U.S. DEPARTMENT OF ENERGY

Energy Parks Initiative

"Leveraging Assets to increase the Taxpayer's Return on Investment"

October 21, 2009

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Deputy Assistant Secretary for Engineering & Technology

Energy, Environment & the Economy

"So we have a choice to make. We can remain one of the world's leading importers of foreign oil, or we can make the investments that would allow us to become the world's leading exporter of renewable energy. We can let climate change continue to go unchecked, or we can help stop it. We can let the jobs of tomorrow be created abroad, or we can create those jobs right here in America and lay the foundation for lasting prosperity."

- President Obama, March 19, 2009

Energy, Environment & the Economy

- Investing in the Clean Energy Jobs of the Future
  - Creating new Jobs in the Clean Energy Economy
  - Investing in the Next Generation of Energy Technologies
- Securing our Energy Future
  - Breaking Dependence on Oil
  - Producing More Energy at Home
  - Promoting Energy Efficiency
- Closing the Carbon Loophole and Cracking Down on Polluters
  - Closing the Carbon Loophole
  - Protecting American Consumers
  - Promoting U.S. Competitiveness
- American Recovery & Reinvestment Act
  - More than $60 billion in clean energy investments to jump-start our economy and build the clean energy jobs of tomorrow.

U.S. Department of Energy Secretary Steven Chu

Published: July 22, 2009

Cleaning Up: Energy and Climate Bill Will Boost the Economy

- The status quo on energy is unsustainable. Today, we import about 60 percent of the oil we use, which is a huge drain on our economy and which weakens our security. When we burn fossil fuels for energy, we emit enormous amounts of greenhouse gases, which have already begun to change our climate. Climate experts predict that, on our current course, the planet could be around 10 degrees Fahrenheit warmer by the end of this century. Such an increase could cause more frequent extreme weather events like droughts, heat waves, and hurricanes; rising sea levels and coastal erosion; serious agricultural losses and water shortages; and many other impacts in the United States.
- There is no question that our energy habits need to change. The only question is whether we can turn this energy challenge into an energy opportunity.
- Here is the future that I see. In the coming decades, the laws of supply and demand will almost certainly force oil and gas prices to rise. At the same time, the consequences of climate change will become so starkly apparent that continuing to emit carbon pollution at today's levels will be unacceptable. As a result, clean-energy technologies will be in high demand. Tens of thousands of windmills and solar panels will be manufactured and installed around the world. Consumers will demand more efficient vehicles, appliances, and buildings. There will be a race to produce the most advanced batteries and biofuels.
- We must ask ourselves: How does the United States want to position itself in this future world? When the great hockey player Wayne Gretzky was asked how he positions himself on the ice, he replied: "I skate to where the puck is going to be, not where it's been." America should do the same.

Energy Parks Initiative

A bold and innovative concept:

. . . to leverage assets and create opportunity to enable rapid development of energy-related facilities.

. . . particularly those with significant potential for sustained progress towards energy independence, regional economic vitality, national security, environmental sustainability, and other national concerns.

EM Mission

"Complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research."

- Largest environmental cleanup effort in the world, originally involving two million acres at 108 sites in 35 states
- Safely performing work
  - In challenging environments
  - Involving some of the most dangerous materials known to man
  - Solving highly complex technical problems with first-of-a-kind technologies
- Operating in the world's most complex regulatory environment
- Supporting other continuing DOE missions and stakeholder partnerships

