

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 213 renewable energy installations on 207 contaminated lands, landfills, and mine sites¹, with a cumulative installed capacity of just over 1,235 megawatts (MW) in a total of 40 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), however, RE-Powering has identified self-reported benefits for 178 of the total 213 renewable energy installations that the Initiative tracked 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.

Subscribe
 EPA's RE-Powering Listserv

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.

A Range of Benefits from RE on CL

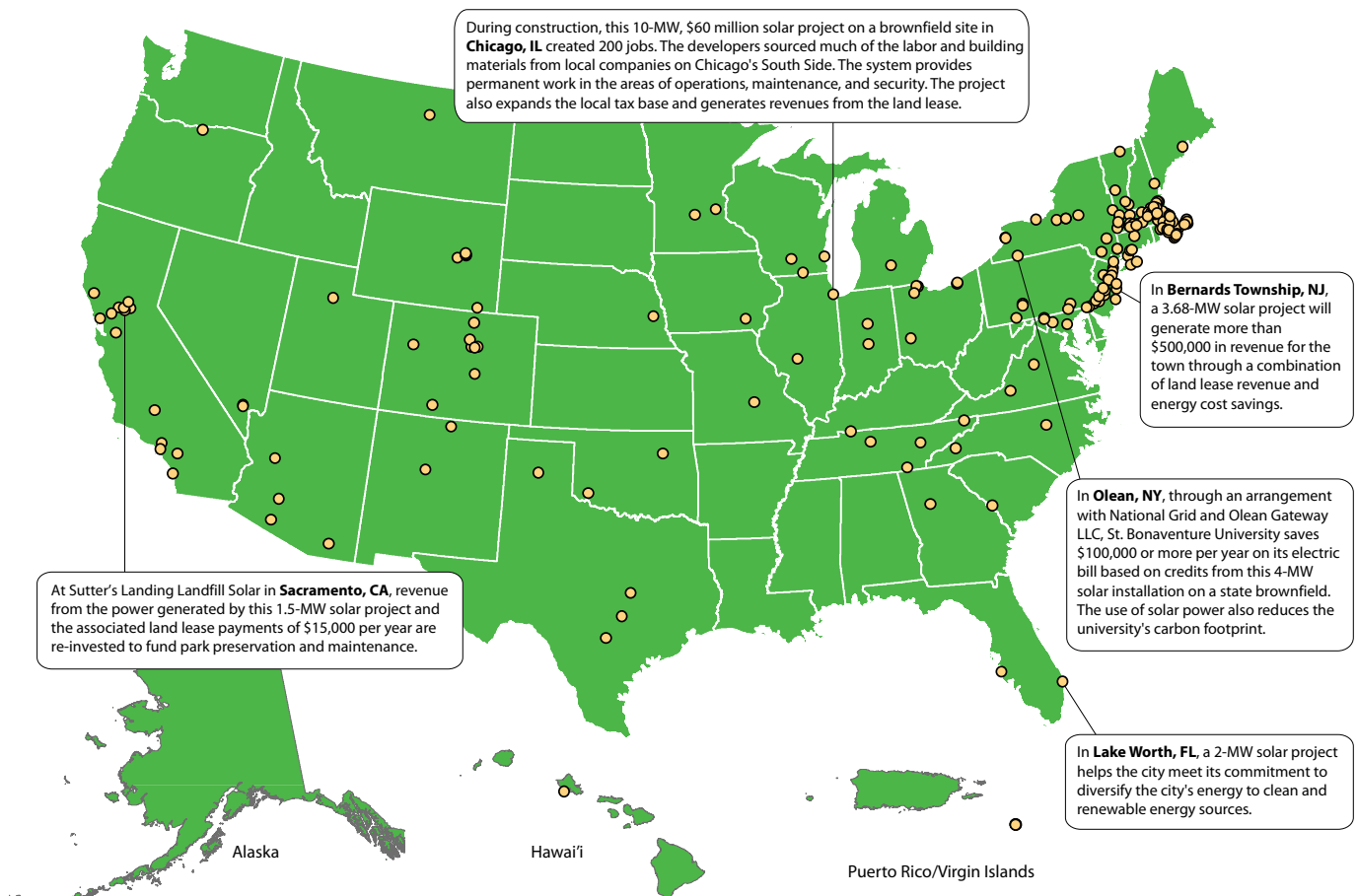
Renewable energy (RE) installations on contaminated land (CL) can provide a range of benefits to municipalities, developers, businesses, and the environment. Some examples include:

