



RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites

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Pam Swingle

OSWER Center for Program Analysis

Environmental Protection Agency

swingle.pamela@epa.gov



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RE-Powering America's Land: Renewable Energy on Contaminated Land & Mining Sites



- EPA launched *RE-Powering America's Land* in 2008
- Recognized the potential redevelopment opportunities of these EPA tracked sites
 - Brownfields
 - Superfund
 - Abandoned Mine Lands
 - RCRA
- To date, have mapped over 13 million acres



Why the Focus on Renewable Energy Development on EPA Tracked Sites?



- **Many of these sites offer:**
 - Adequate Zoning
 - Existing infrastructure - transmission lines, roads and railway
 - NIMBY issues may be less prevalent
 - **Siting renewable energy on these sites may provide:**
 - May increase economic value for the property
 - Furthers environmental sustainability by maximizing land use
 - May have lower overall transaction costs compared to greenfields
 - Reduces the stress on greenfields by reusing these sites
- Provides clean energy for use on-site, locally, and/or to utility grid



How Much Energy Can EPA Tracked Lands Support?



Solar Energy Total Technical Potential

- By 2010, Energy Information Administration (EIA) projects U.S. solar PV and thermal capacity at 6,100 MW
- Solar Energy Generation Capacity on EPA Tracked Lands: ~919,600 MW

Wind Energy Total Technical Potential

- By 2010, EIA projects U.S. wind capacity at 25,610 MW
- Wind Energy Generation Potential on EPA Tracked Lands: ~17,382 MW

Who's the Audience?



- Developers
- Investors
- Environmental Managers
- Consultants
- Renewable Energy Industries
- Community Leaders
- Local, State, and Federal Officials – environmental, economic development, planners
- Anyone interested in renewable energy projects!

RE-Powering Tools



- **Google Earth Maps**
 - Joint EPA-NREL venture produced interactive maps
- **Success Stories**
 - identifying and sharing successes
- **Incentives**
 - State-specific maps and financial incentive sheets describing renewable energy and contaminated lands redevelopment incentives in each state
- **Technical Assistance**

Website:



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www.epa.gov/renewableenergyland

Google Earth Mapping Tool



- **Mapped EPA inventory of EPA tracked sites**
 - Abandoned Mine Lands
 - Brownfields
 - RCRA
 - Superfund
- **National Renewable Energy Laboratory (NREL) Data**
 - Wind, Solar and Biomass Resources
- **Infrastructure Data**
 - U.S. Highways
 - U.S. States
 - U.S. National Transportation Atlas Railroads
 - Transmission Lines



