## RE-Powering America's Land Initiative:

The U.S. Environmental Protection Agency (EPA) recognizes the overall environmental benefit of siting renewable energy projects on contaminated properties. Through the RE-Powering America's Land Initiative, EPA is encouraging renewable energy development on current and formerly contaminated lands, landfills, and mine sites 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. To date, the RE-Powering Initiative has identified 190 renewable energy installations on 181 contaminated lands, landfills, and mine sites ${ }^{1}$, with a cumulative installed capacity of just over 1,172 megawatts (MW) and consistent growth in total installations since the inception of the RE-Powering Initiative. Approximately $60 \%$ of these installations are large-scale systems with a project capacity of 1 MW or more, either exporting energy onto the utility grid, offsetting onsite energy demands, or powering cleanup. This document provides summary statistics of known installations and discusses emerging trends.

## 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

In addition to the completed sites listed here, EPA is tracking more than 100 renewable energy projects on contaminated or disturbed properties in various stages of planning, approval, or construction. These include a 1.1-MW solar project under construction on a Meriden, CT landfill; a 2-MW solar project under construction on a landfill in Lake Worth, FL; and a 7.75-MW solar array ready for construction on a former oil refinery and fertilizer manufacturing site in Olean, NY. In addition, EPA is aware of more than 50 other potential renewable energy projects on contaminated sites, primarily landfills, which have been suggested at town council or public meetings.

190 Renewable Energy Projects, Over 1.1 Gigawatt Installed Capacity


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.

October 2016

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# RE-Powering America's Land Initiative: <br> Project Tracking Matrix 

## National Deployment

RE-Powering has identified installations of renewable energy on contaminated lands, landfills, and mine sites in 38 states and territories. The locations of these installations reflect evolving trends generally linked to available renewable energy resource as well as incentives or policies such as Renewable Portfolio Standards (RPSs), tax exemptions, net metering laws, and others. Policy data in this section are from the Database for State Incentives for Renewables and Efficiency (DSIRE), a comprehensive database managed by the North Carolina Clean Energy Technology Center and funded by the U.S. Department of Energy. DSIRE compiles renewable energy and energy efficiency incentives and policies enacted by the federal government, state governments, U.S. territories, local governments, and large utilities. The DSIRE website allows users to search policies by state and provides quarterly summary maps.

| INSTALLATIONS BY STATE OR TERRITORY² |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| State | \# Installations | Installed Capacity (MW) | State Renewable Portfolio Standard ${ }^{3}$ | Solar Set-Aside Policy ${ }^{4}$ | Solar Multiplier Policy ${ }^{5}$ | Distributed Generation Requirement ${ }^{6}$ |
| MA | 64 | 142.7 | $\checkmark$ | $\checkmark$ |  |  |
| NJ | 15 | 82.9 | $\checkmark$ | $\checkmark$ |  |  |
| NY | 14 | 76.1 | $\checkmark$ |  |  | $\checkmark$ |
| CA | 13 | 104.9 | $\checkmark$ |  |  |  |
| CO | 8 | 7.1 | $\checkmark$ |  | $\checkmark$ | $\checkmark$ |
| OH | 6 | 11.7 | $\checkmark$ | $\checkmark$ |  |  |
| PA | 6 | 178.5 | $\checkmark$ | $\checkmark$ |  |  |
| WY | 5 | 295.8 |  |  |  |  |
| AZ | 4 | 30.0 | $\checkmark$ |  | $\checkmark$ | $\checkmark$ |
| MD | 4 | 23.1 | $\checkmark$ | $\checkmark$ |  |  |
| TX | 4 | 14.6 | $\checkmark 7$ |  | $\checkmark 8$ |  |
| TN | 4 | 10.1 |  |  |  |  |
| VT | 4 | 5.3 | $\checkmark$ |  |  | $\checkmark$ |
| WI | 3 | 2.9 | $\checkmark$ |  |  |  |
| NV | 2 | 28.2 | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| IL | 2 | 10.9 | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |
| NM | 2 | 3.0 | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |
| CT | 2 | 1.7 | $\checkmark$ |  |  |  |
| VA | 2 | 1.6 | $\checkmark 9$ |  |  |  |
| DE | 2 | 0.7 | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| NC | 2 | 0.6 | $\checkmark$ | $\checkmark$ |  |  |
| OK | 2 | 0.0 | $\checkmark^{10}$ |  |  |  |
| MN | 2 | 0.5 | $\checkmark$ | $\checkmark^{11}$ |  | $\checkmark$ |
| OR | 1 | 100.0 | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark^{12}$ |
| ROUS ${ }^{13}$ | 17 | 39.9 |  |  |  |  |
| TOTAL | 190 | 1,172.9 |  |  |  |  |

[^1]
## RE on CL EPA Evaluation Examines RE-Powering Initiative

EPA recently compiled the results of the second phase of its RE-Powering Initiative evaluation. The evaluation proceeded in two steps. First, an initial evaluation scoping assessment that explored data availability and potential evaluation questions was conducted. From that assessment, EPA identified several aspects of the Initiative for additional focus; the second phase was launched in June 2015.

The evaluation sought to address questions about RE-Powering's role in moving the RE on CL market, the usefulness of the EPA/ NREL feasibility studies, and the costs (or savings) associated with RE on CL. EPA also developed a process "roadmap" for successful RE on CL development by compiling perspectives offered by various stakeholders. Fundamentally, the evaluation asked how REPowering could more effectively encourage RE on CL installations.

EPA executed the evaluation through stakeholder interviews; a comprehensive literature review; and a review of the RE-Powering Tracking Matrix, websites, tools, case studies, reports, and newsletters. EPA also developed a timeline of program and market development, based on interviews, literature review, and data; created a process map based on developer interviews and EPA documents; and identified cost components of solar and wind projects.

While RE-Powering is thought to have been helpful in moving the market forward, the evaluation identified additional barriers that still needed to be overcome. Full details of the evaluation and its findings are available on the EPA website.

38 States have Renewable Energy Projects on Contaminated Lands


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# RE-Powering America's Land Initiative: <br> Project Tracking Matrix 

## RE on CL Offers a Range of Economic Benefits

RE on CL provides a number of benefits to the communities within which the sites are built, from making productive use of defunct land to offering economic benefits to municipalities. Such economic benefits include lease payments, taxes or Payments in Lieu of Taxes (PILOT), jobs, and lower energy costs. Some examples include:

Fort Detrick Solar - This 18.6-MW solar installation in Maryland is expected to provide nearly $\$ 3$ million in cost avoidance over the duration of the 25-year PPA between the U.S. Army and developer Ameresco. The site is estimated to have saved the Army $\$ 136,000$ in just the first two and half months of operation.

Nellis Solar Array II - This 15-MW solar installation at Nellis Air Force Base in Nevada created approximately 150 jobs for site installation and NV Energy upgrades. In addition, the new substation and distribution lines added for the solar help provide system redundancy and protect the base against power vulnerabilities. The solar installation is expected to provide emissions reductions of 27,000 tons of carbon dioxide annually.

Weston Landfill Solar - The town of Weston, MA, will receive one net metering credit for each kilowatt-hour of electricity generated by a $2.27-\mathrm{MW}$ solar array on the town landfill over the course of a 20-year Power Purchase Agreement (PPA) with utility Eversource (Nstar). The credits will be applied to the town's electric bill, thereby reducing overall electricity costs.

Groton Landfill Solar - This 2.3-MW solar installation on a landfill in Groton, MA, will provide 25\% of Groton Electric Light Department's required electricity during the middle of the day in the spring and fall.

## EPA and White House Host Clean Energy Summit, Kick Off Solar on Landfill Project

EPA recently partnered with the White House to convene a Clean Energy Savings for All Summit in Spartanburg, S.C. The summit convened local officials, advocates, community organizations, and the public to discuss efforts to reduce air pollution, deploy clean energy and energy efficiency, and build an inclusive clean energy economy that engages low-income communities.

The event included a kickoff ceremony for a solar installation to be built on Spartanburg's now-capped Arkwright landfill, a designated Superfund site.

The South Carolina summit was the first in a series planned across the country.

## San Bernardino County Landfill Set to Shine with Solar

A former landfill in Ontario, California, is on track to become a solar field. The County of San Bernardino's Milliken Sanitary Landfill is under construction to house a 3-MW solar installation on 14 acres. The installation will connect to an on-site substation operated by the California Independent System Operator, known as CAISO. PV Navigator (PVN) a landfill-specific solar power development group, is developing the site. The company released an RFP for an Engineering, Procurement, Construction-or EPC—contractor for the solar. A small, local business was selected, Mangan Renewables, LLC. The company has mostly installed solar arrays on Costco buildings, and this is their first solar on landfill installation.