East Providence Landfill (East Providence, RI): The city of East Providence [receives lease revenue](#) of \$40,000 per year for 18 acres of former landfill on which this 2.25-MW solar installation is located. The city also receives payments in lieu of taxes, or PILOT, of \$30,600 per year, based on a 20% of full valuation of tangible equipment. The construction of the site created local jobs, and the generated power will be [dedicated](#) to the town, a wastewater treatment plant, and a nearby school. The agreement for the installation includes an expected [expansion](#) of the solar capacity in the future.

Schaus-Vorhies Solar (Fairfield, IA): This 0.5-MW [solar installation](#) on a privately owned brownfield is expected to pay for itself in seven years or less, and it provides 100% of the company's electrical needs on a net-annual basis. The anticipated total energy production (over 25 years) will [prevent](#) 10,587 metric tons of carbon dioxide (CO₂) from entering the atmosphere, equivalent to the emissions associated with 25 million miles driven in a typical passenger car.

Frey Farm Landfill Wind (Conestoga, PA): This 3.2-MW wind turbine installation [provides 21–25%](#) of total power needs for nearby Turkey Hill Dairy. In fact, the system's 6.18 million kilowatt hours of electricity annually are enough to make 5,000,000 gallons of the company's well-known ice cream. The wind power also [reduces the dairy's](#) annual greenhouse gas (GHG) emissions by roughly 5,900 tons, which is the equivalent to the emissions from ~1,000 cars.

178 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.

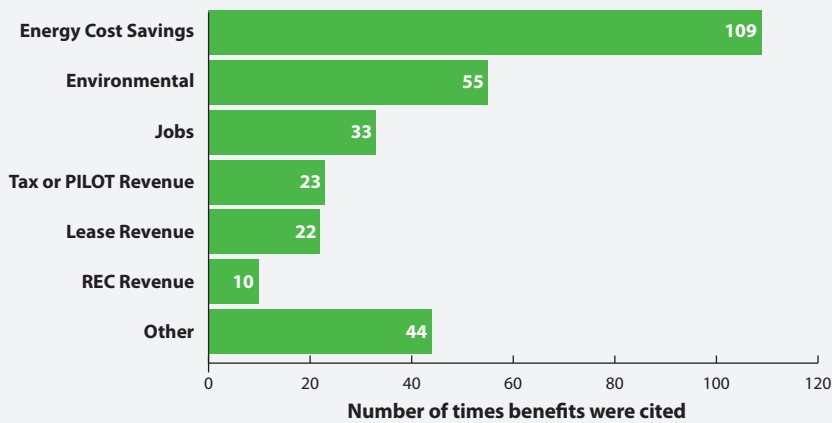
June 2017



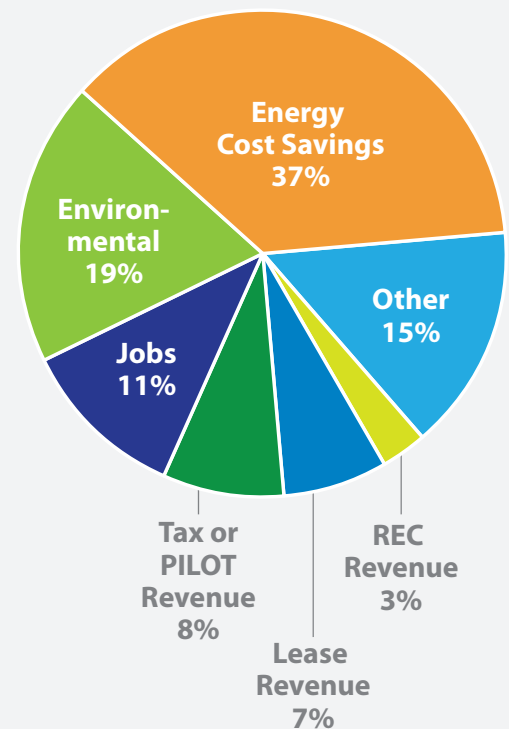
Inside the Numbers²

RE-Powering has verified benefits for 178 renewable energy on contaminated land installations from the RE-Powering Tracking Matrix. However, many sites publicly reported multiple benefits; as such, the RE-Powering Benefits Matrix includes descriptions of nearly 300 reported benefits. In addition to these, many expected benefits have not been publicly reported. Benefits are expected for every RE on CL project, whether energy cost savings, increased revenue, 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.

