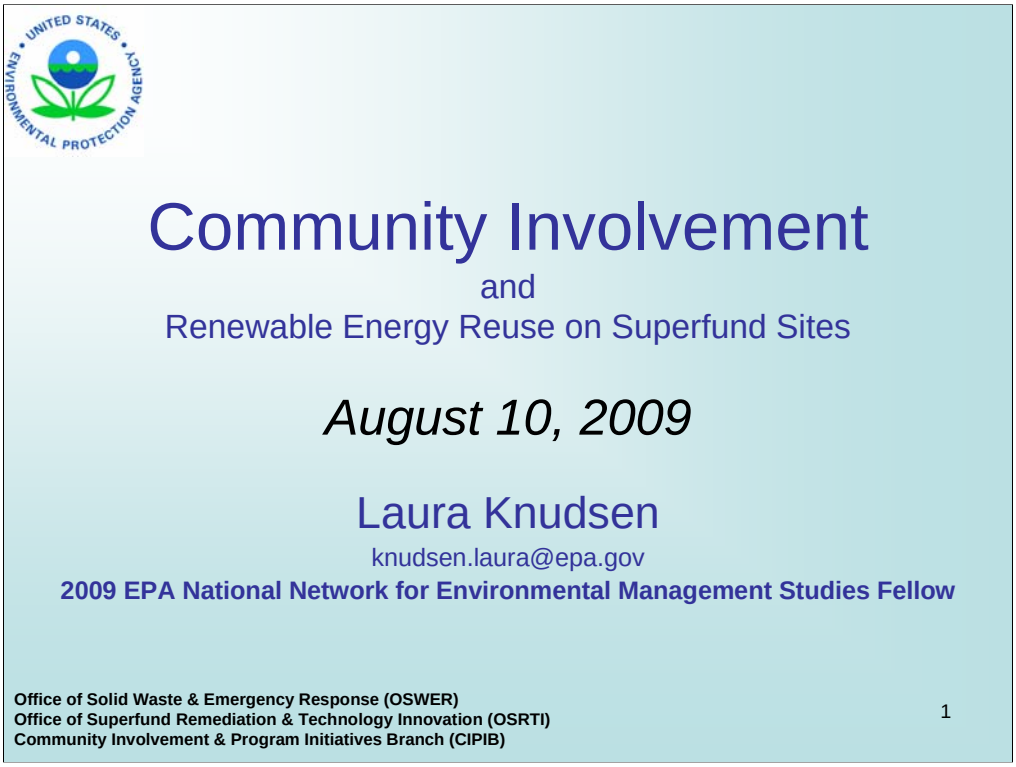



This presentation has a focus on Superfund sites and how the EPA could & is addressing CI, but the community involvement content of this presentation may be applied to other contaminated land sites

# Acronyms

- CI = Community Involvement
- CIC = Community Involvement Coordinator
- CIP = Community Involvement Plan
- EPA = Environmental Protection Agency
- NPL = National Priorities List
- NREL = National Renewable Energy Laboratories
- RE = Renewable Energy
- RPM = Remedial Project Manager

# Overview Slide

- Precedents & Project Overview
- Case Studies
  - Brightfields, Lackawanna, Avtex Fibers, Nebraska Ordnance Plant
- CI Flowchart with a Superfund focus
- CI Tools:  A compilation of ideas
- Existing Tools
  - Pam Swingle (EPA Region 4) will present


**Superfund Redevelopment Initiative**

*Included:

Superfund Redevelopment Pilot funding and created position of Superfund Redevelopment Coordinator

**Re-Powering America's Land** recognizes the potential of Superfund, Brownfields, Abandoned Mine Lands and RCRA sites

*Often times people are more apt to want a project of this sort in the area and sometimes there is less opposition because the area needs economic revitalization and job creation

**Pictures**

Wind energy: http://secla2.files.wordpress.com/2008/08/wind-energy1.jpg

Solar panels: http://www.instablogsimages.com/images/2008/03/12/solar-energy_7071.jpg

Biomass: http://blogs.princeton.edu/chm333/f2006/biomass/eugene3.jpg

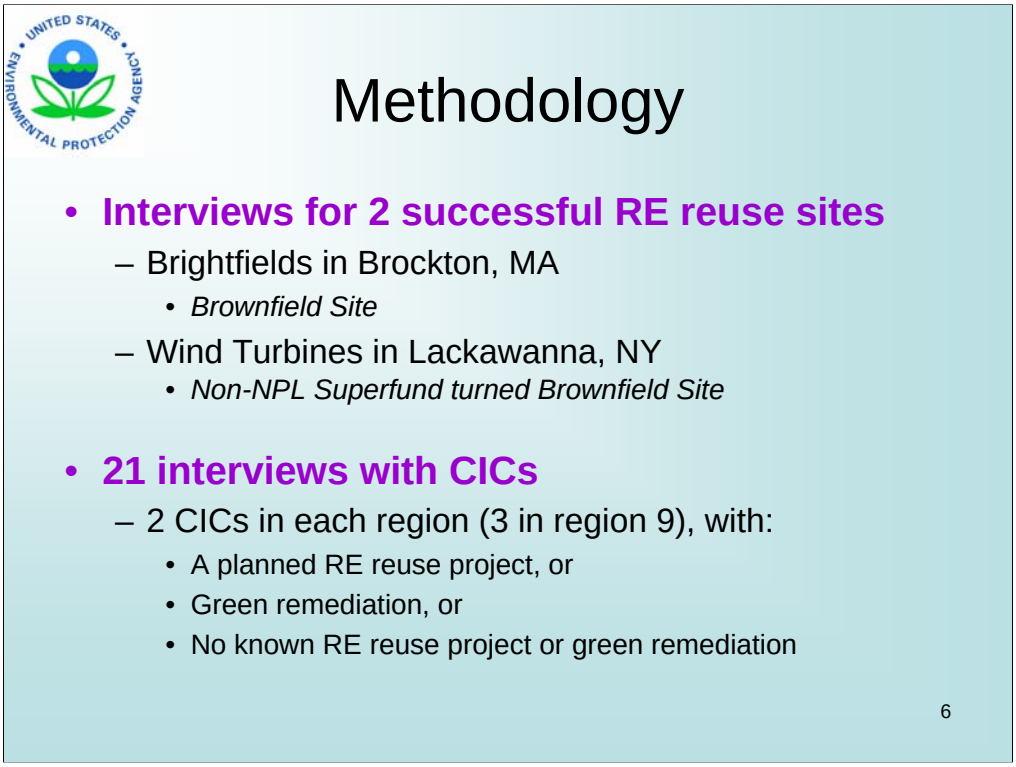
# The Project

- When should CI for RE reuse on Superfund sites be considered?
  - Answer: Before CI may occur, other factors must be taken into account. Once these are known, CI should occur as early as possible
- How should the EPA be involved in CI for RE reuse on Superfund sites?
  - Answer: As a liaison who may facilitate connections between the developer and the community or as an information source
- What tools could help address community interest in RE reuse on Superfund sites?
  - Answer: A compilation of ideas from CICs will be presented

5

*1 & 2 guiding questions --- case studies will help explain the answers to these questions as well as general conclusions from CIC interviews

*3rd guiding question: from CIC interviews




**CIC Interviews**

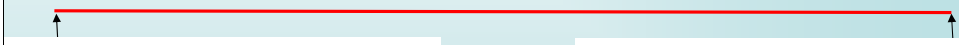
*Also asked about green remediation because I assumed a CIC would use similar tools to educate the public about a green remediation project as they would to educate a community about reuse

*I realize there are non-EPA people on this call, and I would have enjoyed talking to a broader group of individuals that are involved with CI at various sites, but due to time constraints this was not possible. However, many of the recommendations that are presented in this project are applicable to all people involved with CI.

