EPA

RE-POWERING AMERICA'S LAND INITIATIVE

RE-Powering Mapper 3.0 Demonstration

June 2022

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RE-Powering Overview

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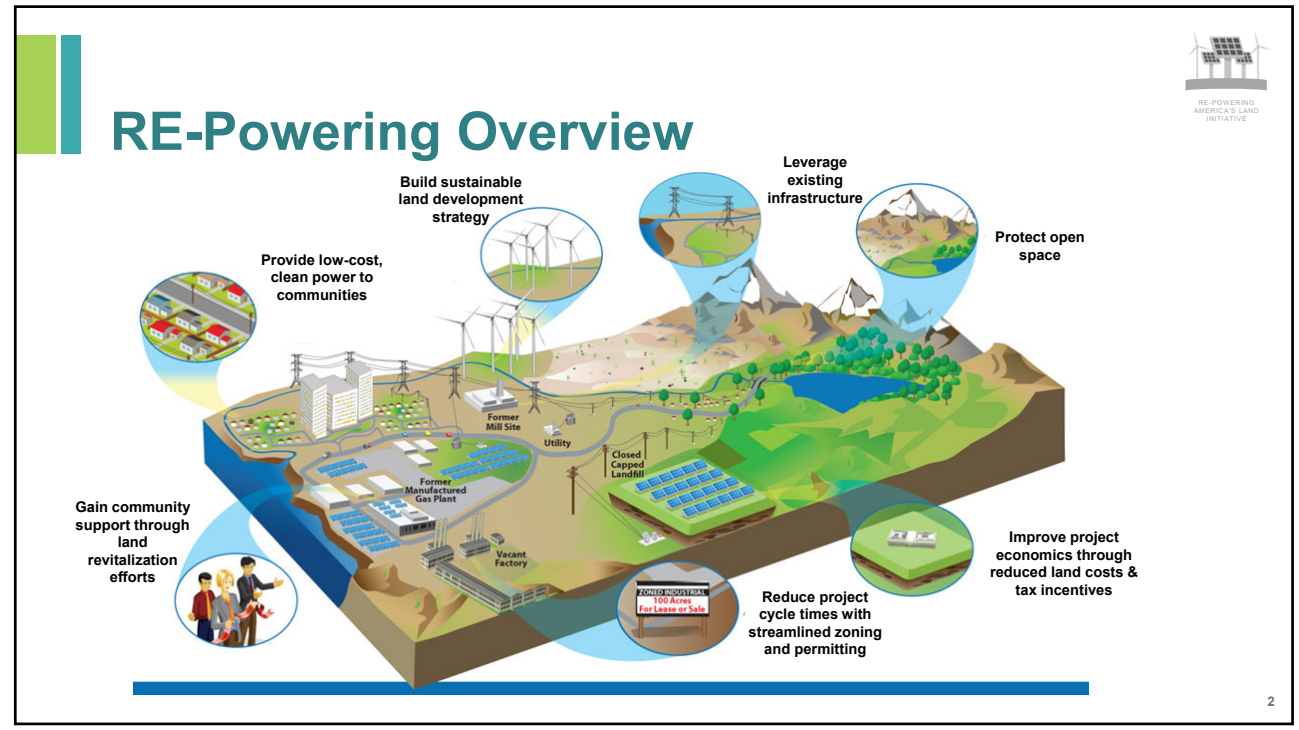
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Polling Question

Have you used the RE-Powering Mapper before?
- **Yes**
- **No**
- **Unsure**

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1 | Data

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What Data Was Used and Why?

RE-Powering worked with states, EPA offices and other federal agencies to determine the best possible information to provide to end users. This included:

- **Using EPA datasets**
- **Identifying and engaging states**
- **Engaging National Renewable Energy Lab (NREL) experts**
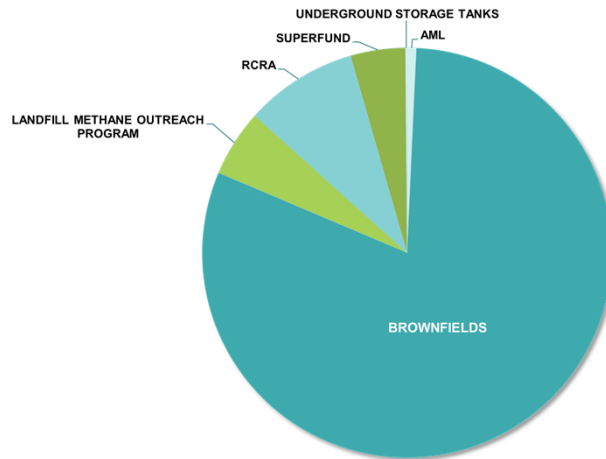- **Adding resource and infrastructure data**

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EPA Tracked Sites

EPA-tracked sites consist of:

- **Brownfields**
- **RCRA**
- **Landfill Methane Outreach Program**
- **Superfund**
- **Abandoned Mine Lands**
- **Underground Storage Tanks (pilot)**

State Data

Including data from states allows:

- Different site types from what EPA might track, including the addition of coal mines.
- More specific details about sites.
- More coverage and exposure of sites to interested parties.