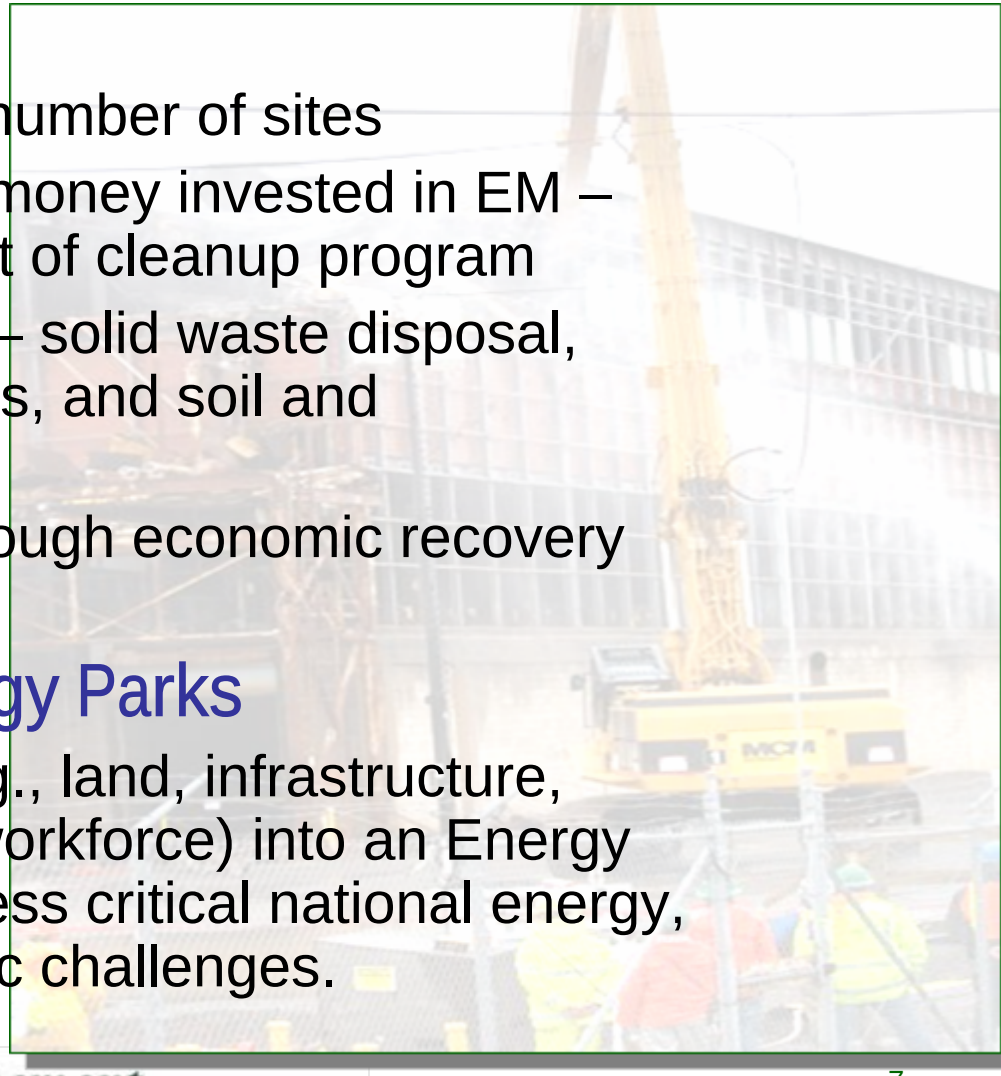
Vision - Footprint Reduction & Energy Parks

Footprint Reduction

- Reduce the active area and number of sites
- Provide maximum return on money invested in EM – reduces overall life-cycle cost of cleanup program
- Focus on proven successes – solid waste disposal, D&D of contaminated facilities, and soil and groundwater remediation
- Create thousands of jobs through economic recovery investment

Reutilization of Assets/Energy Parks

- Transform EM resources (e.g., land, infrastructure, technologies, highly-skilled workforce) into an Energy Parks Initiative (EPI) to address critical national energy, climate change and economic challenges.



Footprint Reduction & Energy Parks


One Hundred Eleventh Congress
of the
United States of America
AT THE FIRST SESSION
An Act

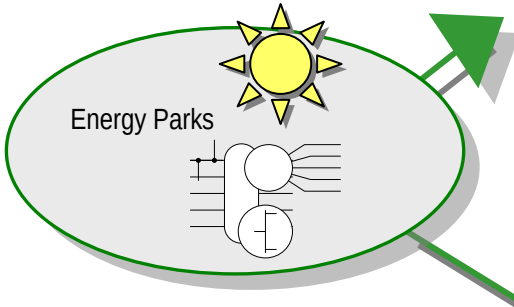
Recovery Act

Economic Stimulus

Office of Environmental Management (EM)