The 196-acre Milliken site operated as a Class III landfill from 1956 to 1999, and the site was closed in three phases. The landfill cap was completed in 2005 and covers an estimated in-place volume of 25 million cubic yards of solid waste. The project uses a GameChange Solar's round tub racking, which allows any drainage to have little to no impact. The solar installation is expected to employ 50-60 people at the peak of construction and is using local labor. PVN has secured a 20-year Power Purchase Agreement (PPA) with Southern California Edison (SCE), under which 100 percent of the electricity from the solar system will be sold directly to SCE's grid.

PVN expects to complete the Milliken installation around the end of 2016. This facility will help California achieve the state RPS goals set by the legislature and governor.


Racking and tubs installed on the Milliken Landfill site. This project can be used as a template for other solar projects within the state to be sited on closed landfills.

# RE-Powering America's Land Initiative: <br> Project Tracking Matrix 

## Landfill in Wisconsin Provides Clean Energy

The state of Wisconsin can now boast that its largest solar installation is on a former landfill site. In June 2016, a 2.3-MW solar installation went live on 17 acres of the former Beloit Coal Ash Landfill in Beloit, Wisconsin. The site is owned by Alliant Energy and was once used for disposal of coal ash from a now-closed coal plant located adjacent to the landfill. The company collaborated with the Wisconsin Department of Natural Resources in enabling the location to be used as a solar facility.

Hanwha Q Cells developed the solar installation and has executed a 10-year PPA with Alliant that includes the option for Alliant to purchase the facility at the end of the PPA term. The installation includes more than 7,700 solar panels and produces enough electricity to power 500 homes.

The project was developed as part of a consent decree between EPA, Sierra Club, and Wisconsin Power and Light (WP\&L), which Alliant owns. The terms of the agreement include a requirement that WP\&L and other parties to pay $\$ 8.5$ million to fund a series of environmental projects over the next five years. The projects include a $\$ 5$ million investment in solar power.

## Air Force and Army Power Up with Solar on Contaminated Land

The U.S. Department of Defense (DoD) recently unveiled two new renewable energy projects on contaminated sites. The first, Nellis Solar Array II, is a $15-\mathrm{MW}$ solar installation located on 102 acres of a closed landfill at Nellis Air Force Base (AFB) in Nevada. As its name implies, Nellis Solar Array II is the second solar installation on the Nellis AFB; the first is a 13.2-MW installation completed in 2007. The two installations combined provide 42 percent of the base's electricity needs and represent the largest solar installation at a DoD facility.

The $\$ 50$ million installation is connected to a new NV Energy substation on the base. The installation was developed by SunPower and created 150 construction jobs. The array is now is operated by NV Energy under a 31-year lease term with DoD. Nellis Solar Array II is the first large-scale solar resource owned by NV Energy.

The second DoD installation completed recently is an $18.6-\mathrm{MW}$ solar field on a former medical command site at the Army's Fort Detrick in Maryland. The area in which the solar is installed is a designated Superfund site, with trichloroethylene and perchloroethylene the major chemical constituents detected in the groundwater. The site was established as a proving ground in the Army's Biological Warfare program, and was later used as a disposal area for chemical, biological, and radiological material and,


From left to right: Sen. Harry Reid; Paul Caudill, NV Energy CEO; Miranda A.A. Ballentine, Assistant Secretary of the Air Force for Installations, Environment and Energy; Tom Werner, SunPower Corp. CEO; and Col. Richard Boutwell, 99th Air Base Wing commander, at the Feb. 2016 dedication for the Nellis Solar Array II. U.S. Air Force photo by Airman 1st Class Kevin Tanenbaum. until 1970, for biological experimentation.

The 67-acre Fort Detrick solar field was developed by Ameresco, Inc. and comprises 69,994 solar panels. The installation connects to Army-owned transmission lines and powers operations at the base through a 25 -year PPA with Ameresco. October 2016

## Inside the Numbers

Based on current trends, just over two-thirds of the identified renewable energy systems sell power back to the grid as wholesale electricity, while a subset provides energy for onsite use. Systems range from utility-scale systems, like the 2.94-MW solar installation at the Central Texas Veterans'Landfill, to smaller projects like the $0.4-\mathrm{MW}$ solar installation on Hutchinson Landfill in Minnesota.

RE-Powering capitalizes on the opportunity to address contamination and support renewable energy implementation to achieve the associated economic and environmental benefits. Installations to date demonstrate the viability of projects across all EPA and state remediation programs, from powering industrial facilities at sites subject to RCRA corrective action to offsetting the energy demands at federal facilities with ongoing cleanup activities to repurposing brownfield and Superfund sites.

| Overview |  |
| :--- | ---: |
| Total \# of sites | 181 |
| Total \# of installations | 190 |
| Total installed capacity (MW) | $38^{14}$ |
| Total \# of states represented | 118.5 |
| Max individual installation size (MW) | $<.001$ |
| Min individual installation size (MW) |  |


| Number of Installations by Site Type ${ }^{\text {15 }}$ |  |  |
| :--- | ---: | :---: |
| Solar and wind projects on landfills/landfill buffer | 111 |  |
| Renewable energy projects on brownfield sites | 36 |  |
| Renewable energy projects on Superfund sites |  |  |
| Renewable energy projects on current/former federal facilities <br> and contaminated properties | 20 |  |
| Renewable energy projects on RCRA corrective action sites | 13 |  |
| Renewable energy projects on mine sites | 10 |  |


| Installations by Energy Use |  |  |
| :--- | :---: | :---: |
|  |  | Installed <br> Capacity <br> (MW) |
| Wholesale Electricity | 129 | 1052.8 |
| Onsite Use - General | 26 | 100.2 |
| Onsite Use - Green Remediation ${ }^{19}$ | 24 | 7.8 |
| Rooftop | 4 | 4.7 |
| Local Use | 1 | 3.2 |
| Unknown | 3 | 2.7 |
| Community Owned/Subscription | 2 | 1.0 |
| Onsite Use - Training | 1 | 0.5 |
| Total | $\mathbf{1 9 0}$ | $\mathbf{1 , 1 7 2 . 9}$ |

[^2]Total Projects by Technology


Total Capacity by Technology


## Continuing Growth

With the exception of one 100-MW wind installation on landfill buffer in Oregon (Columbia Ridge), only 19 projects with a total capacity of 143 MW were installed on contaminated sites through 2007. Of these, many were onsite or green remediation projects, and only four were individually larger than 1 MW . Beginning in 2008, RE-Powering has seen a marked upward trend in terms of the number of new renewable energy projects developed on contaminated lands, the amount of installed capacity produced by these projects, and the number connected to the wholesale electricity grid. These trends demonstrate that communities, developers, and site owners are embracing this sustainable land development strategy.

The range in project sizes reflects market conditions and trends, available acreage, electricity demands, and other variables. Medium- to large-scale installations (1-10 MW) make up almost half of the total number of installed projects to date, while larger systems ( $10+\mathrm{MW}$ ) comprise about $78 \%$ of total installed capacity on contaminated lands.

Of identified projects, $86 \%$ are solar PV projects developed on contaminated lands, landfills, and mine sites, while $54 \%$ of installed capacity is provided by wind systems. The dominance in wind capacity is explained in part by a few very large wind projects, notably the Casselman Wind Power Project in Somerset County, Pennsylvania (35 MW); Steel Winds in Bethlehem, New York, (35 MW ); the wind farm at Columbia Ridge Landfill, Oregon ( 100 MW ); Highland Wind ( 62.5 MW ) and Highland North Wind ( 75 MW ) in Cambria County, Pennsylvania; and the three wind farms at the former Dave Johnston Mine in Glenrock, Wyoming (276 MW). Wind tends to be used more often on vast tracts of contaminated land, such as mine sites, while solar PV is the dominant technology at smaller tracts such as municipal solid waste (MSW) landfills.

The RE-Powering strategy creates new markets for potentially contaminated lands, while supporting a sustainable land development strategy for renewable energy. One continuing trend is the reuse of former landfills as large solar PV developments. To date, EPA is aware of 105 former landfills ${ }^{20}$ that have been returned to productive use as solar projects. Of these, at least 86 ( $82 \%$ ) were completed between 2012 and 2016. Many more are currently being planned or permitted, or are under construction. For more information regarding considerations specific to solar projects on landfills, see RE-Powering's Best Practices for Siting Solar Photovoltaics on Municipal Solid Waste Landfills.