Search

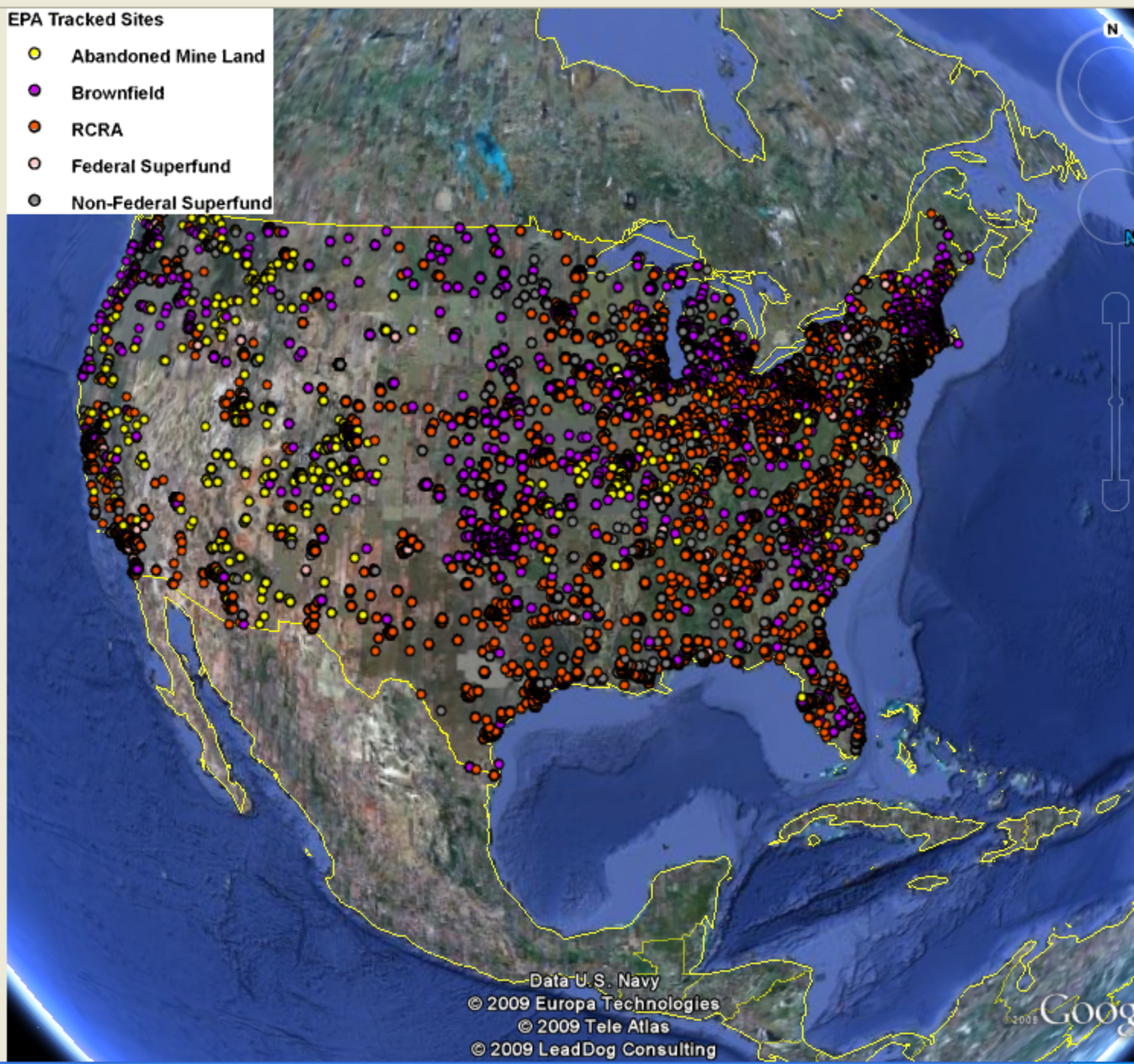
To

to e.g., San Francisco

- EPA Tracked Sites**
- Abandoned Mine Land
 - Brownfield
 - RCRA
 - Federal Superfund
 - Non-Federal Superfund

- Places**
- EPA Renewable Energy Sites
 - EPA Site Type Legend
 - Utility Wind
 - Community Wind
 - CSP Utility Solar
 - PV Utility Solar
 - Abandoned Mine Land
 - Brownfield
 - Federal Superfund
 - Non-Federal Superfund
 - RCRA

- Layers**
- 3D Buildings
 - Street View
 - Borders and Labels
 - Traffic
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 - Gallery
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- RCRA
- Biomower Facility