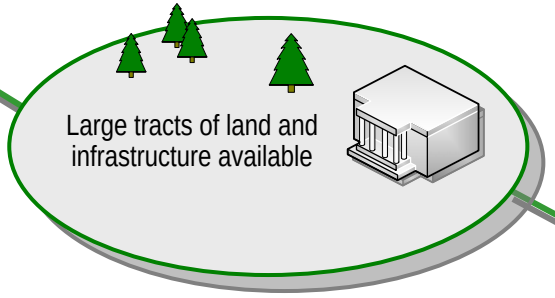
EM Footprint Reduction, small site completions, and other investment opportunities

- Jobs created
- Lifecycle cost reduced
- Environment protected
- Footprint reduced

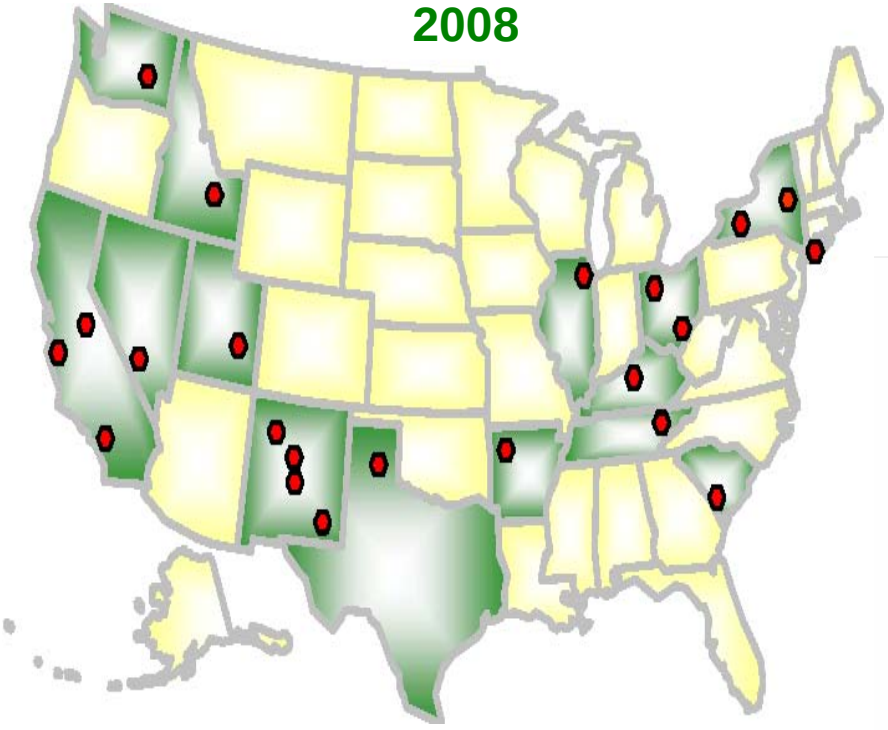


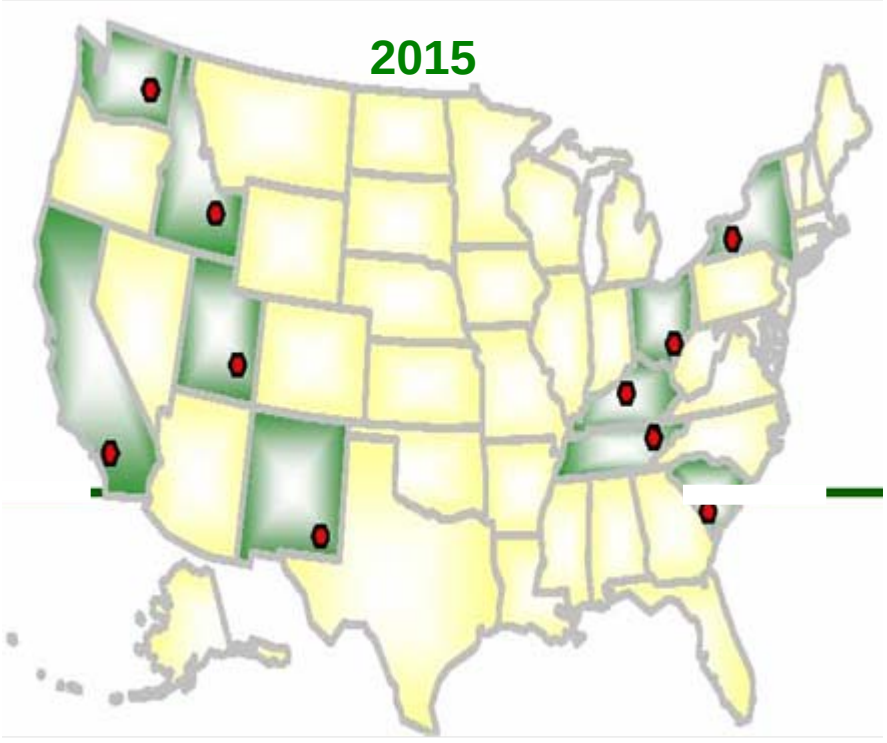
Clean, Diverse Energy Sources

- **Energy security**
- **Establish long-term site mission**
- **Sustainable jobs**