[^3]RE-Powering America's Land Initiative:
Project Tracking Matrix

Annual Growth of Completed Installations and Installed Capacity ${ }^{21,22}$


## Range of System Sizes of Completed Installations



[^4]Annual Growth in Solar Installations on Landfill/Landfill Buffer


## Project Tracking Matrix

Through the RE-Powering America's Land Initiative, the EPA encourages renewable energy development on potentially contaminated land when aligned with the community's vision for the site. This list tracks completed projects where renewable energy systems have been installed on potentially contaminated lands, landfills, or mine sites. Project capacity data reflect total system capacity, which may be installed in whole or in part on potentially contaminated lands, landfills, or mine sites. For systems with an installed capacity less than 10 kW , the capacity is shown as 0.00 . Where information was not found for a given site, it is noted as "Unknown" or with a"-" for numerical values. This information is sorted by state and then by site/project name. Installations newly added for October 2016 are highlighted in orange.
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| 1. Site Description |  |  |  |  |  |  |  |  | 2. Renewable Energy Information |  |  |  | 3. Project Implementation |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Site/Project Name | EPA Region | State | City | Type of Site | Site Owner | Site Ownership Type | Property <br> Acreage | Former Use Description | RE Type | Project Capacity (MW) | Project <br> Acreage | Primary RE Developer Name | Completion Date | Project Type |
| Ajo Solar Project | 9 | AZ | Ajo | Mine Lands | Freeport-McMoRan Copper \& Gold Inc. | Private | 38 | Adjacent to mining | Solar PV | 5.00 | 38.0 | Recurrent Energy | 2011 | Wholesale Electricity |
| Apache Powder | 9 | AZ | Benson | Superfund | Apache Nitrogen Products, Inc. | Private | 1,100 | Dynamite manufacturing facility | Solar PV | 0.00 | - | Unknown | 1997 | Onsite <br> Use - Green Remediation |
| Bagdad Mine Solar | 9 | AZ | Bagdad (censusdesignated) | Mine Lands | Freeport-McMoRan | Private | 21,750 | Open-pit copper and molybdenum mine | Solar PV | 15.00 | 24.0 | Recurrent Energy | 2011 | Wholesale Electricity |
| Desert Star Solar Plant | 9 | AZ | Buckeye | Landfill | City of Phoenix | Municipal | 2,560 | MSW Landfill | Solar PV | 10.00 | 118.0 | Arizona Public Service | 2015 | Wholesale Electricity |
| Aerojet General Corporation Superfund Site | 9 | CA | Sacramento | Superfund | Aerojet | Private | 5,900 | Rocket propulsion development and testing facility | Solar PV | 6.00 | 40.0 | Solar Power, Inc. | 2010 | Wholesale Electricity |
| Camp Pendleton Landfill | 9 | CA | Camp Pendleton | Superfund | U.S. Marine Corps | Federal | 28 | MSW and Light Industrial Waste Landfill | Solar PV | 1.50 | 5.0 | Kyocera Solar | 2011 | Onsite Use General |
| Cloverdale Solar | 9 | CA | Cloverdale | Landfill | Unknown | Unknown | - | Wood Landfill | Solar PV | 1.80 | - | Greenleaf-TNX | 2014 | Wholesale Electricity |
| Fischer Properties: Depot Park | 9 | CA | Sacramento | Brownfield | Fischer Properties | Private | - | Former U.S. Army Depot | Solar PV | 3.00 | 15.0 | SPG Solar | 2010 | Onsite Use General |
| Frontier Fertilizer | 9 | CA | Davis | Superfund | Frontier Fertilizer | Private | 18 | Fertilizer and pesticide storage, sales and application | Solar PV | 0.07 | 0.5 | Unknown | 2011 | Onsite <br> Use - Green Remediation |
| Lawrence Livermore National Laboratory | 9 | CA | Livermore | Superfund | U.S. DOE | Federal | 7,000 | Ranchland, weapons testing range | Solar PV | 0.00 | - | Unknown | 2009 | Onsite <br> Use - Green Remediation |
| NASA Jet Propulsion Laboratory (JPL) | 9 | CA | Pasadena | Superfund | NASA | Federal | - |  | Solar PV | 0.56 | - | Unknown | 2011 | Rooftop |
| Pemaco Superfund Site | 9 | CA | Maywood | Superfund | City of Maywood | Municipal | 1 | Custom Chemical Blender | Solar PV | 0.01 | 1.4 | Unknown | 2007 | Onsite <br> Use - Green Remediation |

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| Regulus Solar Power Plant | 9 | CA | Bakersfield | Brownfield | Unknown | Unknown | - | Former gas and oil field | Solar PV | 82.00 | 737.0 | SunEdison | 2015 | Wholesale Electricity |
| Sutter's Landing Landfill Solar | 9 | CA | Sacramento | Landfill | City of Sacramento | Municipal | - | MSW Landfill | Solar PV | 1.50 | - | SMUD/Conergy | 2014 | Wholesale Electricity |
| Tequesquite Landfill | 9 | CA | Riverside | Landfill | City of Riverside | Municipal | 120 | MSW Landfill | Solar PV | 7.50 | 20.0 | Sunpower/RBI Solar | 2015 | Wholesale Electricity |
| Travis AFB | 9 | CA | Near Fairfield | Federal Facility | U.S. Air Force | Federal | 6,368 |  | Solar PV | - | - | CH2M | 2008 | Onsite <br> Use-Green Remediation |
| West County Wastewater District | 9 | CA | Richmond | Brownfield | West County Wastewater District | Municipal | - | Sludge-drying pond | Solar PV | 1.00 | 10.0 | Solar Power Partners, Inc. | 2008 | Onsite Use General |
| Aurora/Arapahoe Solar Array | 8 | CO | Aurora | Brownfield | City of Aurora | Public | 5 | Adjacent to Buckley AFB | Solar PV | 0.50 | 4.5 | Clean Energy Collective | 2013 | Community Owned/ Subscription |
| Belmar Mixed-Use Development | 8 | CO | Lakewood | Brownfield | Mixed Private/ Public | Other | 48 | Shopping mall | Solar PV | 1.70 | 47.5 | SunPower Corporation | 2008 | Rooftop |
| Boulder Cowdery Meadows Solar Array | 8 | CO | Boulder | Superfund | Cowdery Company | Private | 4 | Landfill buffer to Marshall Landfill Superfund Site | Solar PV | 0.50 | 3.5 | Clean Energy Collective | 2013 | Community Owned/ Subscription |
| Dreher Pickle Plant | 8 | CO | Fort Collins | Brownfield | City of Fort Collins | Municipal | - | Pickling plant | Solar PV | 0.60 | - | Clean Energy Collective | 2015 | Wholesale Electricity |
| Fort Carson | 8 | CO | Fort Carson | RCRA | U.S. Army | Federal | 15 | Construction Landfill | Solar PV | 2.00 | 12.0 | Colorado Springs Utilities | 2008 | Wholesale Electricity |
| New Rifle Mill | 8 | CO | Rifle | Other | City of Rifle | Municipal | 130 | Former DOE uranium processing mill | Solar PV | 1.70 | 12.0 | SunEdison | 2009 | Onsite Use General |
| Place Bridge Academy | 8 | co | Denver | Landfill | Denver Public Schools | Municipal | 10 | Landfill | Solar PV | 0.10 | 1.5 | Namaste Solar | 2013 | Onsite UseGeneral |
| Summitville Mine Superfund Site | 8 | CO | Del Norte | Superfund | U.S. Forest Service | Federal | 1,400 | Heap leach gold and silver mining | Hydro | 0.03 | - | Unknown | 2011 | Onsite <br> Use-Green Remediation |

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| Derby Landfill Solar | 1 | CT | Derby | Landfill | City of Derby | Municipal | 23 | MSW Landfill | Solar PV | 0.74 | 6.0 | Jordan Energy and BQ Energy | 2015 | Wholesale Electricity |
| Hartford CT Landfill (solar) | 1 | CT | Hartford | Landfill | City of Hartford | Municipal | 96 | MSW Landfill | Solar PV | 1.00 | 6.0 | Tecta Solar | 2014 | Wholesale Electricity |
| Dupont Newport | 3 | DE | Newport | Superfund | DuPont | Private | - | Landfill | Solar PV | 0.50 | 5.0 | Greenwood Energy | 2013 | Wholesale Electricity |
| McKees Solar Park | 3 | DE | Newark | Landfill | City of Newark | Municipal | - | MSW Landfill | Solar PV | 0.23 | 3.9 | Unknown | 2014 | Wholesale Electricity |
| Bee Ridge Landfill / Rothenbach Park | 4 | FL | Sarasota | Landfill | Sarasota County | Other | 450 | MSW Landfill | Solar PV | 0.25 | 0.6 | Florida Power \& Light | 2008 | Wholesale Electricity |
| Hickory Ridge Landfill | 4 | GA | Atlanta | Landfill | Republic Services, Inc | Private | 48 | MSW Landfill | Solar PV | 1.00 | 10.0 | Republic Services | 2011 | Wholesale Electricity |
| Kapolei Sustainable Energy Park | 9 | HI | Kapolei | RCRA | James Campbell Company LLC | Private | 12 | Former Industrial Waste Site | Solar PV | 1.20 | 4.0 | Forest City Hawaii | 2011 | Wholesale Electricity |
| Exelon City Solar | 5 | IL | Chicago | Brownfield | City of Chicago | Municipal | 21 | Foundry and casting operation/fastener, hydraulic system components, and ball bearing manufacturer | Solar PV | 10.00 | 41.0 | Exelon and SunPower Corporation | 2010 | Wholesale Electricity |
| Gobnob Wind Turbine Project | 5 | IL | Farmersville | Brownfield | Illinois DNR | State | 14 | Freeman United Crown 1 Mine | Wind | 0.90 | - | Rural Electric Convenience Cooperative of Central IL | 2009 | Wholesale Electricity |
| Reilly Tar \& Chemical (Indianapolis) | 5 | IN | Indianapolis | Superfund | Vertellus Specialities Inc. | Private | 120 | Chemical manufacturing facility | Solar PV | 10.80 | 45.0 | Hanhwa Q Cells | 2014 | Wholesale Electricity |
| Fort Campbell Solar Phase One | 4 | KY | Fort Campbell | Landfill | U.S. Army | Federal | 105,000 | Landfill | Solar PV | 1.90 | 5.0 | BITHENERGY | 2015 | Onsite Use General |
| Acton Landfill | 1 | MA | Acton | Landfill | Town of Acton | Municipal | 35 | MSW and Light Industrial Waste Landfill | Solar PV | 1.60 | 17.5 | Ameresco | 2013 | Wholesale Electricity |
| Adams Landfill | 1 | MA | Adams | Landfill | Town of Adams | Municipal | 20 | MSW Landfill | Solar PV | 1.10 | 5.0 | Apis Energy Group | 2013 | Wholesale Electricity |