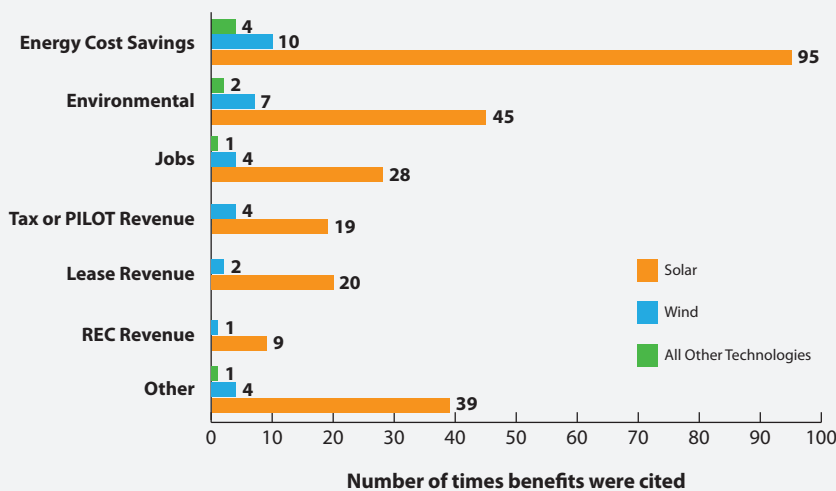
Types of Benefits Reported (All Installations)



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



Types of Benefits Reported (by Technology)



² The "Other" category in all charts includes cost savings associated with powering site clean-up (green remediation); induced economic benefits to the community resulting from jobs created (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 installation for distributed generation.

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 178 of the 213** RE on CL sites in its Tracking Matrix. Stakeholders involved with these 178 sites note specific benefits in terms of **job creation, energy cost savings, tax or PILOT revenue, lease revenue, REC revenue, environmental benefits, and others**.



July 2017 Benefits Spotlight: Additional Revenue from RE on CL

One of the benefits often highlighted by stakeholders involved in renewable energy projects on contaminated properties is the additional revenue generated for landowners, local communities and municipal governments, developers, and renewable energy system owners. This revenue can come in many ways, but is most commonly found in land leases and taxes for the property on which a renewable energy installation is located, revenue from Renewable Energy Credits (RECs) for the power produced, and payments in lieu of taxes (PILOT).

Representatives from at least 55 of the installations in the RE-Powering Tracking Matrix have specifically touted land lease, REC, and/or PILOT revenue as a benefit of renewable energy on contaminated land projects. Examples include:

W.R. Grace Solar (Concord, MA): This 5.6-MW solar project located on a former manufacturing and designated Superfund site [will provide the town](#) of Concord more than \$700,000 in PILOT revenue over 20 years. A PILOT agreement is an arrangement between a local government and another entity to compensate the government for some or all of the tax revenue lost due to tax-exempt use of a specific piece of property. Many renewable energy installations are tax exempt or have reduced property tax rates, but developers may agree to PILOT payments as part of land lease arrangements.

Ravenbrook Farms Landfill (North Carver, MA): The town of North Carver, MA, [negotiated with the developer](#) of this 6-MW solar project on a former combined municipal solid waste and construction/demolition debris landfill site to collect more than \$200,000 in back taxes owed. Solar developer Southern Sky Renewable Energy presented the town with a 25-year agreement that included the opportunity to collect \$247,000 owed by the landowner in back taxes as well as to receive payments for current and subsequent taxes. The back taxes are structured into Southern Sky's lease with the landowner such that a portion of the rent paid is sent to the town for the delinquent taxes.

Casselman Wind Power Project (Somerset County, PA): This 35-MW wind energy project on former mining land in Pennsylvania is [expected to generate](#) approximately \$245,000 in direct economic benefit to the region annually through a combination of taxes, easement payments, and landowner revenue participation payments. The project also created a peak of 150 construction jobs.

Transforming a Closed Pickle Plant into a Productive Solar Garden

In 2015, the city of Fort Collins, CO, transformed a defunct pickle plant, repurposing its land into a community solar garden. The city initially considered developing a park at the site, but several factors limited this potential option, including the presence of salts in the soil and the site's location in the habitat buffer zone of the adjacent Poudre River.