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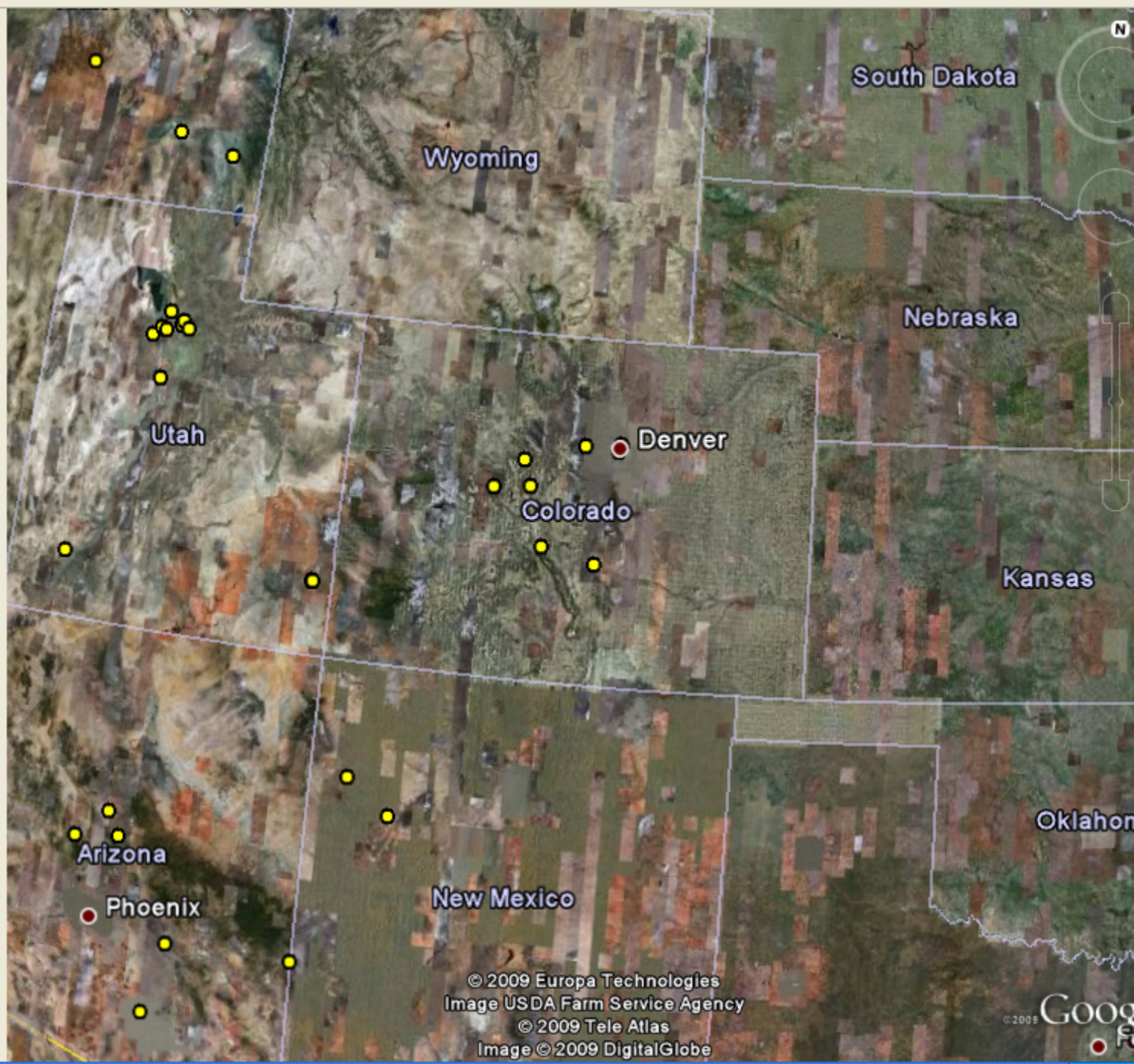
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To Find Businesses Directions