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| Site/Project Name | EPA Region | State | City | Type of Site | Site Owner | Site Ownership Type | Property <br> Acreage | Former Use Description | RE Type | Project Capacity (MW) | Project <br> Acreage | Primary RE Developer Name | Completion Date | Project Type |
| Aquinnah Landfill | 1 | MA | Aquinnah | Landfill | Town of Aquinnah | Municipal | 6 | MSW Landfill | Solar PV | 0.05 | 1.3 | Vineyard Power Solar, LLC | 2012 | Onsite Use General |
| Barnstable Landfill | 1 | MA | Barnstable | Landfill | Town of Barnstable | Municipal | 86 | Landfill | Solar PV | 4.20 | 17.0 | American Capital Energy | 2014 | Wholesale Electricity |
| Beech St. Landfill | 1 | MA | Rockland | Landfill | Town of Rockland | Municipal | 98 | MSW Landfill | Solar PV | 3.20 | 7.5 | NextSun Energy | 2014 | Wholesale Electricity |
| Bolton Orchards | 1 | MA | Bolton | Brownfield | Davis Farms Trust | Private | 105 | Gravel pit | Solar PV | 6.00 | 50.0 | Syncarpha Solar | 2013 | Wholesale Electricity |
| Braintree Landfill | 1 | MA | Braintree | Landfill | Braintree Electric Light Department | Municipal | - | MSW Landfill | Solar PV | 1.26 | - | Ameresco/lvory <br> Street Solar, LLC | 2014 | Wholesale Electricity |
| Brewster Landfill | 1 | MA | Brewster | Landfill | Town of Brewster | Municipal | 16 | MSW Landfill and Recycling Center | Solar PV | 1.23 | 16.0 | American Capital Energy | 2014 | Wholesale Electricity |
| Bridge Street Landfill | 1 | MA | Fairhaven | Landfill | Town of Fairhaven | Municipal | - | MSW Landfill | Solar PV | 0.58 | 3.0 | Dynamic Power/ Blue Sky/Heliosage | 2013 | Onsite Use General |
| Brockton Brightfield | 1 | MA | Brockton | Brownfield | City of Brockton and Bay State Gas Company | Municipal | 27 | Former Gas Works Site | Solar PV | 0.46 | 3.7 | Global Solar | 2006 | Wholesale Electricity |
| Chatham Landfill | 1 | MA | Chatham | Landfill | Town of Chatham | Municipal | 30 | MSW Landfill | Solar PV | 1.80 | 16.5 | American Capital Energy | 2014 | Wholesale Electricity |
| Chicopee Elks Landfill | 1 | MA | Chicopee | Landfill | Chicopee Lodge of Elks \#1849 | Private | - |  | Solar PV | 2.10 | 9.6 | Citizens Enterprises Corp | 2015 | Wholesale Electricity |
| Chilmark Landfill | 1 | MA | Chilmark | Landfill | Town of Chilmark | Municipal | 11 | MSW landfill | Solar PV | 0.10 | 6.0 | Vineyard Power | 2014 | Wholesale Electricity |
| Concord Landfill Phase I | 1 | MA | Concord | Landfill | Town of Concord | Municipal | - | MSW Landfill | Solar PV | 1.70 | - | Kearsarge Energy | 2014 | Wholesale Electricity |
| Cottage Street Landfill | 1 | MA | Springfield | Landfill | Cottage Developers, LLP. | Municipal | 62 | MSW Landfill | Solar PV | 3.90 | 40.0 | Western MA Electric <br> Co. (WMECO) | 2014 | Wholesale Electricity |
| Delta Hills Landfill | 1 | MA | Chicopee | Landfill | WestMass Area Development Corp. | Private | - |  | Solar PV | 2.69 | 8.0 | CR Solar | 2015 | Wholesale Electricity |

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| Dorchester Solar Power Project | 1 | MA | Dorchester | Brownfield | National Grid | Private | - | Former Manufactured Gas Plant | Solar PV | 1.30 | 6.0 | Unknown | 2012 | Wholesale Electricity |
| Duxbury Landfill | 1 | MA | Duxbury | Landfill | Town of Duxbury | Municipal | 19 | MSW Landfill | Solar PV | 0.59 | 3.0 | American Capital Energy (as Duxbury Solar LLC) and Renewable Energy Development Partners, LLC | 2014 | Wholesale Electricity |
| Eastham Landfill | 1 | MA | Eastham | Landfill | Town of Eastham | Municipal | 38 | MSW Landfill | Solar PV | 0.59 | 10.4 | American Capital Energy | 2014 | Wholesale Electricity |
| Everett Solar Power Project | 1 | MA | Everett | Brownfield | National Grid | Private | - | Former Manufactured Gas Plant | Solar PV | 0.61 | 2.5 | Unknown | 2010 | Wholesale Electricity |
| Fairhaven Sanitary Landfill (Canton) | 1 | MA | Canton | Landfill | Town of Canton | Municipal | 15 | MSW Landfill | Solar PV | 5.60 | 12.5 | Southern Sky Renewable Energy / GZA | 2012 | Wholesale Electricity |
| Former Grasso Landfill | 1 | MA | Agawam | Landfill | Town of Agawam | Municipal | 10 | MSW Landfill | Solar PV | 1.98 | 9.5 | Rivermoor-Citizens Agawam, LLC | 2013 | Wholesale Electricity |
| Greenfield Solar Farm | 1 | MA | Greenfield | Landfill | Town of Greenfield | Municipal | 23 | MSW Landfill | Solar PV | 2.00 | 23.0 | Axio Power | 2012 | Wholesale Electricity |
| Groton Landfill | 1 | MA | Groton | Landfill | Town of Groton | Municipal | - | MSW Landfill | Solar PV | 2.93 | 8.0 | Groton Landfill Solar, LLC | 2016 | Wholesale Electricity |
| Harwich Municipal Landfill | 1 | MA | Harwich | Landfill | Town of Harwich | Municipal | 120 | MSW Landfill | Solar PV | 4.50 | 28.0 | American Capital Energy | 2014 | Wholesale Electricity |
| Haverhill Solar Power Project | 1 | MA | Haverhill | Brownfield | National Grid | Private | - | Former Manufactured Gas Plant | Solar PV | 1.00 | 5.0 | Rivermoor Energy | 2010 | Wholesale Electricity |
| Hull Wind II | 1 | MA | Hull | Landfill | Town of Hull | Municipal | 13 | MSW Landfill | Wind | 1.80 | 10.0 | Hull Municipal Light | 2006 | Wholesale Electricity |
| Huntington Avenue Landfill | 1 | MA | Metheun | Landfill | Town of Methuen | Municipal | 30 | MSW Landfill | Solar PV | 1.30 | 4.7 | Borrego Solar | 2013 | Wholesale Electricity |
| Indian Orchard Solar Facility | 1 | MA | Springfield | Brownfield | Springfield Redevelopment Authority | Other | - | Former foundry | Solar PV | 2.30 | 12.0 | Western <br> Massachusetts <br> Electric Company | 2011 | Wholesale Electricity |