While these factors restricted the site's use as a park, they were not prohibitive for a solar installation. No major grading was required to accommodate the solar array, since footings were created by driving pilings rather than excavating for concrete footers or something similar. This reduced the need to disturb the contaminated soils for the solar array.

The 620-kW solar photovoltaic installation covers approximately three acres and provides numerous benefits to the community. The project gave the pickle plant property new life, while offering renewable energy for residents who were otherwise unable to install solar panels. The initial plans were for a 330-kW system, but demand for subscriptions was so high that CEC nearly doubled the system capacity.

In addition, developer Clean Energy Collective (CEC) benefits from a low cost land lease and financial incentives from the city, as well as solar rebates totaling \$495,000 from Fort Collins Utilities. These rebates allowed the utility to discount the buy-in price for customers.



Completed Riverside Community Solar Project at the former defunct Dreher Pickle Plant site.
Photo credit City of Fort Collins.

RE on CL Providing Low-Income Residents Access to Solar

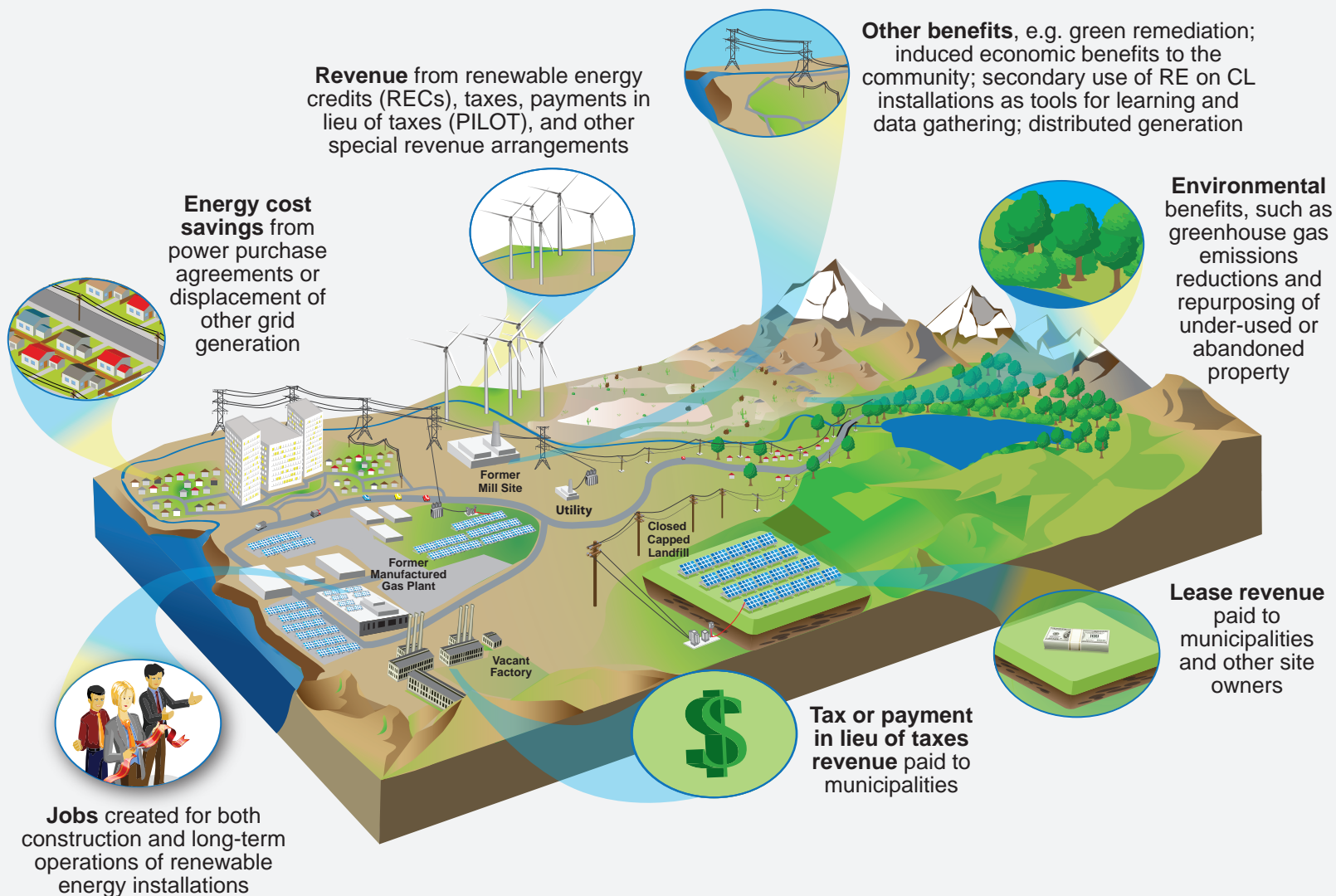
[San Miguel Power Association \(SMPA\)](#), [GRID Alternatives Colorado](#), and the [Colorado Energy Office](#) have announced the development of a community solar array that will lower the electric bills of qualified low-income residents in SMPA's service territory. [SMPA has completed](#) the 200-kilowatt project on a former landfill in Norwood, CO, as part of the utility's effort to make renewable energy available to more of its members at reasonable cost. The installation is part of a statewide initiative to reduce energy costs for customers with the highest need across various utilities. It will turn a former landfill site into a productive property and will allow GRID Alternatives to provide local solar job training to volunteers and installers.