# The Project

- **Main Findings**
  - **Multiple factors need to be understood when first considering RE reuse projects:**
    1. All projects: Community interests
    2. Utility community driven project: Public utility grid issues & legislative barriers
    3. Developer driven project: Initial engineering studies need to be conducted first

**The ends of the spectrum for RE reuse & CI:**



**Don't let the community know the RE reuse possibilities early on**

**The community should always know about & be presented with RE reuse possibilities early on**

**Based on case studies, there is an argument to present the idea to the community as soon as possible. If this occurs during the cleanup phase, this ensures that EPA may play a role in CI.**

  - **Developer driven RE reuse projects are favorable, as long as:**
    - The developer has a CI focus early on and is willing to work with the project team if the site is still in the clean-up phase

# Case Studies

#1: Brightfields (Brockton, MA)

#2: Lackawanna (Lackawanna, NY)

#3: Avtex Fibers (Ft. Royal, VA)

#4: Nebraska Ordnance Plant (Mead, NE)

8

**Pictures:**

Sun image: http://upload.wikimedia.org/wikipedia/commons/thumb/9/96/Flag_of_the_Philippines_-_cropped_sun.svg/500px-Flag_of_the_Philippines_-_cropped_sun.svg.png

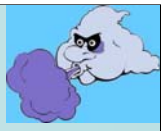
Wind image: http://www.larnach.info/S180/images/wind.jpg

Biofuel image: http://global-warming.accuweather.com/biofuel-thumb.gif

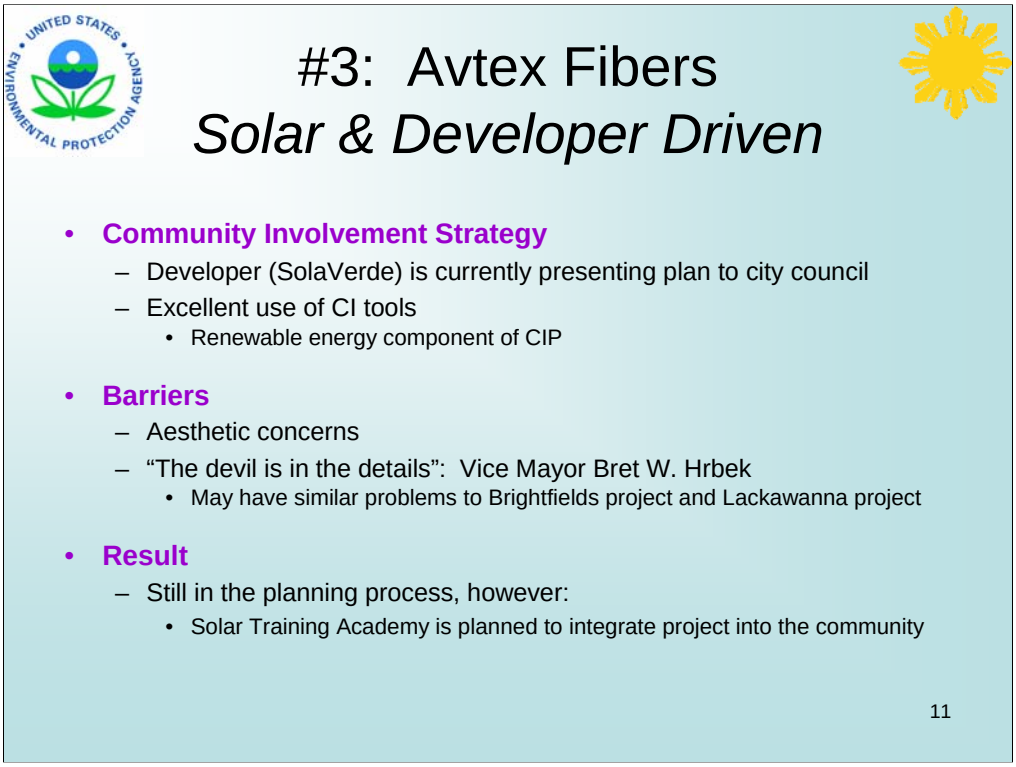
# #1: Brightfields Project
## *Solar & Community Driven*

- **Community Involvement Strategy**
  - Early & complete involvement with all stakeholders
  - Dedicated & experienced community leader
  - Incorporation of community desires - even if this is unrelated to the RE project itself
    - Example: The Fence Project
- **Barriers**
  - Some initial skepticism and hesitation
  - Legal problems regarding community utility power sale
- **Result**
  - Excitement and community support of the project

# #2: Lackawanna Project
## *Wind & Developer Driven*



- **Community Involvement Strategy**
  - University at Buffalo helped target the Lackawanna site for development
  - BQ Energy (now Apex Wind Energy for wind power and Axio Power for solar energy) began informing the community from the beginning
  - Visual tools
- **Barriers**
  - Initial skepticism and lack of understanding
    - More barriers now with 2nd project in discussion!
  - Citizens felt the site would not be fully cleaned-up if the RE reuse project went through
  - Absence of the school district in funding negotiations
- **Result**
  - Successful completion of 1st project, with 2nd project in discussion
  - Negotiations with the school district regarding funding for 2nd project




*Quote from Vice Mayor Bret W. Hrbek found in article at: http://www.avtexfibers.com/news/newspapers/2009/July%2009/avtex0618091.htm

Other project facts:

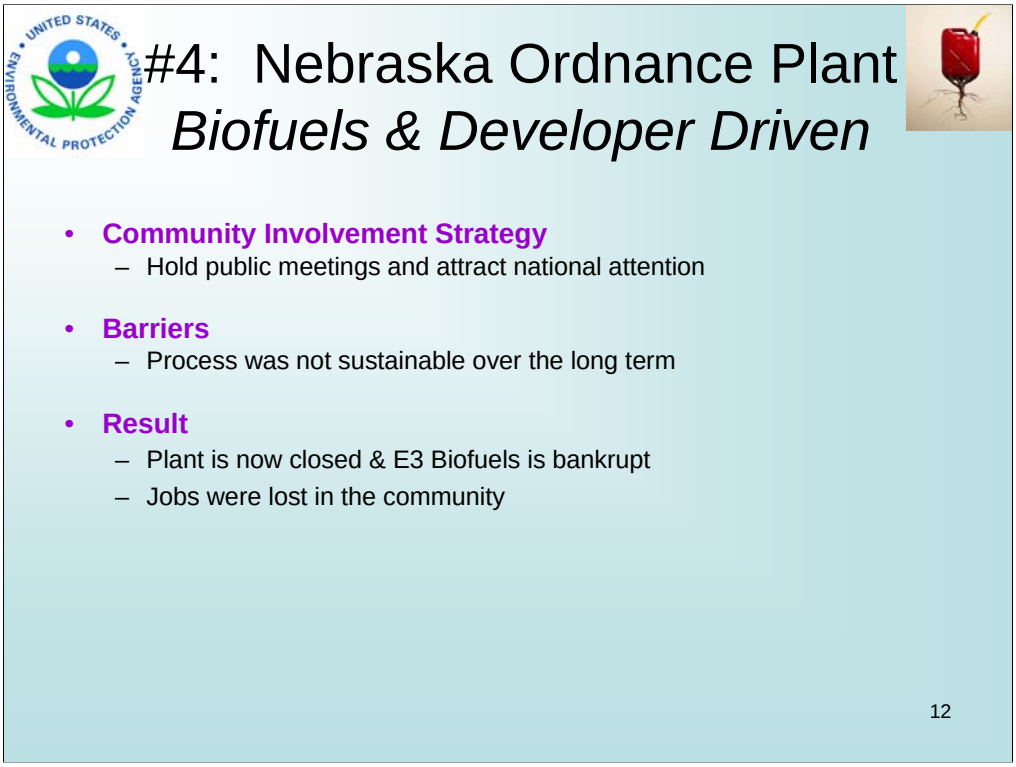
*There was a consent decree for the site that didn't allow 24 hour occupation, renting or building eating establishment, so reuse options were limited (from interview with CIC Larry Johnson)

***Site has a power substation built right on the site!!!**

*Economic development authority of Ft. Royal owns land

*Generally, the cost for solar power depends on how far it has to be transmitted and in this case there are no transmitting issues at all because there is a direct connection on site! (interview with CIC Larry Johnson)

***The Training academy** is to train interested students in construction and installation of solar power panels and support systems. It will not be an actual factory (more like an assembly line). The actual curriculum has not been fully established but i expect updates as the project starts to move towards viability. The training academy is being developed by the solar farm developers.




*Nebraska Ordnance Plant is a federal facility on the NPL, where the Army Corps of Engineers

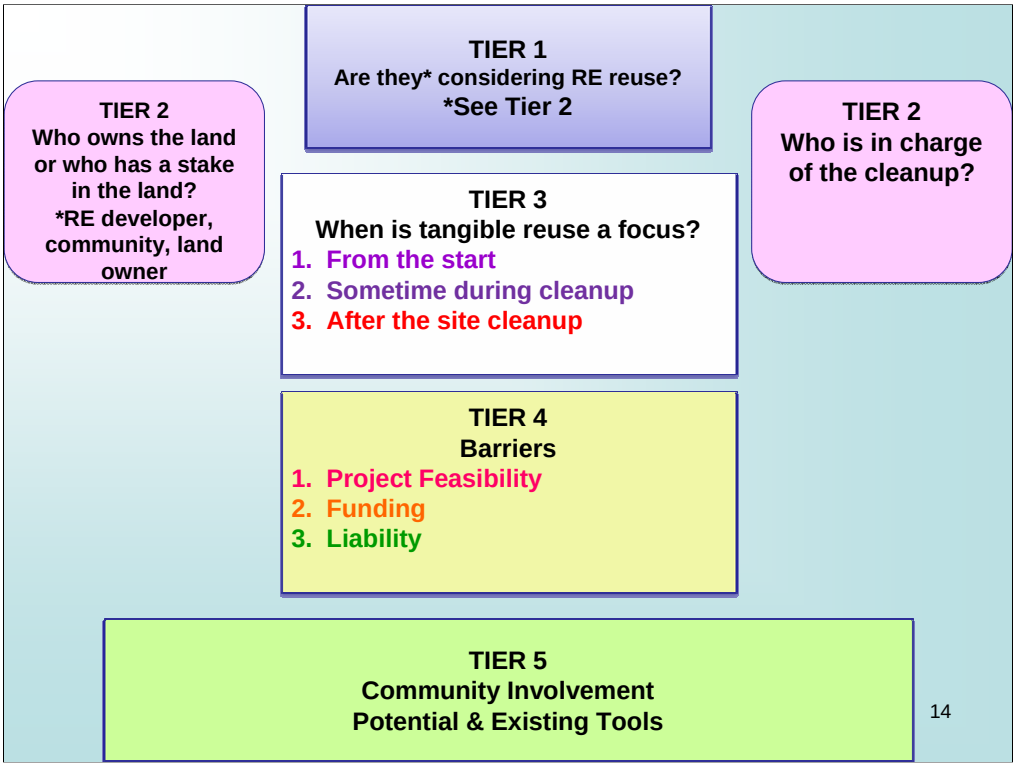
*The Ordnance Plant was an ammunition manufacturing facility where munitions were also stored. Ammonium nitrate was produced at the plant.

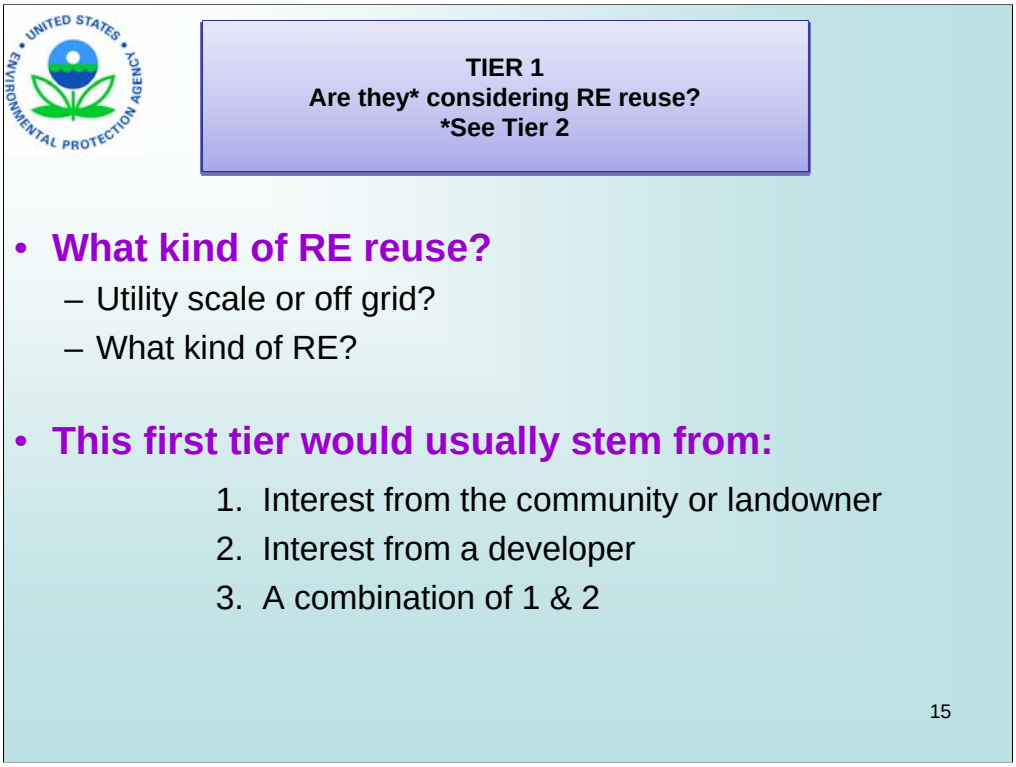
**General Process for producing ethanol at the plant:** Byproduct of ethanol production (wet distillers) was fed to cattle and the cattle manure was then used to power the ethanol plant. Any additional waste that can't be used in the process will be used as biofertilizer.