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| Kingston Landfill (wind) | 1 | MA | Kingston | Landfill | Town of Kingston | Municipal | 20 | MSW Landfill | Wind | 2.00 | 20.0 | Kingston Wind Independence LLC | 2012 | Wholesale Electricity |
| Lancaster Landfill | 1 | MA | Lancaster | Landfill | Town of Lancaster | Municipal | 7 | Gravel Pit Adjacent to Landfill | Solar PV | 0.50 | 2.8 | Unknown | 2013 | Wholesale Electricity |
| Ludlow Landfill | 1 | MA | Ludlow | Landfill | Town of Ludlow | Municipal | 22 | MSW Landfill | Solar PV | 2.70 | 17.0 | Borrego Solar | 2013 | Wholesale Electricity |
| Mashpee Landfill Solar | 1 | MA | Mashpee | Landfill | Town of Mashpee | Municipal | - | MSW Landfill | Solar PV | 2.10 | 8.0 | American <br> Capital Energy/ Renewable Energy Development Partners, LLC | 2014 | Wholesale Electricity |
| Massachusetts Military Reservation (Otis) | 1 | MA | Sagamore | Superfund | U.S. Air Force | Federal | 22,000 | Military training and aircraft operation and maintenance | Wind | 4.50 | - | Unknown | 2011 | Onsite <br> Use - Green Remediation |
| Needham Landfill | 1 | MA | Needham | Landfill | City of Needham | Municipal | 75 | MSW Landfill | Solar PV | 3.70 | 13.0 | Brightfields | 2016 | Wholesale Electricity |
| Norfolk Landfill Phase I | 1 | MA | Norfolk | Landfill | Town of Norfolk | Municipal | 51 | MSW Landfill and Adjacent Land | Solar PV | 0.55 | 1.6 | Constellation Solar Massachusetts, LLC | 2012 | Wholesale Electricity |
| Norfolk Landfill Phase II | 1 | MA | Norfolk | Landfill | Town of Norfolk | Municipal | 51 | MSW Landfill and Adjacent Land | Solar PV | 1.05 | 3.5 | Constellation Solar <br> Massachusetts, LLC | 2012 | Wholesale Electricity |
| North Adams Landfill | 1 | MA | North Adams | Landfill | Town of North Adams | Municipal | - | MSW Landfill | Solar PV | 3.50 | 15.0 | Borrego Solar | 2015 | Wholesale Electricity |
| Oliver Street Landfill | 1 | MA | Easthampton | Landfill | City of Easthampton | Municipal | 40 | MSW Landfill | Solar PV | 2.30 | 12.0 | Borrego Solar | 2012 | Wholesale Electricity |
| Orleans Landfill | 1 | MA | Orleans | Landfill | Town of Orleans | Municipal | 21 |  | Solar PV | 0.57 | 1.7 | "Broadway Renewable Strategies, LLC" | 2015 | Wholesale Electricity |
| Palmer Metropolitan Airfield Solar | 1 | MA | Palmer | Brownfield | JenJill LLC | Private | 105 |  | Solar PV | 6.00 | 22.0 | Borrego Solar | 2016 | Wholesale Electricity |

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| Prospect Street Landfill | 1 | MA | Easton | Landfill | Town of Easton | Municipal | 8 | MSW Landfill | Solar PV | 1.90 | 8.0 | Borrego Solar | 2014 | Wholesale Electricity |
| Quaboag Landfill Solar | 1 | MA | Brookfield | Landfill | Town of Brookfield | Municipal | 16 | MSW Landfill | Solar PV | 0.43 | 3.0 | Washington Gas Energy Systems, Inc. | 2013 | Wholesale Electricity |
| Raffaele Road Solar Project | 1 | MA | Plymouth | Brownfield | Plymouth Sand and Gravel LLC | Private | 30 |  | Solar PV | 5.67 | 26.0 | BlueWave Capital | 2014 | Wholesale Electricity |
| Ravenbrook Farms Landfill | 1 | MA | North Carver | Landfill | Ravenbrook <br> Farms, Inc. (Willard Rhodes) | Private | 31 | MSW, CD\&D Landfill | Solar PV | 6.00 | 14.0 | Southern Sky Renewable Energy | 2014 | Wholesale Electricity |
| Rehoboth Landfill (MA) | 1 | MA | Rehoboth | Landfill | Town of Rehobeth | Municipal | 21 | MSW Landfill | Solar PV | 2.49 | 18.3 | NRG Renew LLC | 2015 | Wholesale Electricity |
| Re-Solve Superfund Solar | 1 | MA | Dartmouth | Superfund | Unknown | Unknown | 6 | Waste Chemical Reclamation | Solar PV | 0.15 | - | Unknown | 2012 | Onsite <br> Use-Green Remediation |
| Revere Solar Power Project | 1 | MA | Revere | Brownfield | National Grid | Private | - | Former Manufactured Gas Plant | Solar PV | 0.75 | 3.0 | Unknown | 2010 | Wholesale Electricity |
| Russells Mills Road Landfill | 1 | MA | Dartmouth | Landfill | Town of Dartmouth | Municipal | 115 | MSW Landfill | Solar PV | 1.45 | 6.3 | Borrego Solar | 2013 | Wholesale Electricity |
| Scituate Landfill | 1 | MA | Scituate | Landfill | Town of Scituate | Municipal | 29 | Landfill: MSW, construction debris, and wastewater treatment residuals | Solar PV | 3.00 | 12.5 | Scituate Solar <br> - JV between Brightfields Development LLC and Syncarpha Capital | 2013 | Wholesale Electricity |
| Shaffer Landfill (Iron Horse Park) | 1 | MA | Billerica | Superfund | Town of Billerica | Municipal | 40 | MSW Landfill | Solar PV | 6.00 | 40.0 | Urban Green Technologies | 2014 | Wholesale Electricity |
| Silver Lake Solar Photovoltaic Facility | 1 | MA | Pittsfield | Brownfield | Western <br> Massachusetts <br> Electric Company | Other | 8 | Former GE site and former steam generating site | Solar PV | 1.80 | 8.0 | Western <br> Massachusetts Electric Company (WMECO) | 2010 | Wholesale Electricity |

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| South Hadley Landfill | 1 | MA | South Hadley | Landfill | Town of South Hadley | Municipal | - | MSW Landfill | Solar PV | 0.08 | - | Tensar/ARM Group | 2012 | Onsite Use General |
| Stow Brownfield Solar | 1 | MA | Stow | Brownfield | Unknown | Private | 12 | Unknown | Solar PV | 2.50 | 12.0 | Syncarpha <br> Solar and Renewable Energy Massachusetts | 2013 | Wholesale Electricity |
| Sudbury Landfill | 1 | MA | Sudbury | Landfill | Town of Sudbury | Municipal | 18 | MSW Landfill | Solar PV | 1.50 | 5.3 | Ameresco/Solar <br> Sudbury One, LLC | 2013 | Wholesale Electricity |
| Sullivan's Ledge | 1 | MA | New Bedford | Superfund | City of New Bedford | Municipal | 12 | Quarry / hazardous waste disposal | Solar PV | 1.80 | 10.0 | SunEdison | 2014 | Wholesale Electricity |
| Sylvester Ray Construction \& Demolition Debris Landfill | 1 | MA | Marshfield | Landfill | Sylvester Ray, Inc. | Private | 27 | Demolition Landfill | Solar PV | 3.87 | 13.0 | No Fossil Fuel, LLC | 2013 | Wholesale Electricity |
| Theophilus Smith Road Landfill | 1 | MA | Dennis | Landfill | Town of Dennis | Municipal | 148 | MSW Landfill | Solar PV | 6.00 | 34.0 | American Capital Energy | 2014 | Wholesale Electricity |
| Tisbury Landfill | 1 | MA | Tisbury | Landfill | Town of Tisbury | Municipal | 22 | MSW Landfill | Solar PV | 1.20 | 4.0 | American Capital Energy | 2014 | Wholesale Electricity |
| Waltham Street Landfill | 1 | MA | Maynard | Landfill | Town of Maynard | Municipal | 14 | MSW Landfill | Solar PV | 1.20 | 5.0 | EPG Solar | 2013 | Wholesale Electricity |
| Westfield Landfill | 1 | MA | Westfield | Landfill | City of Westfield | Municipal | 10 | MSW landfill | Solar PV | 2.50 | 7.5 | Citizens Energy | 2015 | Wholesale Electricity |
| Westford St. Landfill | 1 | MA | Lowell | Landfill | City of Lowell | Municipal | 42 | Landfill - MSW, ash, oxide box waste | Solar PV | 1.50 | 6.0 | Ameresco | 2014 | Wholesale Electricity |
| Weston Landfill | 1 | MA | Weston | Landfill | Town of Weston | Municipal | - | MSW Landfill | Solar PV | 2.27 | 9.0 | Ameresco (d/b/a/ Church Street Solar) | 2016 | Wholesale Electricity |
| Wilbraham Landfill | 1 | MA | Wilbraham | Landfill | Town of Wilbraham | Municipal | - | MSW Landfill | Solar PV | 0.75 | 3.0 | Renewable Energy Development Partners | 2016 | Wholesale Electricity |
| Former Ellicott City Landfill | 3 | MD | Ellicott City | Landfill | Howard County | Municipal | 83 | MSW Landfill | Solar PV | - | 2.0 | Unknown | 2011 | Onsite Use General |