Installation of the San Miguel community solar array in Norwood, Colorado.

RE-Powering America's Land

Benefits from Reusing Potentially Contaminated Land for Renewable Energy



RE-Powering America's Land Initiative: Benefits Matrix

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Site/Project Name	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
ARIZONA													
Ajo Solar Project	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	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	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	Buckeye	Landfill	Municipal	Solar	10	Wholesale Electricity	2015	Estimated \$15 million - \$20 million of direct and indirect investments were made to the local economy from this project. More than 100 construction jobs.				✓	✓
CALIFORNIA													
Aerojet General Corporation Superfund Site	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	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	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 million pounds of CO ₂ .			✓		
Fischer Properties: Depot Park	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	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	Livermore	Superfund	Federal	Solar	0.004	Onsite Use - Green Remediation	2009	The self-powered solar treatment units allow groundwater treatment at remote areas of the 7,000-acre site without the installation of costly power lines or generators.					✓
NASA Jet Propulsion Laboratory (JPL)	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 kilowatt-hours (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	Maywood	Superfund	Municipal	Solar	0.006	Onsite Use - Green Remediation	2007	Annual electricity cost savings of \$2,839.	✓				
Regulus Solar Power Plant	Bakersfield	Brownfield	N/A	Solar	82	Wholesale Electricity	2015	The project will contribute to the creation of 1,300 full time equivalent employee years, \$6.1 million in property taxes and \$25.4 million 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	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	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.	✓				
Travis Air Force Base	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.					✓

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West County Wastewater District	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	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.	✓			✓	
COLORADO													
Aurora/Arapahoe Solar Array	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	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	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	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	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.	✓				
New Rifle Mill	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.	✓				

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Place Bridge Academy	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.	✓		✓		✓
Summitville Mine Superfund Site	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 - 20% of the electricity needed to operate the existing water treatment plant.	✓		✓		
CONNECTICUT													
Bridgeport Landfill	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 \$7 million 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	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.	✓				
Hartford CT Landfill (Solar)	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.	✓	✓	✓		
Wintergreen Ave. Landfill	New Haven	MSW Landfill	Private	Solar	1	Wholesale Electricity	2016	Minimum savings [for the town] of \$30,000 per year.	✓				

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DELAWARE													
DuPont Newport	Newport	Superfund	Private	Solar	0.5	Wholesale Electricity	2013	Construction created nearly 120 jobs.				✓	
McKees Solar Park	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-kWh 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.			✓		✓
FLORIDA													
Lake Worth Landfill	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.			✓		
GEORGIA													
Hickory Ridge Landfill	Atlanta	Landfill	Municipal	Solar	1	Wholesale Electricity	2011	Enough energy to meet the needs of 224 homes annually.			✓		
HAWAII													
Kapolei Sustainable Energy Park	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.			✓		
ILLINOIS													
Exelon City Solar	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	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	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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INDIANA													
Reilly Tar & Chemical (Indianapolis)	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 contracts for equipment and labor with local firms during the 15-35-year operating period of the facility.	✓	✓		✓	
IOWA													
Schau-Vorhies Solar	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.	✓		✓		
KENTUCKY													
Fort Campbell Solar Phase One	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.			✓		
MASSACHUSETTS													
Acton Landfill	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	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.	✓				