For more information, go to:
http://www.epa.gov/oecaerth/resources/publications/cleanup/er3/e3bio-fs.pdf

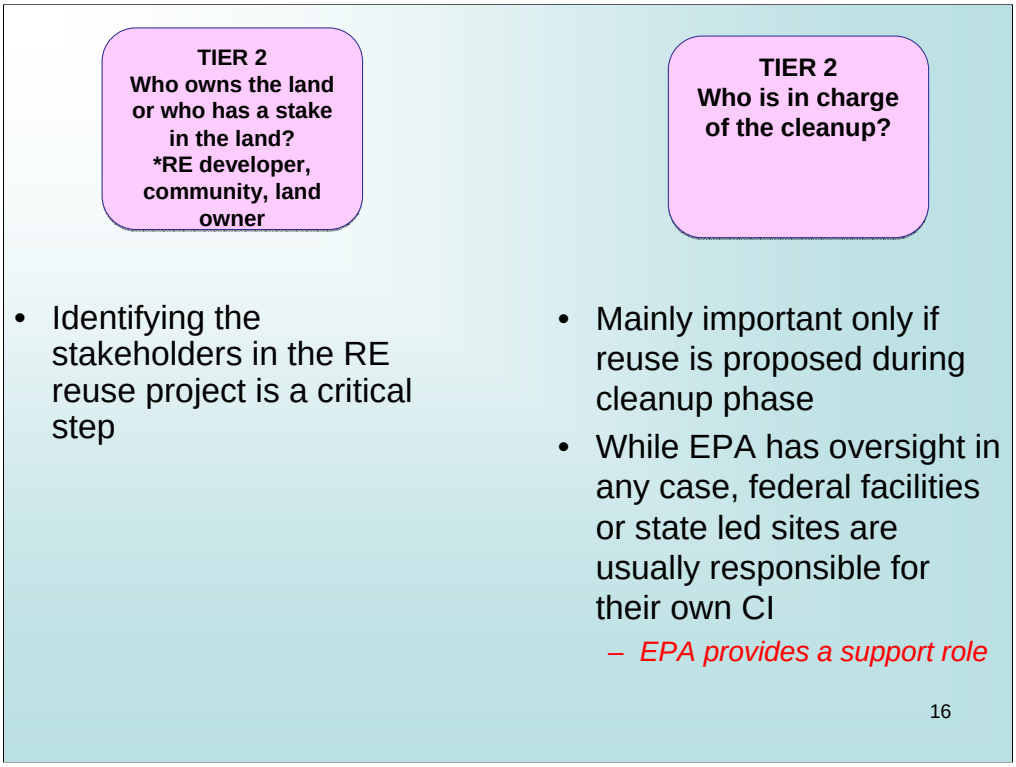
**Interesting Fact:** This site is working on installing a wind turbine to power the ground water ciculation wells
(http://www.cluin.org/greenremediation/subtab_d6.cfm)

***How do we relate these CI cases to other Superfund sites with RE reuse?***


TIER 1
Are they* considering RE reuse?
*See Tier 2
TIER 2
Who owns the land or who has a stake in the land?
*RE developer, community, land owner
TIER 2
Who is in charge of the cleanup?
TIER 3
When is tangible reuse a focus?
1. From the start
2. Sometime during cleanup
3. After the site cleanup
TIER 4
Barriers
1. Project Feasibility
2. Funding
3. Liability
TIER 5
Community Involvement
Potential & Existing Tools