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| Fort Detrick | 3 | MD | Frederick | Superfund | U.S. Army | Federal | 1,200 | Army Medical Command installation | Solar PV | 18.60 | 67.0 | Ameresco Inc. | 2016 | Onsite Use General |
| Forty West Landfill | 3 | MD | Hagerstown | Landfill | Washington County | Municipal | - | MSW Landfill | Solar PV | 2.00 | 10.0 | EPG Solar | 2015 | Wholesale Electricity |
| Washington County Rubble Landfill | 3 | MD | Williamsport | Landfill | Washington County | Municipal | - | Building materials and construction debris landfill | Solar PV | 2.50 | - | EPG Solar | 2015 | Wholesale Electricity |
| Belfast Landfill | 1 | ME | Belfast | Landfill | City of Belfast | Municipal | - | MSW Landfill | Solar PV | 0.12 | - | ReVision Energy | 2015 | Wholesale Electricity |
| Eaton Rapids Landfill | 5 | MI | Hamlin Township | Landfill | Town of Eaton Rapids | Municipal | 30 | MSW Landfill | Solar PV | 0.54 | - | Helios Solar LLC | 2014 | Wholesale Electricity |
| Fridley Plant Solar | 5 | MN | N/A | Superfund | FMC Corp. (PRP) | Private | 18 | Industrial Landfill | Solar PV | 0.15 | - | Unknown | 2009 | Onsite <br> Use - Green Remediation |
| Hutchinson Landfill | 5 | MN | Hutchinson | Landfill | City of Hutchinson | Municipal | - |  | Solar PV | 0.40 | 1.0 | Ameresco | 2015 | Onsite Use General |
| Busy Bee's Laundry | 7 | мо | Rolla | Brownfield | Unknown | Private | - | Dry Cleaner | Solar PV | 0.56 | - | Unknown | 2011 | Onsite <br> Use - Green Remediation |
| Zortman-Landusky Mine | 8 | MT | N/A | Mine Lands | BLM and MT DEQ | Federal/ Municipal | 1,200 | Ore mining and gold mining | Wind | 0.23 | - | Montana DEQ and U.S. BLM | 2012 | Onsite <br> Use-Green Remediation |
| Evergreen Packaging Landfill | 4 | NC | Haywood County | Landfill | Evergreen Packaging | Private | - | Industrial Landfill | Solar PV | 0.55 | 3.0 | FLS Energy | 2010 | Wholesale Electricity |
| NC State University - Agricultural Pesticide Landfill | 4 | NC | Raleigh | Brownfield | NC State University | Private | - | Agricultural Pesticide Landfill | Solar PV | 0.08 | - | Carolina Solar Energy | 2007 | Wholesale Electricity |
| Former Nebraska Ordnance Plant | 7 | NE | Mead | Superfund | University of Nebraska, et al | Other | - | Former Army Ordnance Plant | Wind | 0.01 | - | Unknown | 2004 | Onsite <br> Use - Green <br> Remediation |
| Brick Township Landfill | 2 | NJ | Brick Township | Superfund | Brick Township | Municipal | 42 | MSW landfill | Solar PV | 7.00 | 20.0 | Brick Standard | 2014 | Wholesale Electricity |

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| Site/Project Name | EPA Region | State | City | Type of Site | Site Owner | Site Ownership Type | Property <br> Acreage | Former Use Description | RE Type | Project Capacity (MW) | Project <br> Acreage | Primary RE Developer Name | Completion Date | Project Type |
| Clean Harbors | 2 | NJ | Bridgeport | Landfill | Clean Harbors Development | Private | 200 | Hazardous waste treatment, storage, and disposal facility | Solar PV | 1.50 | 82.0 | Clean Harbors | 2011 | Onsite <br> Use - Green Remediation |
| Edgeboro Landfill | 2 | NJ | East Brunswick | Landfill | Middlesex County | Municipal | - | MSW Landfill | Solar PV | 4.30 | 27.0 | NERC Solar | 2011 | Wholesale Electricity |
| FedEx Ground Distribution Hub | 2 | NJ | Woodbridge | Brownfield | FedEx | Private | 200 | Former chemical facility | Solar PV | 2.42 | 3.3 | BP Solar | 2009 | Rooftop |
| Hackensack Solar Farm | 2 | NJ | Hackensack | Brownfield | PSE\&G | Other | 40 | Former manufactured gas plant/storage | Solar PV | 1.06 | 6.0 | PSE\&G | 2012 | Wholesale Electricity |
| Kearny Landfill | 2 | NJ | Kearny | Landfill | New Jersey <br> Meadowlands <br> Commission | Other | 35 | MSW Landfill | Solar PV | 3.00 | 13.0 | SunDurance Energy LLC | 2012 | Wholesale Electricity |
| Kinsley Landfill | 2 | NJ | Deptford Township | Landfill | Kinsley's Landfill, Inc. (subsidiary of TransTech) | Private | 140 | MSW Landfill | Solar PV | 11.18 | 35.0 | PSE\&G | 2014 | Wholesale Electricity |
| L\&D Landfill | 2 | NJ | Eastampton, Lumberton, and Mount Holly | Superfund | Waste Management | Private | 200 | Industrial/MSW landfill | Solar PV | 12.93 | 53.0 | PSE\&G | 2016 | Wholesale Electricity |
| Linden Solar Farm | 2 | NJ | Linden | Brownfield | Public Service <br> Electric and Gas <br> Company | Other | - | Synthetic natural gas facility | Solar PV | 3.20 | 10.0 | Advanced Solar <br> Products | 2011 | Wholesale Electricity |
| Parklands Solar Farm | 2 | NJ | Bordentown Township | Landfill | Waste Management | Private | 95 | MSW Landfill | Solar PV | 10.14 | 40.0 | PSE\&G | 2015 | Wholesale Electricity |
| Paulsboro Terminal Landfill | 2 | NJ | Paulsboro | Brownfield | BP | Private | 17 | Former refined petroleum and specialty chemical bulk storage and distribution facility | Solar PV | 0.28 | 5.0 | BP | 2002 | Onsite <br> Use - Green Remediation |
| Pennsauken Landfill Renewable Energy ParkSolar | 2 | NJ | Pennsauken | Landfill | Pollution Control Financing Authority of Camden County | Other | 39 | MSW, commercial, and non-hazardous industrial landfill | Solar PV | 2.60 | 10.0 | PPL Renewable Energy | 2008 | Onsite Use General |

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| Silver Lake Solar Farm | 2 | NJ | Edison | Brownfield | Public Service Electric and Gas Company | Private | 6 | Gas manufacturing | Solar PV | 2.02 | 5.7 | J. Fletcher Creamer \& Sons | 2010 | Wholesale Electricity |
| Tinton Falls Solar | 2 | NJ | Tinton Falls | Mine Lands | Tinton Falls Solar Farm, LLC / Zongyi Solar America Co. | Private | 97 | Sand and gravel mining | Solar PV | 20.00 | 97.0 | Zongyi Solar <br> America | 2013 | Wholesale Electricity |
| Trenton Solar Farm | 2 | NJ | Trenton | Brownfield | PSE\&G | Other | - | Gas manufacturing | Solar PV | 1.30 | 5.5 | PSE\&G | 2010 | Wholesale Electricity |
| Chevron Questa Project | 6 | NM | Questa | Superfund | Chevron Mining | Private | - | Mining Site | Solar PV | 1.00 | 20.0 | Chevron <br> Technology Venture | 2011 | Wholesale Electricity |
| Emcore Eubank Landfill | 6 | NM | Albuquerque | Brownfield | New Mexico State Land Office | Municipal | 40 | MSW Landfill | Solar PV | 2.00 | 17.0 | Emcore/Suncore | 2013 | Onsite Use General |
| Nellis AFB Solar Facility Site I | 9 | NV | Las Vegas | RCRA | U.S. Air Force | Federal | 14,000 | Landfill/landfill buffer | Solar PV | 13.20 | 140.0 | MMA Renewable Ventures LLC | 2007 | Onsite Use General |
| Nellis AFB Solar Array II Generating Station | 9 | NV | Las Vegas | RCRA | U.S. Department of Defense | Federal | 14,000 |  | Solar PV | 15.00 | 102.0 | SunPower | 2016 | Onsite Use General |
| Bethlehem Steel Winds I | 2 | NY | Hamburg / Lackawanna | RCRA | Tecumseh Redevelopment Inc | Private | 1,600 | Steel Mill | Wind | 20.00 | 30.0 | BQ Energy and First Wind | 2007 | Wholesale Electricity |
| Bethlehem Steel Winds II | 2 | NY | Hamburg / Lackawanna | RCRA | Tecumseh Redevelopment Inc | Private | 1,600 | Steel Mill | Wind | 15.00 | 30.0 | BQ Energy and First Wind | 2012 | Wholesale Electricity |
| Former Ferdula Landfill | 2 | NY | Frankfurt | Landfill | Unknown | Unknown | 2 | MSW Landfill | Wind | - | - | Unknown | 1998 | Onsite <br> Use - Green Remediation |
| Honeywell Water Treatment Plant | 2 | NY | Camillus | Unknown | Honeywell Corporation | Private | - |  | Solar PV | 1.50 | - | O'Connell Electric | - | Unknown |
| Hoosick Falls Solar Garden | 2 | NY | Village of Hoosick Falls | Landfill | Village of Hoosick Falls | Municipal | 27 | MSW Landfill | Solar PV | 0.59 | - | Monolith Solar | 2015 | Wholesale Electricity |
| Islip Municipal Town Landfill | 2 | NY | Hauppauge | Landfill | Town of Islip | Municipal | 55 | MSW Landfill | Solar PV | 0.05 | - | Town of Islip | 2011 | Wholesale Electricity |