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Barnstable Landfill	Barnstable	Landfill	Municipal	Solar	4.2	Wholesale Electricity	2014	Estimated annual savings for the town of over \$270,000.	✓				
Beech St. Landfill	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.	✓	✓			
Bent Mill Solar	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	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 the town of Chelmsford (higher demand than Bolton).	✓	✓			
Braintree Landfill	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	Brewster	Landfill	Municipal	Solar	1.23	Wholesale Electricity	2014	The project is expected to save the town \$75,685 in the first year.	✓				
Bridge Street Landfill	Fairhaven	Landfill	Municipal	Solar	1.8	Wholesale Electricity	2013	The town is expected to save \$1.5 million over 30 years. A PPA allows the town to avoid costs associated with solar system ownership.	✓				

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Brockton Brightfield	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.		✓			
Chatham Landfill	Chatham	Landfill	Municipal	Solar	1.8	Wholesale Electricity	2014	Estimated to save the town \$120,446 in the first year and more than \$3.5 million by the end of the 20-year PPA.	✓				
Chicopee Elks Landfill	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	Chilmark	Landfill	Municipal	Solar	0.099	Wholesale Electricity	2014	System offsets 60% of the town's historical energy usage. In first year of operation, saved the town \$2,374 from net metering (as of Sept 2015).	✓				
Concord Landfill Phase I	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	Springfield	Landfill	Municipal	Solar	3.9	Wholesale Electricity	2014	Estimated to have brought \$22 million of construction revenue to the region.				✓	✓
Cowles Gravel Solar	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	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.			✓		

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Duxbury Landfill	Duxbury	Landfill	Municipal	Solar	0.585	Wholesale Electricity	2014	The system should meet 15% of the town's electricity needs and save \$45,000 per year. The project will generate enough electricity for over 100 homes.	✓		✓		
Eastham Landfill	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	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.		✓			
Fairhaven Sanitary Landfill (Canton)	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.	✓				
Former Grasso Landfill	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	Greenfield	Landfill	Municipal	Solar	2	Wholesale Electricity	2012	The system is projected to save the city \$250,000 in first year of operation and created 50 local jobs.	✓			✓	
Groton Landfill Solar	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	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	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	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	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.	✓	✓			
Huntington Avenue Landfill	Methuen	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	Springfield	Brownfield	Other	Solar	2.3	Wholesale Electricity	2011	The project will generate \$400,000 in annual property tax revenue to city of Springfield.		✓			
Kingston Landfill (wind)	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	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	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)	✓				
Ludlow Landfill	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.	✓	✓			

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Mashpee Solar	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)	Sagamore	Superfund	Federal	Wind	4.5	Onsite Use - Green Remediation	2011	The turbines to offset electrical costs for powering numerous groundwater cleanup systems at the site.	✓				✓
Needham Landfill	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	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	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%).	✓				
Oliver Street Landfill	Easthampton	Landfill	Municipal	Solar	2.3	Wholesale Electricity	2012	The system was constructed at no cost to the 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.	✓	✓			
Palmer Metropolitan Airfield Solar	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.		✓			

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Philips Lightolier Wind	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.			✓		
Prospect Street Landfill	Easton	Landfill	Municipal	Solar	1.9	Wholesale Electricity	2014	The project will save the town approximately \$200,000 annually and nearly \$4.5 million over the course of the 20-year contract. The system will produce the equivalent quantity of electricity consumed by 235 homes in one year.	✓		✓		
Quaboag Landfill Solar	Brookfield	Landfill	Municipal	Solar	0.434	Wholesale Electricity	2013	The installation will earn approximately \$800,000 over 20 years for the 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.	✓	✓	✓		
Ravenbrook Farms Landfill Solar	North Carver	Landfill	Municipal	Solar	6	Wholesale Electricity	2014	Developer negotiated to allow the town to collect more than \$200,000 in back taxes owed via added land lease payments. Town will also collect tax revenue on installation going forward.		✓			
Re-Solve Superfund Solar	Dartmouth	Superfund		Solar	0.15	Onsite Use - Green Remediation	2012	System to generate 90% of electricity for the groundwater treatment system; about 186,000 kWh/yr.	✓				
Revere Solar Power Project	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	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	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.	✓	✓			