Data from the following states was included: California, Colorado, Connecticut, Florida, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Texas, Virginia, West Virginia and Wisconsin.
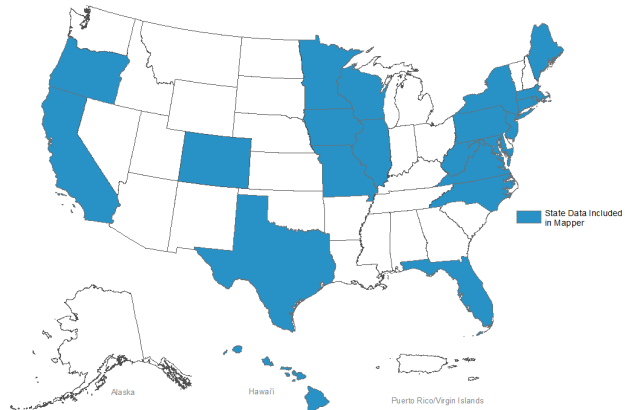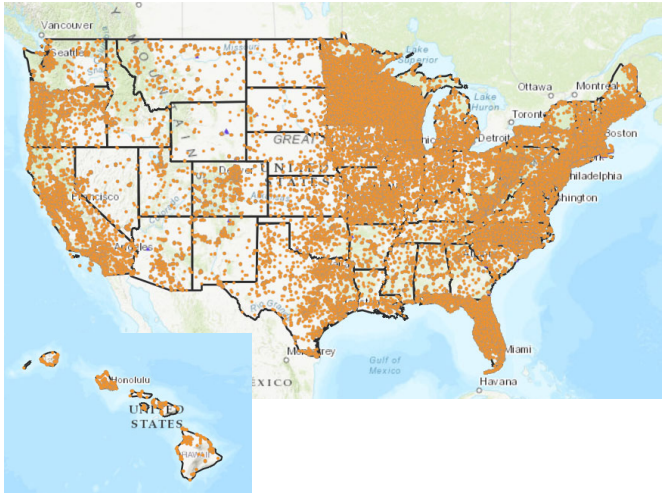
How Many Sites?

- Over 190,000 sites total
- Over 147,000 state provided sites
- Over 37,000 EPA-tracked sites

Have Data?

If you have data you would like to see in the RE-Powering Mapper, let us know!

Email:
strine.lora@epa.gov

Regional Team Contacts:
https://www.epa.gov/re-powering/forms/contact-us-about-re-powering-americas-land

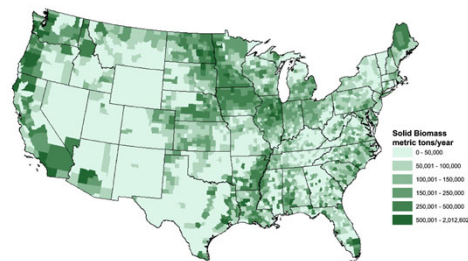**Data needs to have locational information at a minimum.**

Resource Data

- NREL assisted in identifying the best renewable energy resource data for wind, solar and biomass.

- Southern Methodist University provided datasets for geothermal resources.
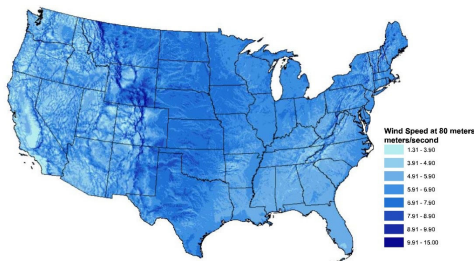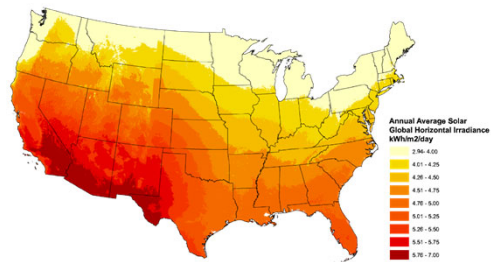
Infrastructure

- **Distance to infrastructure is important when considering siting renewable energy.**
  - Transmission lines are expensive to build.
  - Substations are important for interconnection.
  - Rails are useful for transporting biomass feedstock and biofuels.
  - Roads are needed to bring solar panels or wind turbines to the site location.