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| Site/Project Name | EPA Region | State | City | Type of Site | Site Owner | Site Ownership Type | Property <br> Acreage | Former Use Description | RE Type | Project Capacity (MW) | Project <br> Acreage | Primary RE Developer Name | Completion Date | Project Type |
| Long Island Solar Farm at Brookhaven National Laboratory | 2 | NY | Upton | Superfund | U.S. DOE | Federal | - | Previously disturbed land at DOE Nat'I Lab Facility | Solar PV | 32.00 | 200.0 | Long Island Solar Farm, LLC (BP Solar and MetLife) | 2011 | Wholesale Electricity |
| Madison County <br> Agriculture and Renewable Energy Park | 2 | NY | Lincoln | Landfill | Madison County | Municipal | 600 | MSW Landfill | Solar PV | 0.05 | 1.0 | Carlisle Energy Services, Inc. | 2011 | Onsite Use General |
| Madison County Landfill (Canastota) | 2 | NY | Canastota | Landfill | Madison County | Municipal | - | MSW landfill | Solar PV | 0.05 | - | Solar Liberty <br> Electric | 2014 | Onsite Use General |
| PatterSun NY \#1 | 2 | NY | Patterson | Landfill | Town of Patterson | Municipal | 10 | MSW Landfill | Solar PV | 0.94 | - | BQ Energy | 2015 | Wholesale Electricity |
| Tech City | 2 | NY | Ulster | RCRA | Tech City | Private | 256 | Computer mainframe development and testing facility | Solar PV | 0.05 | - | Solartech Renewables Inc. | 2011 | Rooftop |
| Wallkill Landfill | 1 | NY | Wallkill | Landfill | Town of Wallkill | Municipal | 68 |  | Solar PV | 2.00 | 8.0 | GE Renewable Energy | 2016 | Wholesale Electricity |
| West Nyack Landfill | 2 | NY | Clarkstown | Landfill | Town of Clarkstown | Municipal | - | MSW landfill | Solar PV | 2.36 | 13.0 | OnForce Solar | 2014 | Wholesale Electricity |
| Williamson Landfill | 2 | NY | Williamson | Landfill | Town of Williamson | Municipal | - | MSW Landfill | Solar PV | 1.50 | - | Sustainable Energy Developments | 2014 | Wholesale Electricity |
| Cuyahoga Metropolitan Housing Authority | 5 | OH | Cleveland | Brownfield | Cuyahoga Metropolitan Housing Authority | Municipal | 12 | Industrial Use | Solar PV | 1.10 | 6.0 | Carbon Vision | 2013 | Wholesale Electricity |
| Dayton Tech Town | 5 | OH | Dayton | Brownfield | Unknown | Unknown | - | Former Automotive Site | Geothermal | - | - | Heapy Engineering | 2010 | Onsite Use General |
| Medical Center Company Solar | 5 | OH | Cleveland | Brownfield | Unknown | Unknown | 6 |  | Solar PV | 1.00 | - | Medical Center Company | 2014 | Wholesale Electricity |
| Pilkington North America | 5 | OH | Northwood | Brownfield | Pilkington North America, Inc. | Private | 11 | Glass Manufacturing Facility | Solar PV | 0.25 | 1.0 | Hull \& Associates | 2011 | Onsite Use General |
| Toledo Zoo Solar | 5 | OH | Toledo | Brownfield | Anthony Wayne <br> Solar Number 1 | Private | 22 | Elevator factory | Solar PV | 2.10 | - | Rudolph/Libbe and GEM Energy | 2014 | Onsite Use General |
| Wood County Landfill | 5 | OH | Bowling Green | Landfill | Wood County | Municipal | 60 | MSW Landfill | Wind | 7.20 | 4.0 | American <br> Municipal Power | 2004 | Wholesale Electricity |

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| Altus Air Force Base | 6 | OK | Altus | RCRA | U.S. Air Force | Federal | - | Federal Facility, Flight Training Center | Solar PV | 0.00 | - | Unknown | 2007 | Onsite <br> Use - Green Remediation |
| Guthrie Green | 6 | OK | Tulsa | Brownfield | George Kaiser Family Foundation | Foundation | - | Industrial | Geothermal w/ solar PV | - | - | Unknown | 2012 | Onsite Use General |
| Columbia Ridge Landfill | 10 | OR | Arlington | Landfill Buffer | Waste Management | Private | 12,000 | MSW and Industrial Landfill - active | Wind | 100.00 | - | Pacificorp | 2004 | Wholesale Electricity |
| Casselman Wind Power Project | 3 | PA | Traverses Summit, Black, and Addison | Mine Lands | Iberdrola <br> Renewables, LLC | Private | 2,000 | Surface Coal Mine and adjacent land | Wind | 34.50 | 165.0 | Iberdrola <br> Renewables LLC | 2008 | Wholesale Electricity |
| Exelon-Conergy Solar Energy Center | 3 | PA | Falls Township | Landfill Buffer | Waste Management of Pennsylvania | Private | 17 | Buffer to Geological Reclamation Operations and Waste Systems landfill | Solar PV | 3.00 | 16.5 | Conergy Company | 2008 | Wholesale Electricity |
| Frey Farm Landfill | 3 | PA | Conestoga | Landfill | Lancaster Cnty Solid Waste Mgmt Authority | Municipal | - | MSW Landfill - active | Wind | 3.20 | 10.3 | Energy Power Partners, LLC | 2011 | Local Use |
| Highland North Wind | 3 | PA | Cambria County | Mine Lands | Everpower, others | Public/ Private | 3,500 | Strip mine | Wind | 75.00 | 3,500.0 | Everpower | 2012 | Wholesale Electricity |
| Highland Wind | 3 | PA | Cambria County | Mine Lands | Everpower | Private | 4,000 | Strip mine | Wind | 62.50 | 4,000.0 | Everpower | 2009 | Wholesale Electricity |
| York County Landfill Solar | 3 | PA | Hopewell Township | Landfill | York County Solid Waste Authority | Municipal | - | MSW Landfill | Solar PV | 0.30 | 2.0 | Solar Renewable Energy, LLC | 2014 | Onsite <br> Use - Green Remediation |
| East Providence Landfill Solar Farm | 1 | RI | East Providence | Landfill | City of East <br> Providence | Municipal | 229 | MSW landfill | Solar PV | 2.25 | 14.0 | CME OCI Solar <br> Power LLC / CME Energy | 2014 | Wholesale Electricity |
| Savannah River's Biomass Steam Plant | 4 | SC | Aiken | Superfund | U.S. DOE | Federal | 34 | 1950s vintage coal-fired steam plant | Biomass | 20.00 | 34.0 | Ameresco Inc | 2008 | Onsite Use General |
| Binkley Solar Farm | 4 | TN | Hermitage | Landfill | Binkley family | Private | - | Construction and Demolition Landfill | Solar PV | 0.20 | - | Stansell Electric | 2012 | Wholesale Electricity |
| Bristol Demolition Landfill | 4 | TN | Bristol | Landfill | City of Bristol | Municipal | - | Demolition landfill | Solar PV | 0.20 | - | EcoLogical Energy Systems | 2012 | Wholesale Electricity |