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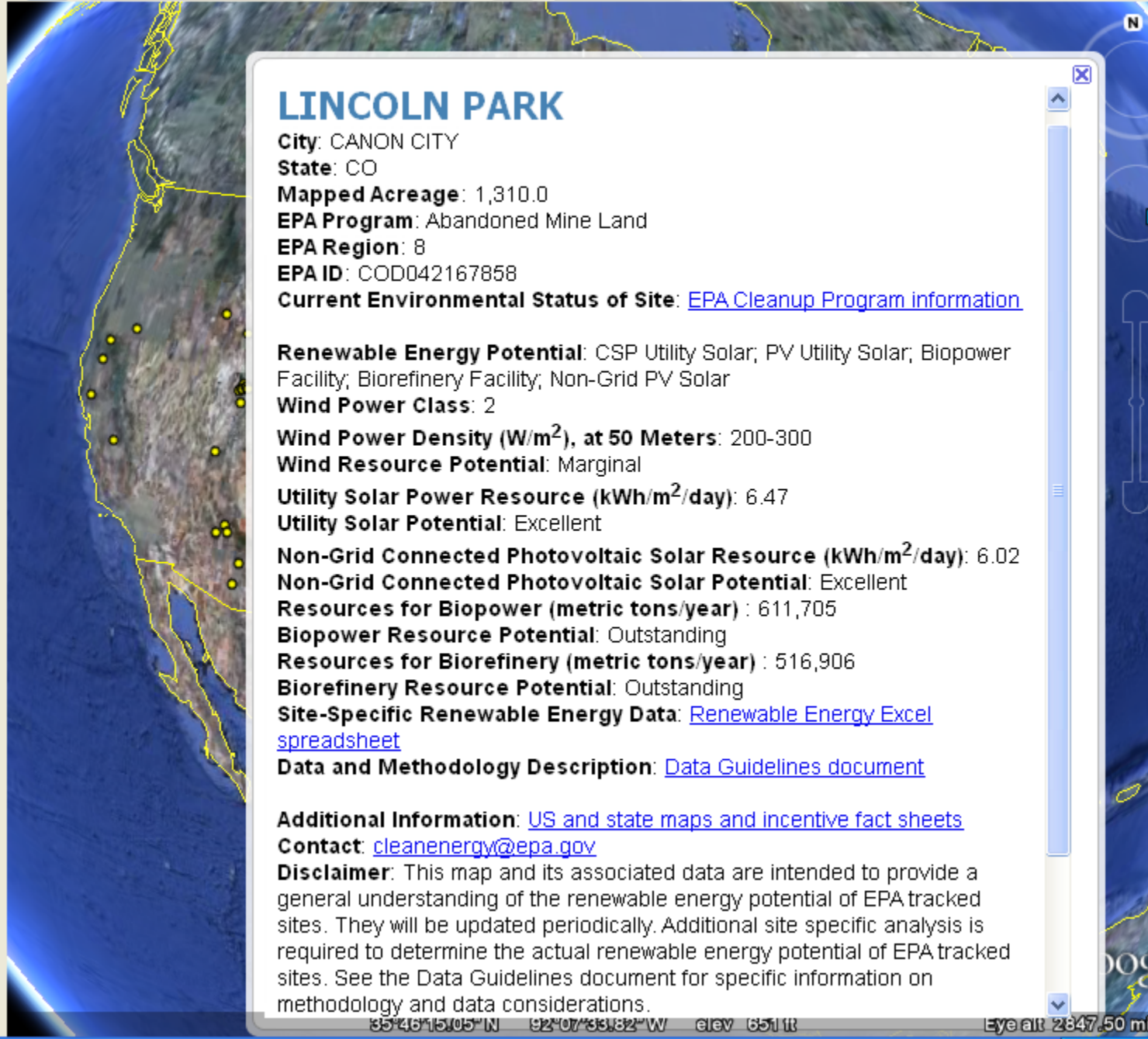
Places

Add Content

- CSP Utility Solar
- PV Utility Solar
- Abandoned Mine Land
- Brownfield
- Federal Superfund
- Non-Federal Superfund
- RCRA
- Biopower Facility
- Biorefinery Facility

Layers

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LINCOLN PARK

City: CANON CITY

State: CO

Mapped Acreage: 1,310.0

EPA Program: Abandoned Mine Land

EPA Region: 8

EPA ID: COD042167858

Current Environmental Status of Site: [EPA Cleanup Program information](#)

Renewable Energy Potential: CSP Utility Solar; PV Utility Solar; Biopower Facility; Biorefinery Facility; Non-Grid PV Solar

Wind Power Class: 2

Wind Power Density (W/m²), at 50 Meters: 200-300

Wind Resource Potential: Marginal

Utility Solar Power Resource (kWh/m²/day): 6.47

Utility Solar Potential: Excellent

Non-Grid Connected Photovoltaic Solar Resource (kWh/m²/day): 6.02

Non-Grid Connected Photovoltaic Solar Potential: Excellent

Resources for Biopower (metric tons/year): 611,705

Biopower Resource Potential: Outstanding

Resources for Biorefinery (metric tons/year): 516,906

Biorefinery Resource Potential: Outstanding

Site-Specific Renewable Energy Data: [Renewable Energy Excel spreadsheet](#)

Data and Methodology Description: [Data Guidelines document](#)

Additional Information: [US and state maps and incentive fact sheets](#)

Contact: cleanenergy@epa.gov

Disclaimer: This map and its associated data are intended to provide a general understanding of the renewable energy potential of EPA tracked sites. They will be updated periodically. Additional site specific analysis is required to determine the actual renewable energy potential of EPA tracked sites. See the Data Guidelines document for specific information on methodology and data considerations.

