	✓			✓	
TN - TENNESSEE														
Bristol Demolition Landfill	TN	Hermitage	Landfill	Municipal	Solar	0.2	Wholesale Electricity	2012	The city leases the land for $6,000 annually and sells the electricity generated at the landfill site to TVA via the local energy provider, Bristol Tennessee Essential Services (BTES), for $0.21/kWh. The contract specifies a twelve-and-a-half-year term of use with another twelve-and-a-half-year extension. After the initial term of the agreement, the rate will go down to $0.01/kWh, but the $6,000 annual lease fee will stay the same. The city receives about 10 percent of the revenue generated from the system and EES gets 90 percent. This system will produce approximately 300,000 kW of solar electricity annually with a lifetime guarantee of 30 years. The array provides enough electricity to power about fifty homes in the area and offsets over 6,000 tons of carbon dioxide annually.		✓	✓		✓

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RSI Brightfields One	TN	Bristol	Brownfield	Private	Solar	0.2	Wholesale Electricity	2012	Used TN-produced solar panels.					✓
Volkswagen Chattanooga	TN	Chattanooga	RCRA	Private	Solar	9.5	Wholesale Electricity	2013	Expected to meet 12.5% of the energy needs of Volkswagen's Chattanooga manufacturing plant during full production and 100% during non-production periods. Equivalent to avoiding CO_2 emissions of nearly 2,000 passenger vehicles per year, or the equivalent amount of electricity needed to power nearly more than 1,000 average American homes annually.			✓		✓
TX - TEXAS														
Central Texas Veterans Landfill Solar	TX	Temple	Landfill	Federal	Solar	2.94	Wholesale Electricity	2012	Installation saves the U.S. Department of Veterans Affairs $300,000 per year in energy costs	✓				
Grove Landfill	TX	Austin	Landfill		Solar		Onsite Use - Green Remediation	2006	Avoided installation of utility lines and associated air emissions from construction equipment (and additional consumption of grid-supplied electricity) by using the PV energy system wherever possible.			✓		✓
Pantex Renewable Energy Project (PREP)	TX	Amarillo	Superfund	Federal	Wind	11.5	Wholesale Electricity	2014	An estimated $2.8 million annual energy savings for DOE.	✓				
Tessman Road Municipal Solid Waste Landfill	TX	San Antonio	Landfill	Private	Solar	0.13	Wholesale Electricity	2009	Site uses a flexible solar cover. Republic and CPS Energy will study and document the results of this installation for use in the deployment of solar energy covers on owned landfills throughout the region.					✓
UT - UTAH														
Salt Lake City Landfill	UT	Salt Lake City	Landfill	Municipal	Solar	1	Wholesale Electricity	2015	Combined with a solar installation on its roof, landfill solar allows city public safety building to achieve net zero energy.			✓		✓
VA - VIRGINIA														
Crozet Orchard	VA	Crozet	Superfund	Private	Solar		Onsite Use - Green Remediation	2007	Avoids costs and greenhouse gas emissions associated with consumption of grid electricity during the treatment process.	✓		✓		✓

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VI - VIRGIN ISLANDS														
Former St. Croix Alumina Plant	VI	St Croix	RCRA		Wind, Solar	0	Onsite Use - Green Remediation	2002 2003 2006	Wind-driven turbine compressors drive compressed air into hydraulic skimming pumps. Solar PV powers some recovery wells. These systems avoid air emissions associated with consumption of grid electricity during petroleum recovery.			✓		✓
VT - VERMONT														
Elizabeth Mine Solar	VT	Stafford	Superfund	Private	Solar	7	Wholesale Electricity	2017	Developer used local civil, mechanical, and electrical contractors for the project, driving employment for local economies during installation. Grid upgrades completed during construction benefited the community with an improved electrical system that upgraded the reliability of the entire system. Project will avoid 6,000 tons of CO_2 annually, equivalent to emissions from combustion of 14,000 barrels of oil; equal the carbon sequestration from almost 5,000 acres of forest; and provide electricity sufficient to power 1,200 homes annually.			✓	✓	✓
Rutland Landfill (Stafford Hill)	VT	Rutland	Landfill	Municipal	Solar	2.3	Wholesale Electricity	2015	The utility plans to lease the dormant landfill from the city for 25 years, with a 25-year option, for $30,600 a year		✓			
Townshend Landfill	VT	Townshend	Landfill	Municipal	Solar	0.15	Wholesale Electricity	2014	Community solar project providing power to 15 residences as well as the Town Hall and town library.					✓
WI - WISCONSIN														
Beloit Coal Ash Landfill	WI	Beloit	Landfill	Municipal	Solar	2.3	Wholesale Electricity	2016	Enough clean energy to power 500 local homes.			✓		
MATC PV Evaluation Lab	WI	Milwaukee	Landfill	Private	Solar	0.54	Onsite Use - Training	2010	The estimated energy savings in the first year of operation is $70,300. Energy produced at the site will be used to operate the Milwaukee Public Television transmitter that is located at the site. This will be the first public television transmitter in the country that will transition to being neutral to the energy grid. The facility also will serve as a training center for technicians, designers, site assessors, electricians, sales personnel and other professionals in the fields of renewable energy.	✓				✓

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Refuse Hideaway Landfill	WI	Middleton	Superfund	State	Solar	0.01	Onsite Use - Green Remediation	2010	The solar array generates clean power to offset the needs of the remediation systems. A Madison-based company was hired to install a 44-solar panel array, capable of generating 12,000 kilowatt-hours per year. Energy from the system is then returned to the power grid, and the DNR is credited on its next energy bill.			✓	✓	✓
Chevron Casper Wind Farm	WY	Casper	RCRA	Private	Wind	16.5	Wholesale Electricity	2009	Created approximately 20 construction jobs, 1.5 permanent jobs.				✓	
Dave Johnston Mine / Glenrock Wind I and III	WY	Glenrock	Mine Lands	Private	Wind	276	Wholesale Electricity	2008/2009	The system produces enough electricity to supply 66,800 households for one year.			✓		
Warren AFB Wind	WY	Cheyenne	RCRA	Federal	Wind	3.32	Wholesale Electricity	2009	Expected to save the Air Force more than $11.4 million in energy costs over the 20 years. The annual estimated energy production is approximately $575,000 with a simple payback period of 14 years.	✓				

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