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| RSI Brightfields One | 4 | TN | Oak Ridge | Brownfield | Restoration <br> Services, Inc. (RSI) | Private | 1 | Former DOE Gaseous Diffusion Plant | Solar PV | 0.20 | 1.0 | RSI | 2012 | Wholesale Electricity |
| Volkswagen Chattanooga | 4 | TN | Chattanooga | RCRA | Volkswagon | Private | 33 | Former Army Ammunition Plant | Solar PV | 9.50 | 33.0 | Silicon Ranch | 2013 | Wholesale Electricity |
| Central Texas Veterans Landfill Solar | 6 | TX | Temple | Landfill | Department of Veterans Affairs | Federal | - |  | Solar PV | 2.94 | - | REC Solar | 2012 | On-site Use General |
| Grove Landfill | 6 | TX | Austin | Landfill | Rhizome Collective, Inc | Other | 10 | Landfill (Illegal dumping) | Solar PV | - | - | Unknown | 2006 | Onsite Use - Green Remediation |
| Pantex Renewable Energy Project (PREP) | 6 | TX | Amarillo | Superfund | U.S. Department of Energy NNSA and Texas Tech University | Federal | 16,000 | Nuclear weapon assembly and disassembly | Wind | 11.50 | 1,500.0 | Siemens USA | 2014 | Onsite Use General |
| Tessman Road Municipal Solid Waste Landfill | 6 | TX | San Antonio | Landfill | Republic Services, Inc | Private | 680 | MSW Landfill | Solar PV | 0.13 | 5.6 | CSP Energy | 2009 | Wholesale Electricity |
| Salt Lake City Landfill | 8 | UT | Salt Lake City | Landfill | Salt Lake City | Municipal | 4 | MSW Landfill | Solar PV | 1.00 | 4.0 | Taylor Electric | 2014 | Unknown |
| Crozet Orchard | 3 | VA | Crozet | Superfund Removal | Unknown | Private | - | Apple Orchard | Solar PV | - | - | Unknown | 2007 | Onsite <br> Use - Green Remediation |
| Salem VA Medical Center Solar | 3 | VA | Salem | Landfill | U.S. Department of Veterans Affairs | Federal | 6 | Landfill | Solar PV | 1.60 | 6.0 | REC Solar | 2013 | Onsite Use <br> - General |
| Former St. Croix Alumina Plant Solar I | 2 | vı | St Croix | RCRA | Unknown | Unknown | - | Alumina Plant | Solar PV | 0.00 | - | Unknown | 2003 | Onsite <br> Use - Green Remediation |
| Former St. Croix Alumina Plant Solar II | 2 | vi | St Croix | RCRA | Unknown | Unknown | - | Alumina Plant | Solar PV | 0.00 | - | Unknown | 2006 | Onsite <br> Use-Green Remediation |
| Former St. Croix Alumina Plant Wind I | 2 | vı | St Croix | RCRA | Unknown | Unknown | - | Alumina Plant | Wind | - | - | Unknown | 2002 | Onsite <br> Use - Green Remediation |
| Former St. Croix Alumina Plant Wind II | 2 | vı | St Croix | RCRA | Unknown | Unknown | - | Alumina Plant | Wind | - | - | Unknown | 2006 | Onsite <br> Use-Green Remediation |

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| Basketville Site | 1 | VT | Putney | Brownfield | Unknown | Unknown | 6 | Manufacturing | Solar PV | 0.16 | - | Integrated Solar | 2013 | Unknown |
| Coventry Landfill | 1 | VT | Coventry | Landfill Buffer | Casella Waste Systems | Private | - | MSW Landfill Buffer | Solar PV | 2.70 | 12.0 | Coventry PV (subsidiary of Borrego Solar) | 2015 | Wholesale Electricity |
| Rutland Landfill (Stafford Hill) | 1 | VT | Rutland | Landfill | City of Rutland | Municipal | 15 | MSW Landfill | Solar PV | 2.30 | 9.0 | Green Mountain Power | 2015 | Wholesale Electricity |
| Townshend Landfill | 1 | VT | Townshend | Landfill | Town of Townshend | Municipal | - | MSW Landfill | Solar PV | 0.15 | - | Soveren Solar | 2014 | Wholesale Electricity |
| Beloit Coal Ash Landfill | 5 | WI | Beloit | Landfill | Alliant Energy | Private | 20 | Coal Ash Landfill | Solar PV | 2.30 | 17.0 | Hanwha Q CELLS USA | 2016 | Wholesale Electricity |
| MATC PV Evaluation Lab | 5 | WI | Milwaukee | Landfill | Milwaukee Area Technical College (MATC) | Private | 32 | MSW Landfill | Solar PV | 0.54 | 32.0 | MATC and Johnson Controls | 2010 | Onsite Use - <br> Training |
| Refuse Hideaway Landfill | 5 | WI | Middleton | Superfund | State of Wisconsin | State | 23 | Municipal, commercial, and industrial landfill | Solar PV | 0.01 | 0.1 | Full Spectrum Solar Company | 2010 | Onsite Use - Green Remediation |
| Chevron Casper Wind Farm | 8 | WY | Casper | RCRA | Chevron | Private | 880 | Refinery | Wind | 16.50 | 880.0 | Chevron Global Power Company | 2009 | Wholesale Electricity |
| Dave Johnston Mine / Glenrock Wind I | 8 | wY | Glenrock | Mine Lands | PacificCorp | Private | 14,000 | Surface Coal Mine | Wind | 118.50 | 300.0 | PacificCorp | 2008 | Wholesale Electricity |
| Dave Johnston Mine / Glenrock Wind III | 8 | wY | Glenrock | Mine Lands | PacificCorp | Private | 14,000 | Surface Coal Mine | Wind | 39.00 | 300.0 | PacificCorp | 2009 | Wholesale Electricity |
| Dave Johnston Mine / Rolling Hills | 8 | WY | Glenrock | Mine Lands | PacificCorp | Private | 14,000 | Surface Coal Mine | Wind | 118.50 | 300.0 | PacificCorp | 2009 | Wholesale Electricity |
| Warren AFB Wind | 8 | WY | Cheyenne | Superfund Non-NPL | U.S. Air Force | Federal | - | Former gunnery range | Wind | 3.32 | - | Unknown | 2009 | Wholesale Electricity |


[^0]:    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. Multiple installation details can be seen in the tracking spreadsheet at the end of this document.

[^1]:    Table includes states with multiple installations plus the state with the largest single installation. Policy information from DSIRE (www.dsireusa.org). Accessed Oct. 14, 2016.
    A renewable portfolio standard (RPS) requires utilities to use or procure a certain percentage of total generation from renewable sources.
    A solar set-aside requires a certain percentage of the state's electricity be generated from solar resources. Some states call them "solar carve-outs."
    A solar multiplier gives additional credit for solar projects that contribute toward meeting RPS requirements.
    A distributed generation requirement obliges a utility to procure a certain percentage of electricity from renewable, customer-sited sources.
    Texas has already achieved its 2025 RPS goal. The state also had a voluntary non-wind generation goal that expired in 2015 and has been exceeded.
    Texas has a non-wind multiplier policy, which includes solar, but is not specific to solar. The non-wind multiplier is active through 2019, when the state's REC trading program is currently set to expire.
    Virginia has a voluntary renewable portfolio goal that provides an enhanced rate of return for renewable generation from approved projects.
    Oklahoma's RPS is a goal, not a requirement.
    Minnesota's solar carve-out is divided by utility. The overall carve-out is $1.5 \%$ for solar for public utilities by the end of 2020, 10\% of which must come from solar PV systems with capacity if 20 kW or more. Xcel Energy, however, is required to have at least $25 \%$ of retail electricity sales generated by wind energy or solar energy systems by 2020, with solar limited to no more than $1 \%$ of this additional requirement
    Oregon's RPS includes a goal that, by 2025, at least 8\% of the state's electrical load comes from small-scale, community renewable energy installations with capacities of 20 MW or less. The RPS also includes a multiplier fir PV systems with a capacity of 500 kW to 5 MW installed prior to January 1, 2016.
    For purposes of this report, RoUS (Rest of US) indicates other states or territories with renewable energy on contaminated lands: Florida, Georgia, Hawai', Indiana, Kentucky, Maine, Michigan, Missouri, Montana, Nebraska, Rhode Island, South Carolina, Utah, and the U.S. Virgin Islands.

[^2]:    ${ }^{14}$ Includes U.S. Virgin Islands.
    ${ }^{15}$ Some installations can be considered multiple "site types." For example, a Superfund site on a federal facility would be counted both as a Superfund site and as a federal facility for the purposes of this table; however, sites considered to be multiple site types are counted only once when calculating the total number of sites.
    ${ }^{16}$ Includes sites subject to the National Priorities List (NPL), non-NPL sites, and sites subject to removal action under Superfund.
    ${ }^{17}$ This is the Highland North Wind Project in the townships of Adams and Summerhill, PA. The turbines are located on mixed use land, which Everpower notes is held by both public and private landowners.
    ${ }_{18}^{18}$ One geothermal project, the Guthrie Green project in Tulsa, OK, uses a small solar array to power the geothermal heat pump.
    19 Green remediation is the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions. One such practice is using renewable energy systems to power remediation activities or off-set the energy needs associated with cleanup efforts. Projects identified as On-site Green Remediation include all known projects which currently use or have previously used renewable energy for remediation purposes. This figure may include projects that have ceased operations since being added to the tracking matrix. Capacity includes a $4.5-\mathrm{MW}$ system used to offset groundwater remediation systems at Massachusetts Military Reservation.

[^3]:    ${ }^{20}$ This includes landfills accepting MSW, construction waste, and industrial waste, as well as landfill buffer areas.

[^4]:    ${ }^{21}$ Note that the growth curve for both the number of sites and cumulative installed capacity differs from previous versions of the Project Tracking Matrix, as the RE-Powering team learns about additional renewable energy projects installed on contaminated lands in previous years.
    22 The "Unknown" installation is a 1.5 MW solar installation constructed by Honeywell Corporation as part of the Onondaga Lake cleanup project in Onondaga, NY. The bulk of the cleanup took place in 2010, but the exact completion date of the solar installation is unknown.