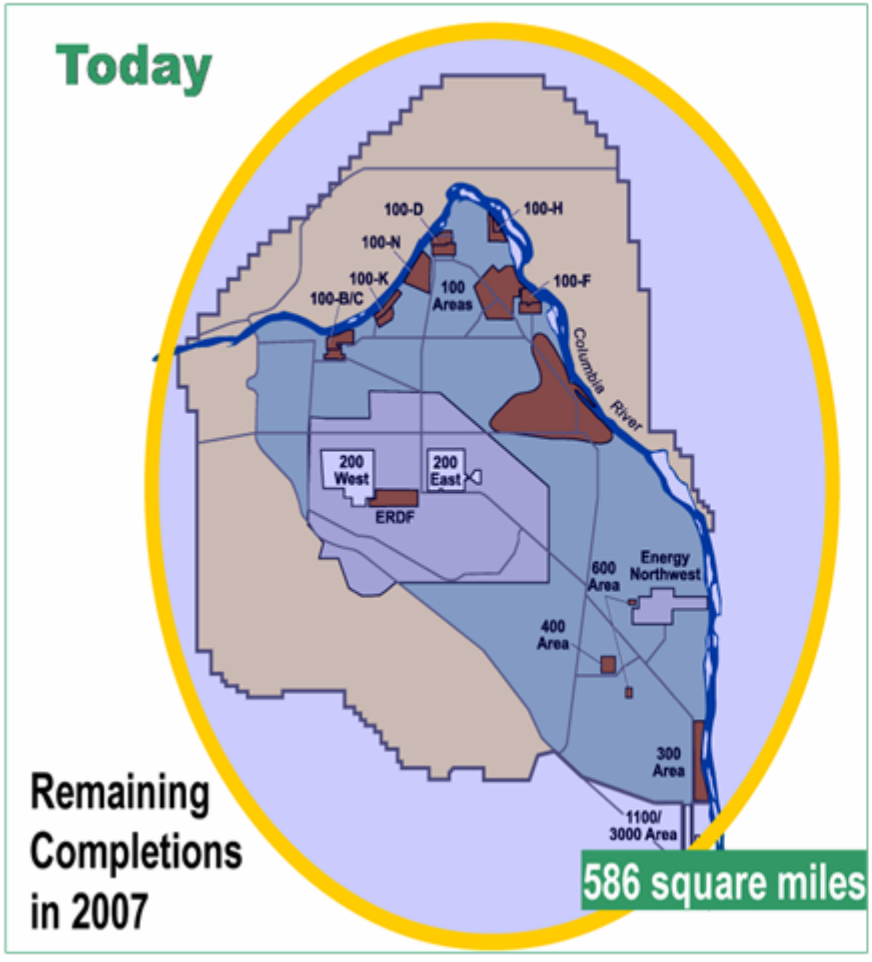


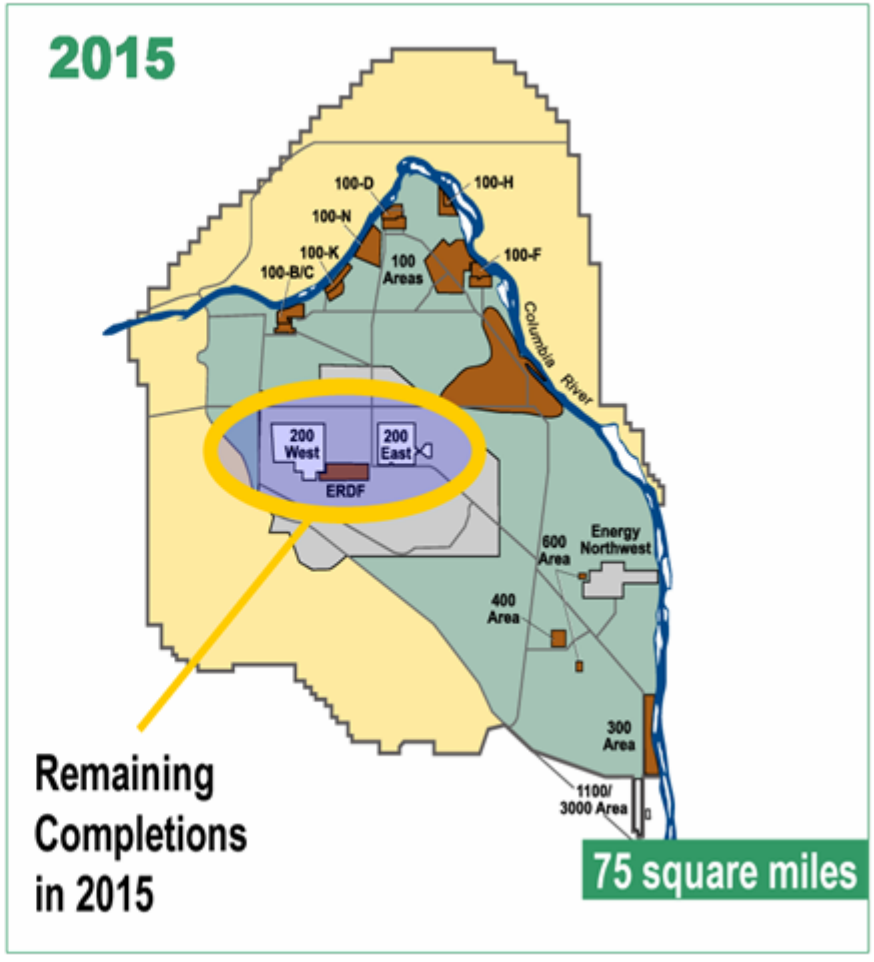