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Scituate Landfill	Scituate	Landfill	Municipal	Solar	3	Wholesale Electricity	2013	The system is expected to save the 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.	✓	✓			
Shaffer Landfill (Iron Horse Park)	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.	✓				
Silver Lake Solar Photovoltaic Facility	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	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	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 (PILOT), 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 12 acres.		✓			
Sudbury Landfill Solar	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	New Bedford	Superfund	Municipal	Solar	1.8	Wholesale Electricity	2014	The system is expected to save the city \$2.7 million over 20 years. Used a local (MA-based) capital firm, BlueWave, for development.	✓			✓	
Theophilus Smith Landfill	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 the town.	✓				
W.R. Grace Solar	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 ~ 4,503 metric tons of carbon dioxide per year.		✓	✓		

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Waltham Street Landfill	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.		✓	✓		
West Boylston Landfill	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	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	Westfield	Landfill	Municipal	Solar	2.5	Wholesale Electricity	2015	The city receives benefits from lease payments, 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	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	Weston	Landfill	Municipal	Solar	2.27	Wholesale Electricity	2016	The town will receive one net metering credit for each kWh 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.	✓				
MARYLAND													
Former Ellicott City Landfill	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	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.	✓				
Forty West Landfill	Hagerstown	Landfill	Private	Solar	2	Wholesale Electricity	2015	Across all EPGSolar installations (including two 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).	✓	✓			

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Site/Project Name	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
Washington County Rubble Landfill	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).	✓	✓			
MAINE													
Belfast Landfill	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.	✓				
MINNESOTA													
Fridley Plant Solar	N/A	Superfund	Private	Solar	0.147	Onsite Use - Green Remediation	2009	Solar panels provide 30% 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	Hutchinson	Landfill	Private	Solar	0.4	Onsite Use - General	2015	Used local companies for the installation (tenKSolar, a Bloomington-based solar company that supplied the hardware and 975 panels, and Hunt Electric - the contractor that installed the panels). Generates 15% of power needed for WWTP (next door).	✓				✓
MISSOURI													
Busy Bee's Laundry	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.			✓		✓
MONTANA													
Zortman-Landusky Mine	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.	✓				✓

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NORTH CAROLINA													
Evergreen Packaging Landfill	Haywood County	Landfill	Private	Solar	0.55	Wholesale Electricity	2010	Developer savings on land lease via 20-year agreement at \$1/year.					✓
NEBRASKA													
Former Nebraska Ordnance Plant	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.	✓		✓		✓
NEW HAMPSHIRE													
Milton Landfill Solar Garden	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; the town has signed PPA, which provides energy cost savings.	✓				✓
NEW JERSEY													
Bernards Township Landfill	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	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.	✓				
Clean Harbors	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.	✓				✓

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FedEx Ground Distribution Hub	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.	✓		✓		
Hackensack Solar Farm	Hackensack	Brownfield	Other	Solar	1.06	Wholesale Electricity	2012	Created construction and permanent jobs (number not specified).				✓	
Industrial Land Reclaiming Landfill	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	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 a solar field.			✓		
L&D Landfill	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	Linden	Brownfield	Other	Solar	3.2	Wholesale Electricity	2011	Created construction and permanent jobs (number not specified).				✓	
Parklands Solar Farm	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	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. Reduction of CO ₂ gases by 571,000 pounds per year.	✓		✓		
Pennsauken Landfill Renewable Energy Park-Solar	Pennsauken	Landfill	Other	Solar	2.6	Onsite Use - General	2008	All power from the installation sold to Aluminum Shapes aluminum company.					✓
Silver Lake Solar Farm	Edison	Brownfield	Private	Solar	2.02	Wholesale Electricity	2010	PSE&G used a NJ contractor to build Silver Lake Solar Farm.				✓	
Tinton Falls Solar	Tinton Falls	Mine Lands	Private	Solar	20	Wholesale Electricity	2013	Provided "hundreds" of highly skilled union and professional jobs during construction.				✓	
Trenton Solar Farm	Trenton	Brownfield	Other	Solar	1.3	Wholesale Electricity	2010	Creation of green jobs.				✓	