National Maps: EPA Tracked Sites

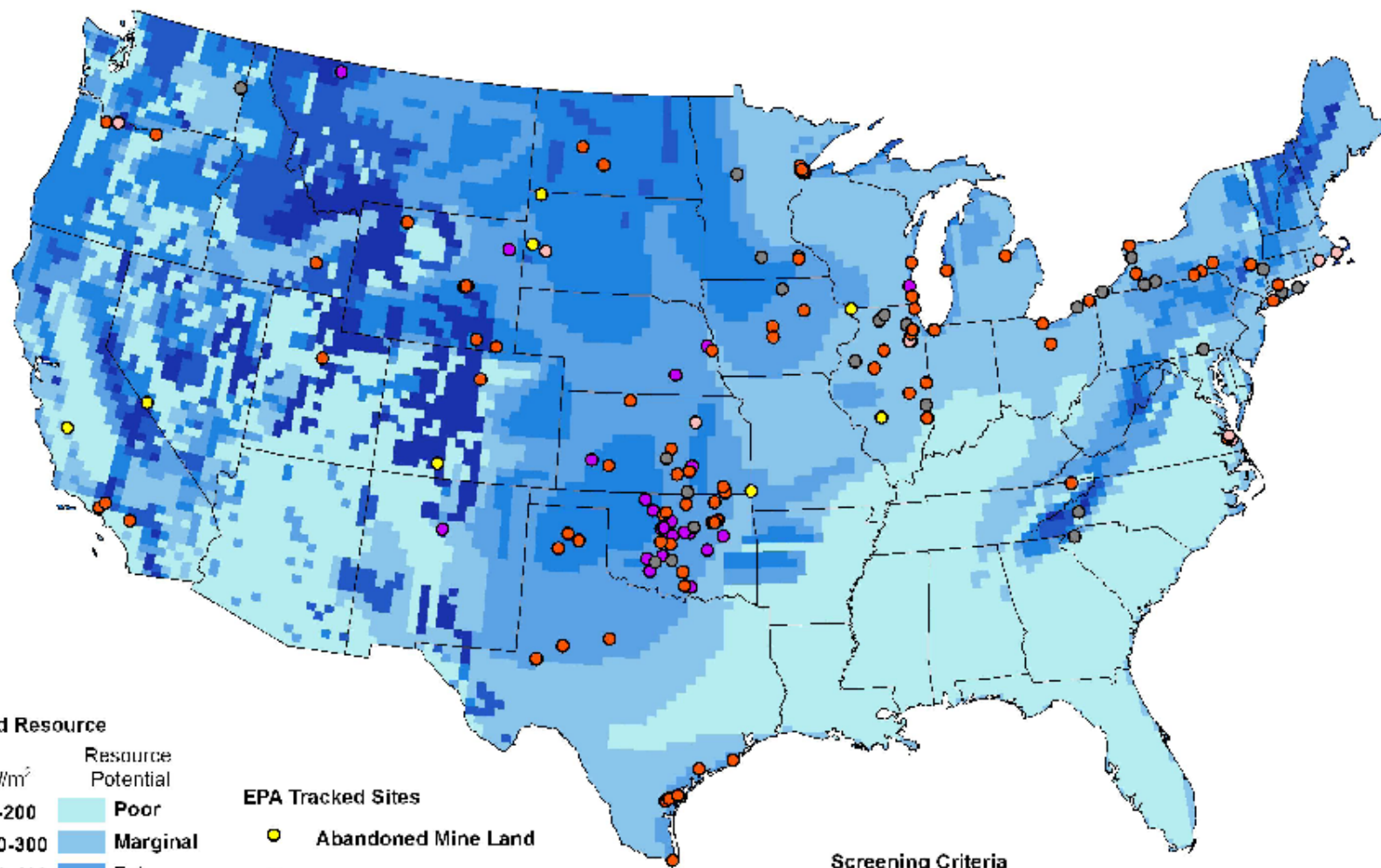


EPA Tracked Sites Potential

- Utility Scale Wind Energy Generation
- Community Wind Energy Generation
- Utility Scale Concentrated Solar Power (CSP) Energy Generation
- Utility Scale Photovoltaic (PV) Solar Energy Generation
- Biopower Facility Siting
- Biorefinery Facility Siting
- Non-Grid Connected Wind Energy Generation
- Non-Grid Connected Photovoltaic (PV) Solar Energy Generation



EPA Tracked Sites with Community Wind Energy Generation Potential



Wind Resource		Resource Potential
Power Class	W/m ²	
1	0-200	Poor
2	200-300	Marginal
3	300-400	Fair
4	400-500	Good
5	500-600	Excellent
6	600-800	Outstanding
7	>800	Superb

EPA Tracked Sites

- Abandoned Mine Land
- Brownfield
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- Non-Federal Superfund

Screening Criteria

Wind power class of 3 or greater, measured at 50m above ground
 Property size between 100 and 1,999 acres
 Distance to graded roads of 25 miles or less
 Distance to transmission lines is not a screening criterion because energy is generally distributed locally



This map was developed by SRA International for the U.S. Environmental Protection Agency (EPA) OSWER Center for Program Analysis. Results are based on site screening criteria adapted from National Renewable Energy Laboratory (NREL) criteria and GIS data provided by NREL and EPA. This map and its associated data are intended to provide a general understanding of the renewable energy potential of EPA tracked sites; additional site specific analysis is required to determine the actual energy generation potential of EPA tracked sites. For further information, please see the accompanying Data Guidelines document, or contact cleanenergy@epa.gov.



Incentives



- **State Incentive Fact Sheets for Clean and Renewable Energy and Development of Contaminated Lands**
 - Funding – grants, loans, bonds
 - Taxes – abatements, deductions, credits