Sites with Active EM Programs



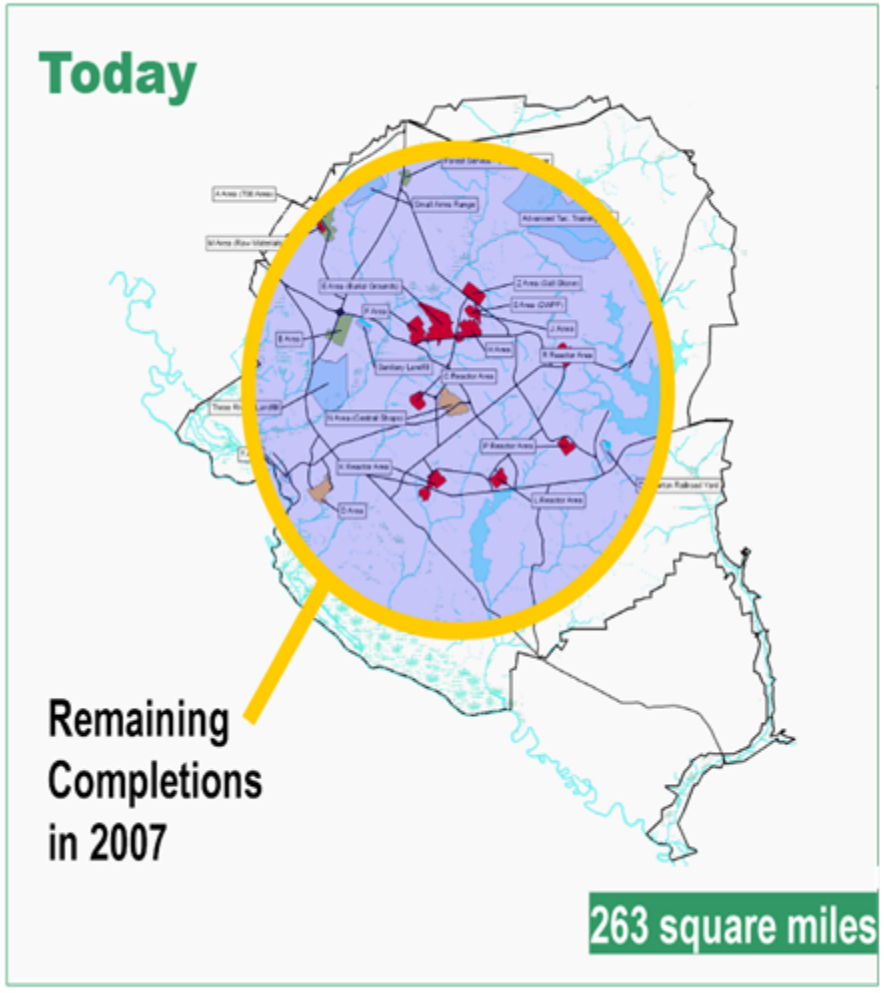