2 | Screening Criteria

Screening Criteria

- **Renewable energy types**
  - Solar
  - Wind
  - Biomass
  - Geothermal
- **Screening Considerations**
  - Resource
  - Acreage
  - Transmission Lines
  - Roads
  - Rails

RENEWABLE ENERGY TYPE AND SCALE	ESTIMATED RENEWABLE ENERGY PROJECT CAPACITY RANGE*	RENEWABLE ENERGY RESOURCE AVAILABILITY	ACREAGE (ACRES)	DISTANCE TO TRANSMISSION** (MILES)	DISTANCE TO GRADED ROADS (MILES)
Solar Photovoltaic (PV)		**Global Horizontal Irradiance (kWh/m2/day)**			
Utility scale PV	≥ 5 MW	N/A	≥ 35	≤ 10	≤ 10
Distributed scale PV	< 5 MW	N/A	< 35	N/A	N/A
Off-grid PV***	N/A	N/A	N/A	N/A	N/A
Unknown acreage PV****	N/A	N/A	N/A	N/A	N/A
Wind		**Wind speed (m/s)*******			
Utility scale wind	≥ 15 MW	5.5 m/s at 80 m	≥ 1,200	≤ 5	≤ 10
Community scale wind	1.5 MW - 15 MW	5.5 m/s at 80 m	40 - 1,200	N/A	≤ 1
Facility scale wind	<1.5 MW	5.0 m/s at 40 m	0.5 - 40	N/A	N/A
Unknown acreage wind****	N/A	5.5 m/s at 80 m	N/A	N/A	N/A
Biomass		**Biomass potential within 50 miles (metric tons/year)**			
Biopower	> 10 MW	≥ 150,000 (woody)	≥ 6	≤ 10	≤ 3 road; ≤ 8 rail
Biorefinery	> 20 MMgal/year	≥ 286,000 (herbaceous)	≥ 132	N/A	≤ 3 road; ≤ 8 rail
Geothermal		**Permafrost Presence**			
Heat pump	N/A	Absence of glacier or continuous permafrost	Acreage and distance variables are not included in the prescreening.		

* MW is megawatts, MMgal/year is million gallons per year.
** Transmission lines are typically defined as power lines with voltages greater than or equal to 69 kilovolts (kV).
*** Off-grid would not be connected to the grid for the purposes of this screening criteria. Off-grid does not include no-acreage sites.
**** Acreage information is not readily available for these sites; this is the only category in which sites without acreage information are included.
***** Wind speed is represented in meters per second (m/s) at heights of 40 and 80 m, as specified for each resource type.
N/A is not applicable.

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3 | **Pulling it all Together**

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Real Results

- **190,000** plus sites screened for renewable energy potential.
- Over **158,000** sites screened positively for renewable energy potential in states that have a Renewable Portfolio Standard (RPS) or goal.
- Approximately **71,000** sites screened positively for renewable energy potential in states that have a RE-Powering policy that encourages renewable energy on contaminated lands.
- Nearly **34,000** sites screened positively for distributed-scale photovoltaic (PV) solar or larger in states that encourage community solar or other shared renewables.
- More than **82,000** screen positively for off-grid solar that could be used on-site to reduce energy use or power green remediation.

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Pulling it all Together – End Products

RE-Powering Mapper:

An interactive web application, allows users to identify contaminated lands, landfills and mine sites for renewable energy development.
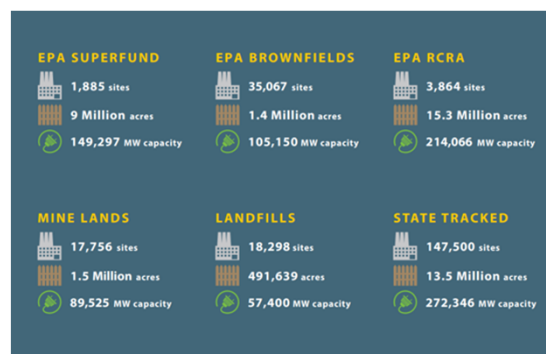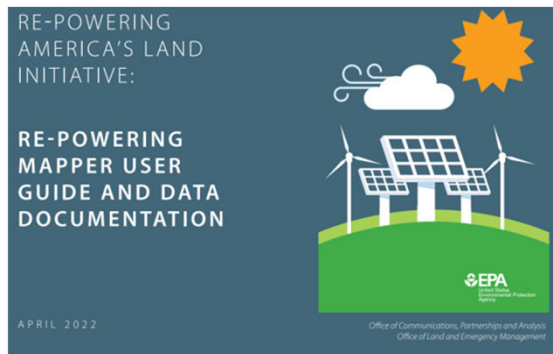
RE-Powering Geodatabase:

ESRI geodatabase containing screened sites from the RE-Powering Mapper

RE-Powering Spreadsheet:

Microsoft Spreadsheet containing screened sites from the RE-Powering Mapper

Documentation

RE-POWERING AMERICA'S LAND INITIATIVE:

RE-POWERING MAPPER USER GUIDE AND DATA DOCUMENTATION

APRIL 2022

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

EPA SUPERFUND	EPA BROWNFIELDS	EPA RCRA
1,885 sites	35,067 sites	3,864 sites
9 Million acres	1.4 Million acres	15.3 Million acres
149,297 MW capacity	105,150 MW capacity	214,066 MW capacity
MINE LANDS	**LANDFILLS**	**STATE TRACKED**
17,756 sites	18,298 sites	147,500 sites
1.5 Million acres	491,639 acres	13.5 Million acres
89,525 MW capacity	57,400 MW capacity	272,346 MW capacity

- **Combined User Guide and Data Documentation**
  - Has step-by-step user information
  - Details regarding data included
- **RE-Powering Mapper Factsheet**
  - Contains facts and statistics about the Mapper
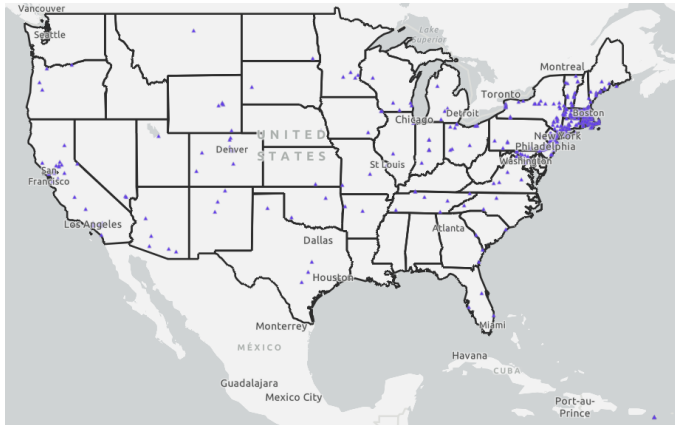
4 | Mapper Upgrades

Mapper Upgrades

- **Latest Esri platform**
- **Increased number of included state tracked sites**
- **Refreshed screening criteria based on current market**
- **Added more tools:**
  - Custom filters
  - Additional layers
  - Links to environmental justice information

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Completed Projects Across the US

Polling Question

Do you plan on using the RE-Powering Mapper 3.0 in the future?
- **Yes**
- **No**
- **Unsure**

Thank You!

RE-Powering would like to thank the following groups for providing data and insight into the RE-Powering Mapper:

- **EPA**
- **ORISE Research Fellows**
- **National Renewable Energy Lab**
- **State Agencies**
- **Beta Testers**
- **GDIT**
- **North Point Geographic Solutions**

Without you RE-Powering Mapper 3.0 would not be nearly as awesome as it is!

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Thank You to Our Colleagues!

- RE-Powering Response Team
- Landfill Methane Outreach Program
- Office of Land and Emergency Management
- Office of Communications, Partnerships and Analysis
- Office of Brownfields and Land Revitalization
- Office of Superfund Remediation and Technology Innovation
- Office of Resource Conservation and Recovery
- Office of Underground Storage Tanks
- Office of Mountains, Deserts and Plains
- ORISE Research Fellows
- National Renewable Energy Lab
- California Department of Toxic Substances Control
- Colorado Department of Public Health and Environment
- Connecticut Department of Energy and Environmental Protection
- Florida Department of Environmental Protection
- Hawai'i State Department of Health Hazard Evaluation and Emergency Response Office

- Illinois Environmental Protection Agency
- Iowa Natural Resources Department
- Maine Department of Environmental Protection
- Maryland Land Restoration Program
- Massachusetts Clean Energy Results Program
- Missouri Land Reclamation Program
- New Jersey Department of Environmental Protection
- New York Department of Environmental Conservation
- North Carolina Department of Environmental Quality
- Oregon Department of Environmental Quality
- Pennsylvania Bureau of Abandoned Mine Reclamation
- Rhode Island Department of Environmental Management
- Texas Commission on Environmental Quality
- Virginia Department of Energy
- West Virginia Office of Abandoned Mine Lands and Reclamation
- Wisconsin Department of Natural Resources
- Beta Testers

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