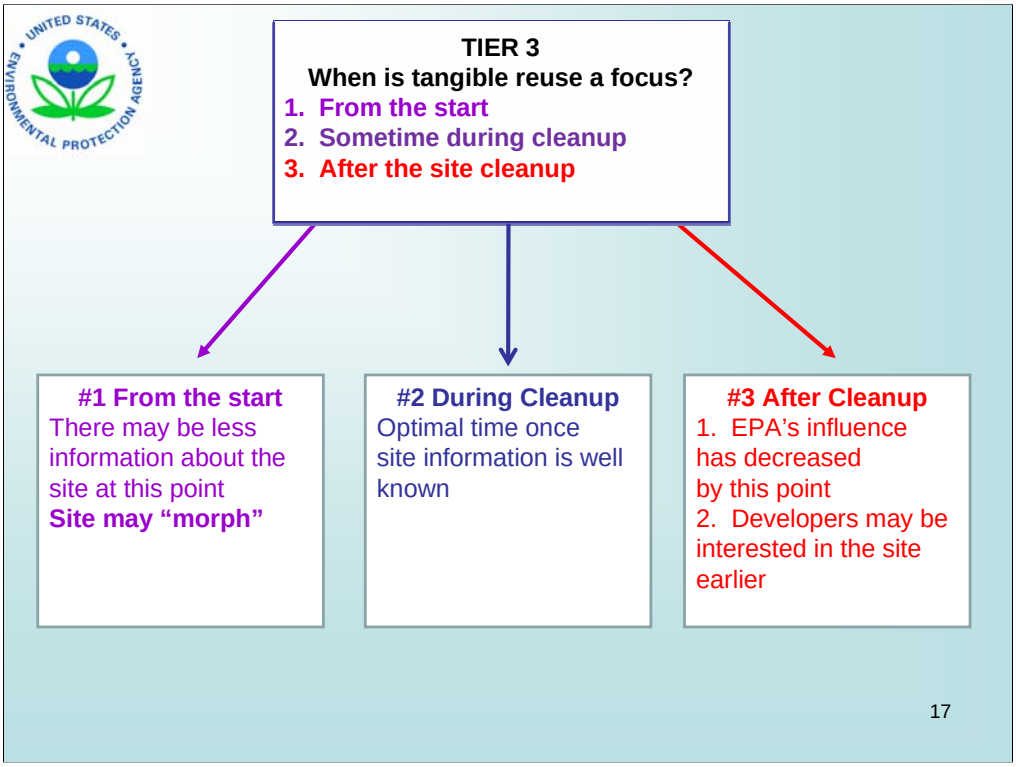


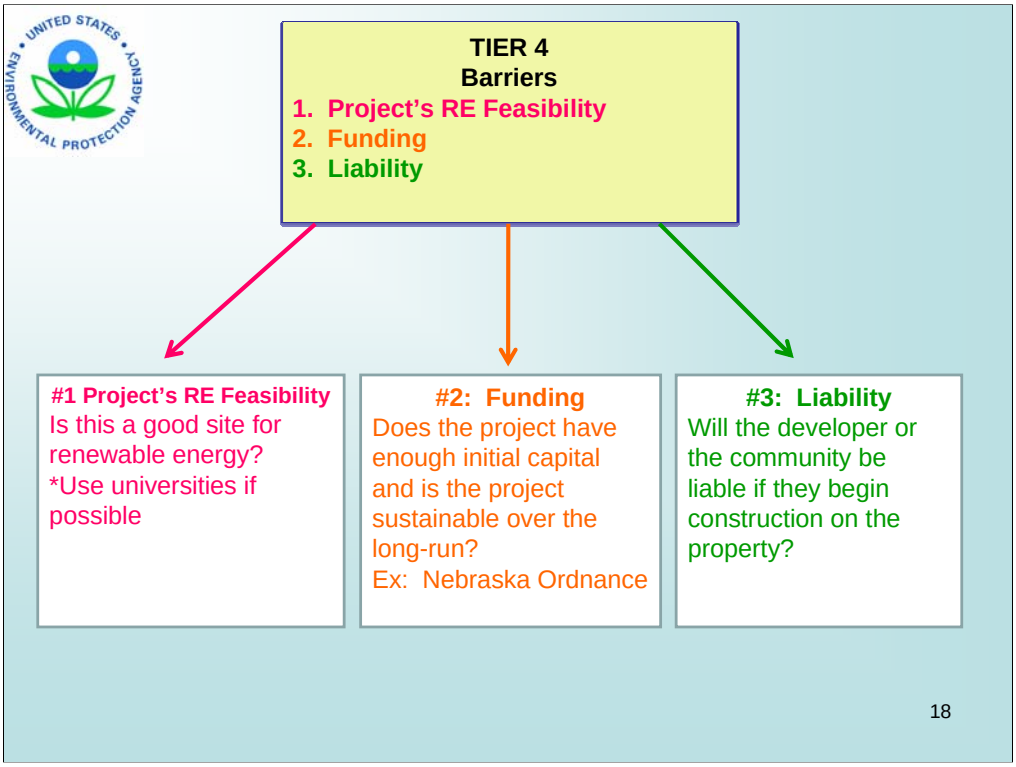

It is important to take into account all reuse options (parks, commercial, golf course, etc…). If there is no marked interest in a complete RE reuse by the community, then it should not be pursued.



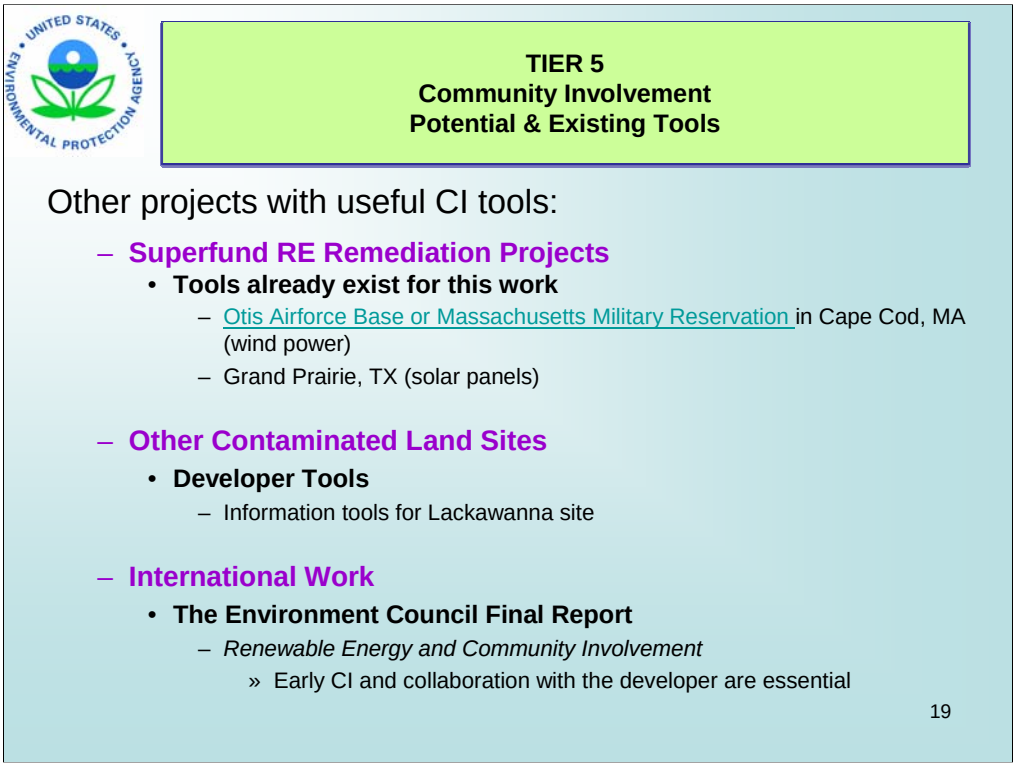

**Who owns the land & who has a stake in the land:** How reuse will be approached depends on whether a PRP or the community owns the land (or ownership is ambiguous)

**Who is in charge of the cleanup (PRP/Fund Lead/State)** will determine who is taking the assuming responsibility for CI during the cleanup portion


TIER 3
When is tangible reuse a focus?
1. From the start
2. Sometime during cleanup
3. After the site cleanup
#1 From the start
There may be less information about the site at this point
Site may "morph"
#2 During Cleanup
Optimal time once site information is well known
#3 After Cleanup
1. EPA's influence has decreased by this point
2. Developers may be interested in the site earlier




**#2:** You don't want to have a project collapse later on, even if it seems like a good idea initially. However, there are some things you can't control (bad economy, etc…).




**Grand Prairie, TX (Region 6)** has solar panels that are used to power fans for dealing with vapor intrusion. They already have documents in Spanish and English re: how solar panels work, how to repair them, etc…

*This also has great lessons for CI: brought actual solar panels out and showed them to people, explained lower cost for using solar panels (people immediately accepted them), had many 1 on 1 conversations…

*Translation Issues - must be careful about translation though --- different Spanish dialects mean that you can't always share information universally

# Recommendations

## Necessary Documents

- Guidance documents for CI regarding RE reuse
  -Look to UK model
- State by state guidance document for communities who want to create their own utility power source

## Tools

- Provide documents in other languages
- Database for RE projects & results
- Create a more official information exchange network for existing educational tools
- Visual aids
- Cost savings calculator for RE projects
- Adding RE Reuse Educational Training Tools
  - Foster CI in the schools

# Recommendations Continued…

## Good Practices

- More of a focus on REUSE at an earlier stage in the project
  - Especially once scope of site is understood
- EPA or other entity could facilitate initial engineering studies of the site
  - NREL is already doing this
  - Utilize the power of universities
- Focused communication among CICs, RPMs and Superfund Redevelopment Coordinators regarding RE reuse projects
- For community led projects, provide financial & technical advice
  - DSIRE database (http://www.dsireusa.org/)
- Communicate with CI conscious developers
- Highlight RE in CIP if possible to gain further input and awareness

## Trainings

- Community Involvement University Course on Renewable Energy
- EPA Developer Training for CI

# For more information…

- **International Work**
  - *Renewable Energy and Community Involvement*
    - Author: The Environment Council, 2005
- **Brightfields Project**
  - *Does It Have to be So Complicated? Municipal Renewable Energy Projects in Massachusetts*
    - Author: Lori A. Ribeiro, 2006
- **Steel Winds Project in Lackawanna, NY**
  - *the windy city: Harnessing Power in the Neighborhood Landscape*
    - Author: Jonathan S. Cherry, 2008