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NEW MEXICO													
Chevron Questa	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	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, 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.	✓			✓	✓
NEVADA													
Nellis Air Force Base	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	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.			✓	✓	✓
NEW YORK													
Bethlehem Steel Winds (combined, two installations)	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.		✓		✓	
Former Ferdula Landfill	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.	✓		✓		

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Hoosick Falls Landfill Solar Garden	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 \$1.3 million over 20 years.	✓				
Islip Municipal Town Landfill	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	Upton	Superfund	Federal	Solar	32	Wholesale Electricity	2011	Created 200 plus full time equivalent jobs during construction, two 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	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. It is estimated that the 50kW system will generate approximately 50,000 kWh power year; offsetting existing electric demand at the recycling facility.	✓	✓		✓	
Olean Gateway "Solean"	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.	✓		✓		
West Nyack Landfill	Clarkstown	Landfill	Municipal	Solar	2.634	Wholesale Electricity	2014	The town expects to save about \$4 million over life of system (30 years).	✓				
Williamson Landfill	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.	✓				
OHIO													
Cuyahoga Metropolitan Housing Authority	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	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.	✓				

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Medical Center Company Solar	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	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	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).	✓				
Wood County Landfill	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.	✓		✓		
OKLAHOMA													
Altus Air Force Base	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	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.	✓				

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PENNSYLVANIA													
Casselman Wind Power Project	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	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.	✓		✓		
Highland North Wind Farm	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.		✓			
Highland Wind Farm	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 nine full-time O&M staff.		✓		✓	✓
York County Landfill Solar		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.	✓		✓		
RHODE ISLAND													
East Providence Landfill Solar Farm	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.		✓		✓	

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SOUTH CAROLINA													
Savannah River's Biomass Steam Plant	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).	✓			✓	
TENNESSEE													
Bristol Demolition Landfill	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 12.5-year term of use with another 12.5-year extension. After the initial term of the agreement, the kW rate will go down to \$0.01/ kWh, but the \$6,000 annual lease fee will stay the same. The city receives about 10 % of the revenue generated from the system and EES gets 90%. This system will produce approximately 300,000kW of solar electricity annually with a lifetime guarantee of 30 years. The array provides enough electricity to power about 50 homes in the area and offsets over 6,000 tons of carbon dioxide annually.	✓	✓	✓		
RSI Brightfields One	Bristol	Brownfield	Private	Solar	0.2	Wholesale Electricity	2012	Used TN-produced solar panels.					✓
Volkswagen Chattanooga	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.	✓		✓		

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TEXAS													
Central Texas Veterans Landfill Solar	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	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)	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	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.					✓
UTAH													
Salt Lake City Landfill	Salt Lake City	Landfill	Municipal	Solar	1	Wholesale Electricity	2015	Combined with a solar installation on its roof, landfill solar allow the city public safety building to achieve net zero energy.	✓		✓		
VIRGINIA													
Crozet Orchard	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.			✓		✓
U.S. VIRGIN ISLANDS													
Former St. Croix Alumina Plant	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.			✓		✓

RE-Powering America's Land Initiative: Benefits Matrix

July 2017

Through the RE-Powering America's Land initiative, the EPA encourages renewable energy development on potentially contaminated land, landfills, and mine sites when 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 and compiles this information in its [Project Tracking Matrix](#). The following list tracks benefits associated with completed sites identified and reported by parties directly involved with their respective projects (e.g., information from the associated city, town, or county; site owners; developers; utilities; and/or financiers) or from other EPA resources. Common benefits reported include revenues from land leases and taxes, electricity cost savings associated with the reduced need to purchase power from the grid, job creation, reduced greenhouse gas emissions, et al. This resource is for informational purposes only. **Please note that the benefits listed here are not a comprehensive representation of all benefits associated with completed renewable energy projects on contaminated lands and such benefits are calculated in various ways; nevertheless, this list illustrates the breadth of benefits being realized and highlighted across the country by those developing these types of installations.**

Site/Project Name	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
VERMONT													
Rutland Landfill (Stafford Hill)	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	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.					✓
WISCONSIN													
Beloit Coal Ash Landfill	Beloit	Landfill	Municipal	Solar	2.3	Wholesale Electricity	2016	Enough clean energy to power 500 local homes.			✓		
MATC PV Evaluation Lab	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.	✓				✓
Refuse Hideaway Landfill	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.	✓		✓	✓	✓
WYOMING													
Chevron Casper Wind Farm	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	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	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.	✓				