 - Other – technical assistance contacts, net metering and limited liability information
- **Federal Incentive Fact Sheet**
- **Individual State Map - Solar, Wind and Biopower**



Success Stories



- **Steel Winds – Lackawanna, New York**
 - 30 acre Bethlehem Steel idle for 30 years – Superfund and Brownfields
 - One of the first wind farms in the country
 - 50 million Kilowatt Hours each year, enough power to sustain 9,000 homes
- **Summitville Mine, Rio Grande County, Colorado**
 - 1,400 acre heap leach gold and silver mining
 - Constructing micro hydroelectric plant
 - Up to 290K kilowatt-hours per year, enough to power 25 homes AND operate a required onsite water treatment plant



Additional Website Resources:



- Tools and Guidance for Mine Site Redevelopment
- Revitalization Handbook
- Liability Relief Resources



What's Next?



- State and Regional Input - Increase Dialogue
 - Success stories and case studies
 - Input on the existing tools
 - State and regional needs to promote renewable energy on these sites
- Enhance Mapping Tools
 - Geothermal potential
 - Landfill methane sites
- Website Overhaul and Continuous Updates
- Expand Partnerships to Promote Renewable Energy on EPA Tracked Sites
 - Federal, State and Local Organizations - economic development, energy and environmental
 - Industry
 - Non-profits
- Continue EPA/DOE NREL Partnership

More Information



- RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites
www.epa.gov/renewableenergyland
- Addition Questions or Information
Email: cleanenergy@epa.gov



EPA Contacts

The EPA logo is circular with a blue border. Inside, it features a green leaf and a blue globe. The text "UNITED STATES" is at the top and "ENVIRONMENTAL PROTECTION AGENCY" is at the bottom.

Pam Swingle
OSWER Center for Program Analysis
Phone: 202-566-1018
Email: swingle.pamela@epa.gov

Lura Strasser
OSWER Center for Program Analysis
Phone: (202) 566-2539
Email: strasser.lura@epa.gov

THANK YOU!!!