# Existing Tools

**Thank you!**
**Now, please welcome Pam Swingle!**

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***Penguin picture:**

http://media.photobucket.com/image/really%20happy%20picture%20cartoon/glitterhoney/happy%20feet/HAPPY-1.jpg

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

**August 10, 2009**

**Pam Swingle**
**OSWER Center for Program Analysis**
**Environmental Protection Agency**
***swingle.pamela@epa.gov***

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

- OSWER 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
  - Create local jobs for development and operation of renewable energy facilities

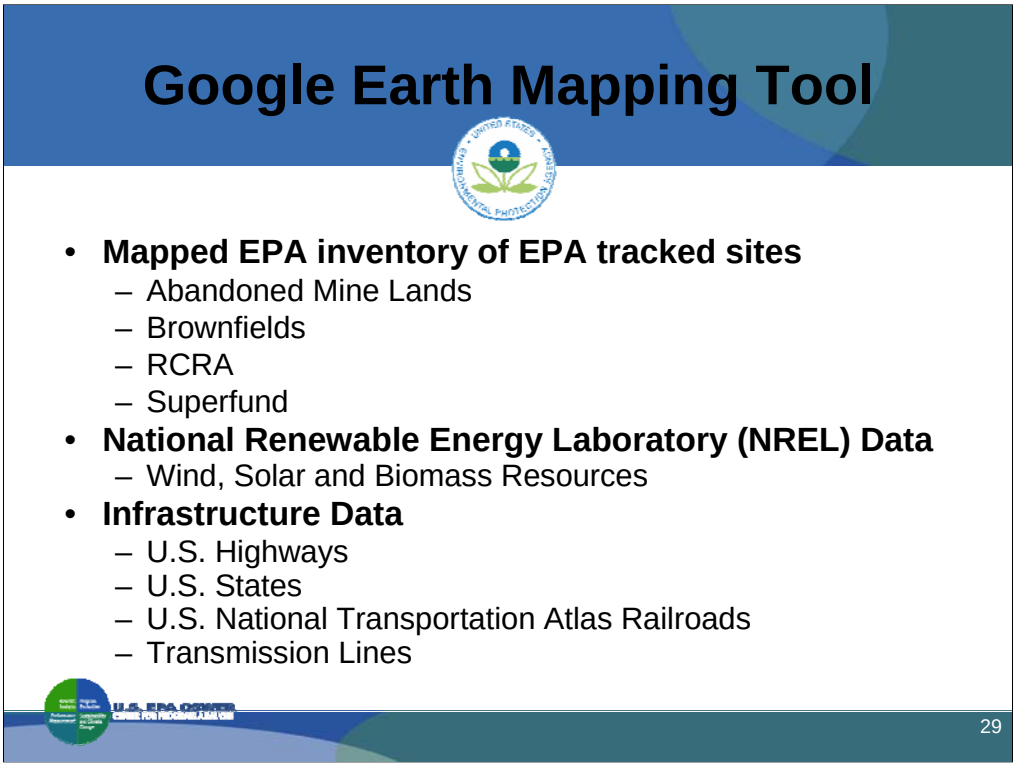
# Who's the Audience?

- 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 and Static Maps**
  - State-specific maps and financial incentive sheets describing renewable energy and contaminated lands redevelopment incentives in each state
- **Technical Assistance**

**Website:** [www.epa.gov/renewableenergyland](www.epa.gov/renewableenergyland)

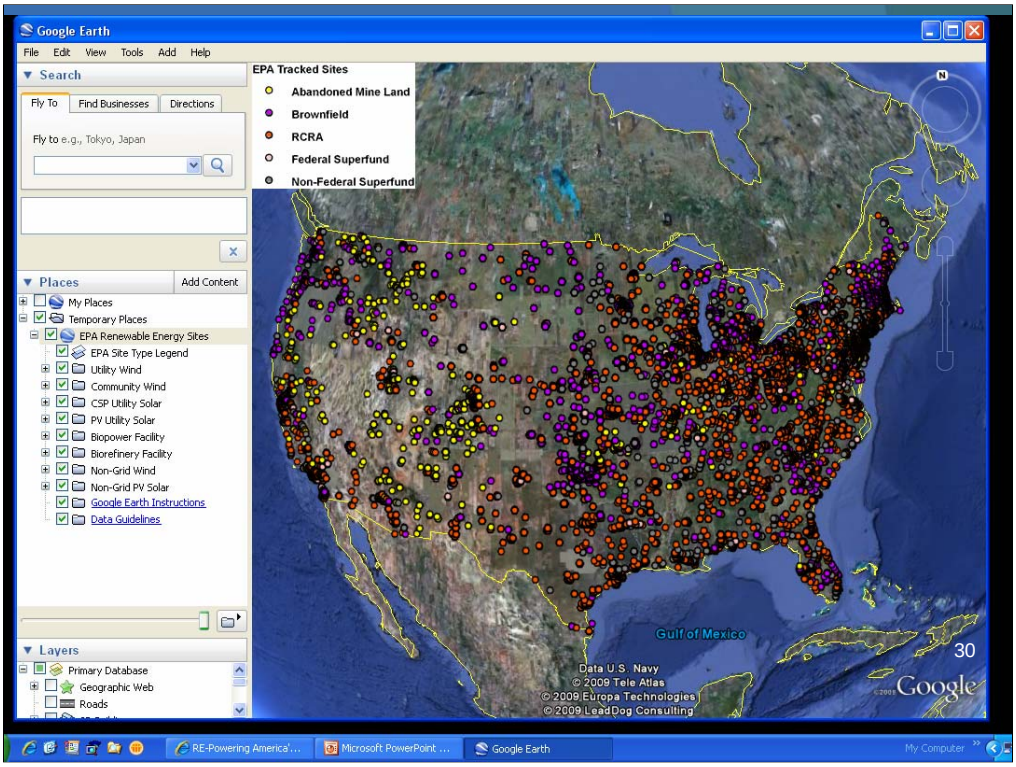



ESRI Datat

•US Highways – used to calculate the approximate distance to the nearest graded road.

•US States – state outlines

•US National Transportation Railroads – used to calculate the approx distance to the nearest railway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EPA Site Type Legend
Utility Wind
Community Wind
CSP Utility Solar
PV Utility Solar
Biopower Facility
Biorefinery Facility
Non-Grid Wind
Non-Grid PV Solar
Google Earth Instructions
Data Guidelines
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Primary Database
Geographic Web
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Abandoned Mine Land
Brownfield
RCRA
Federal Superfund
Non-Federal Superfund
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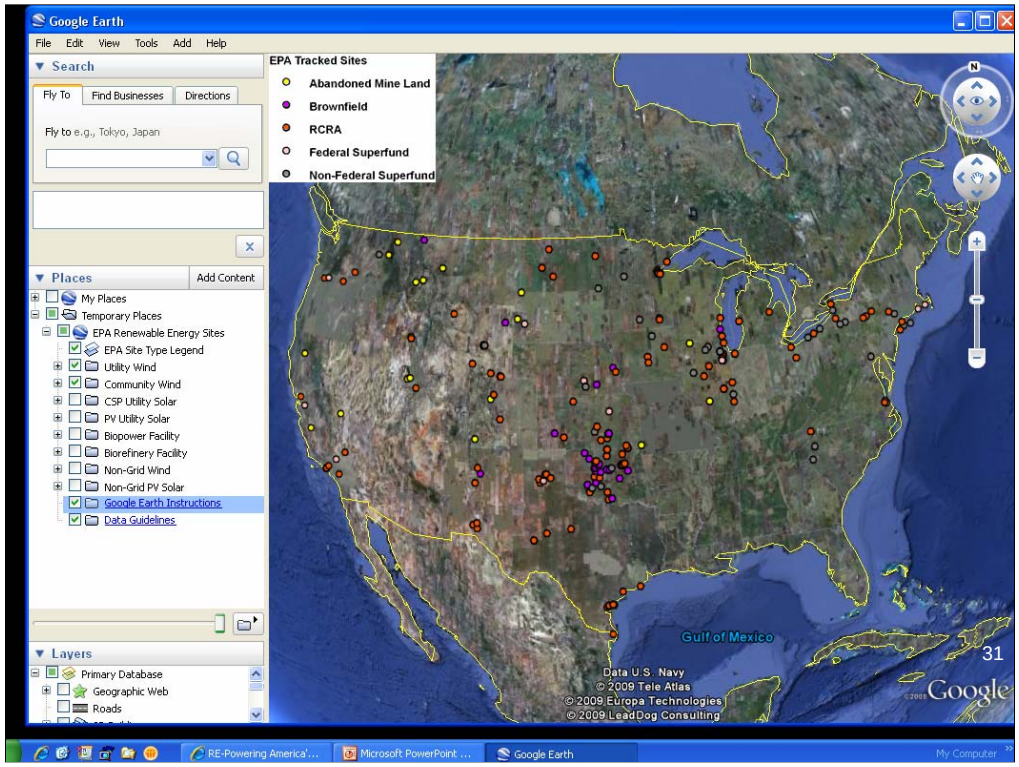
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EPA Site Type Legend
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Community Wind
CSP Utility Solar
PV Utility Solar
Biopower Facility
Biorefinery Facility
Non-Grid Wind
Non-Grid PV Solar
Google Earth Instructions
Data Guidelines
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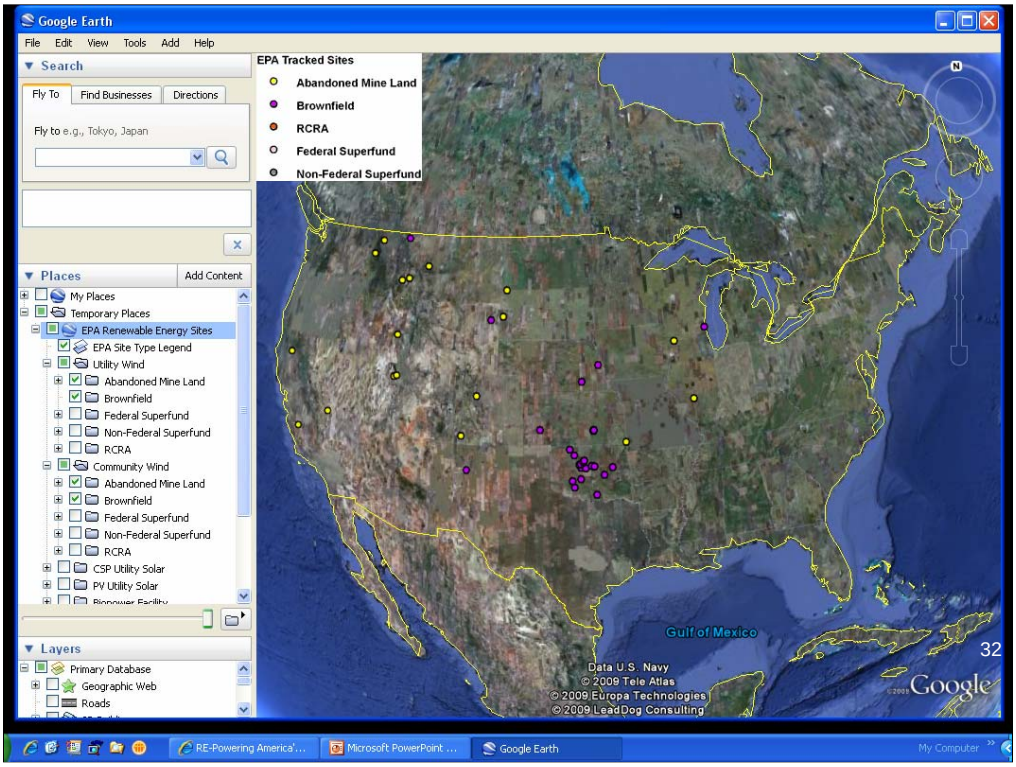
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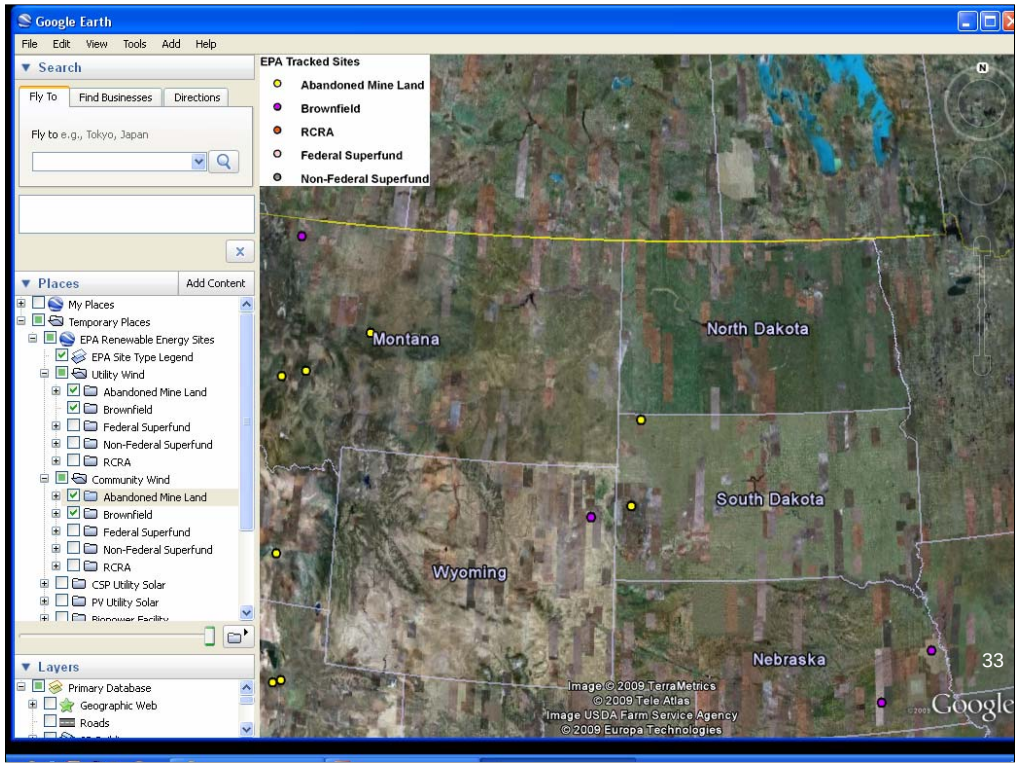
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Nebraska
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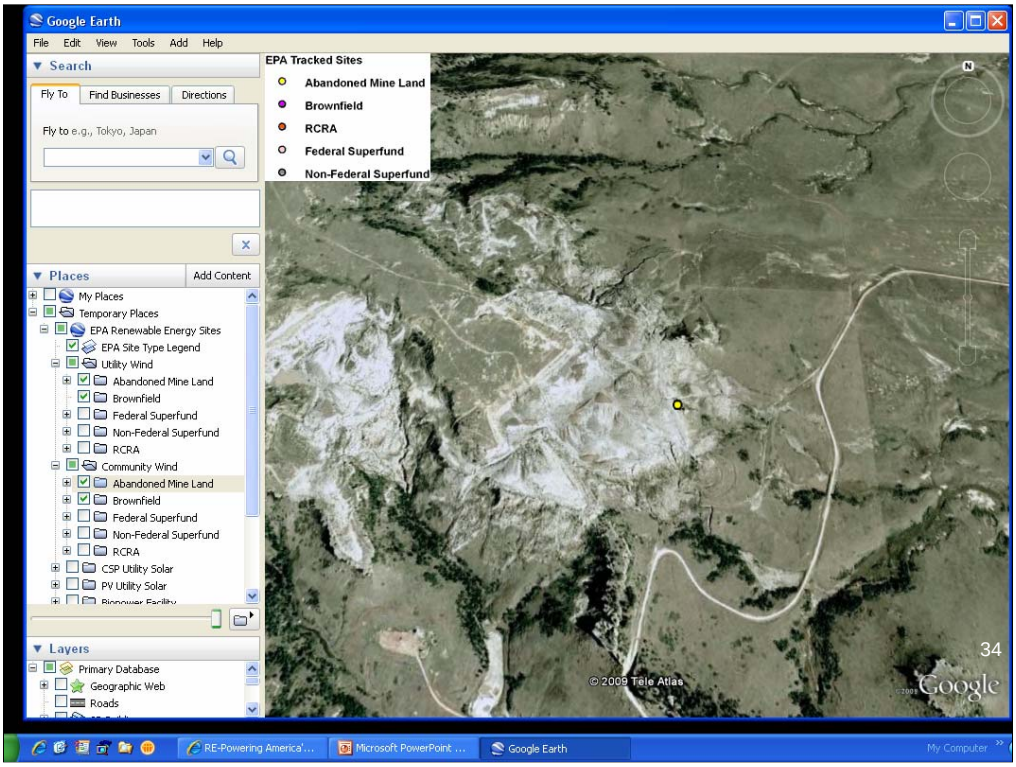
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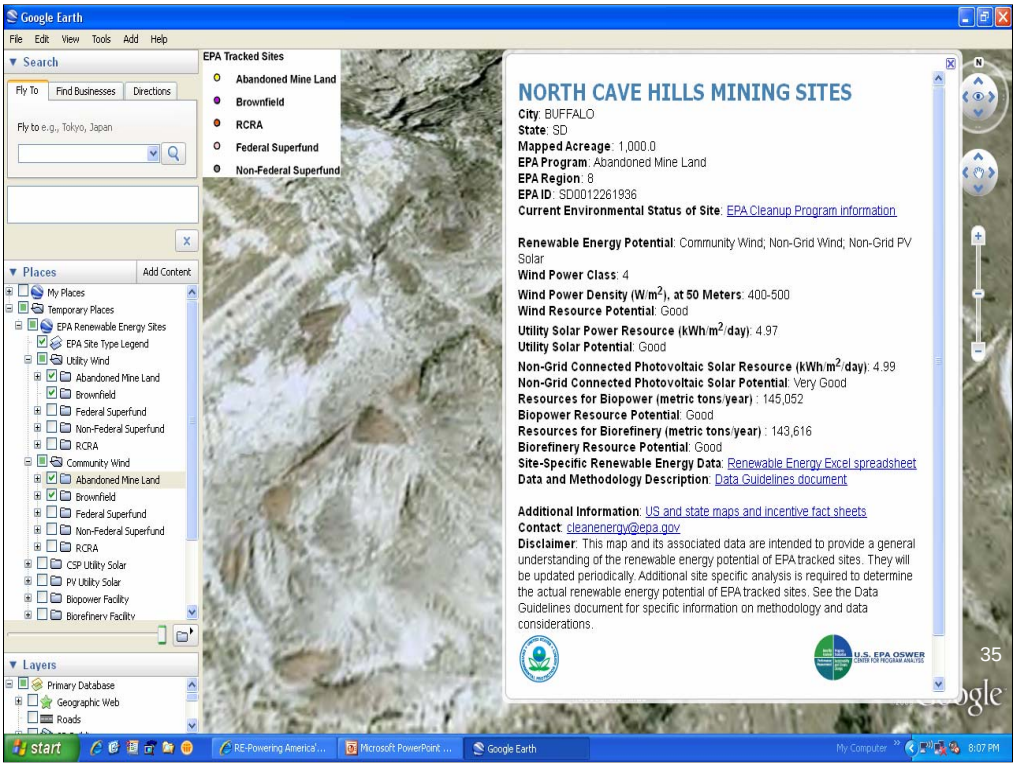
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Abandoned Mine Land
Brownfield
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Federal Superfund
Non-Federal Superfund
NORTH CAVE HILLS MINING SITES
City: BUFFALO
State: SD
Mapped Acreage: 1,000.0
EPA Program: Abandoned Mine Land
EPA Region: 8
EPA ID: SD0012261936
Current Environmental Status of Site: EPA Cleanup Program information
Renewable Energy Potential: Community Wind; Non-Grid Wind; Non-Grid PV Solar
Wind Power Class: 4
Wind Power Density (W/m2), at 50 Meters: 400-500
Wind Resource Potential: Good
Utility Solar Power Resource (kWh/m2/day): 4.97
Utility Solar Potential: Good
Non-Grid Connected Photovoltaic Solar Resource (kWh/m2/day): 4.99
Non-Grid Connected Photovoltaic Solar Potential: Very Good
Resources for Biopower (metric tons/year) : 145,052
Biopower Resource Potential: Good
Resources for Biorefinery (metric tons/year) : 143,616
Biorefinery Resource Potential: Good
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.
U.S. EPA OSWER
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# Incentive Fact Sheets

- **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, can 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

# Next Steps

- 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
- Stakeholder Meetings
  - Expand partnerships to promote renewable energy
  - Federal, State and Local Organizations, Industry, and Non-profits

# Next Steps Continued…

- Website Overhaul and Continuous Updates
  - Enhance Mapping Tools
    - Geothermal potential
    - Landfill methane sites
- EPA/DOE NREL Partnership
  - Interagency Agreement
  - Provide technical assistance and feasibility studies for specific sites

# More Information?

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

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

*THANK YOU!!*

# Thank You

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Links to Additional Resources

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