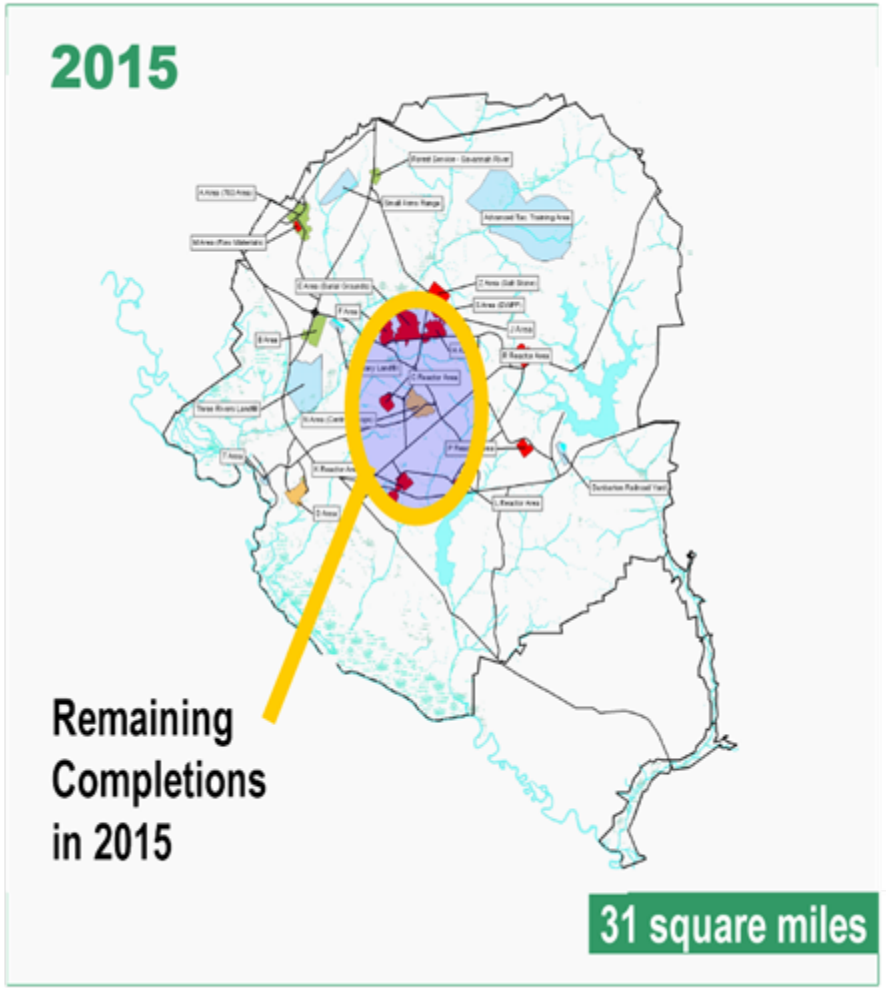
Hanford Footprint Reduction Proposal



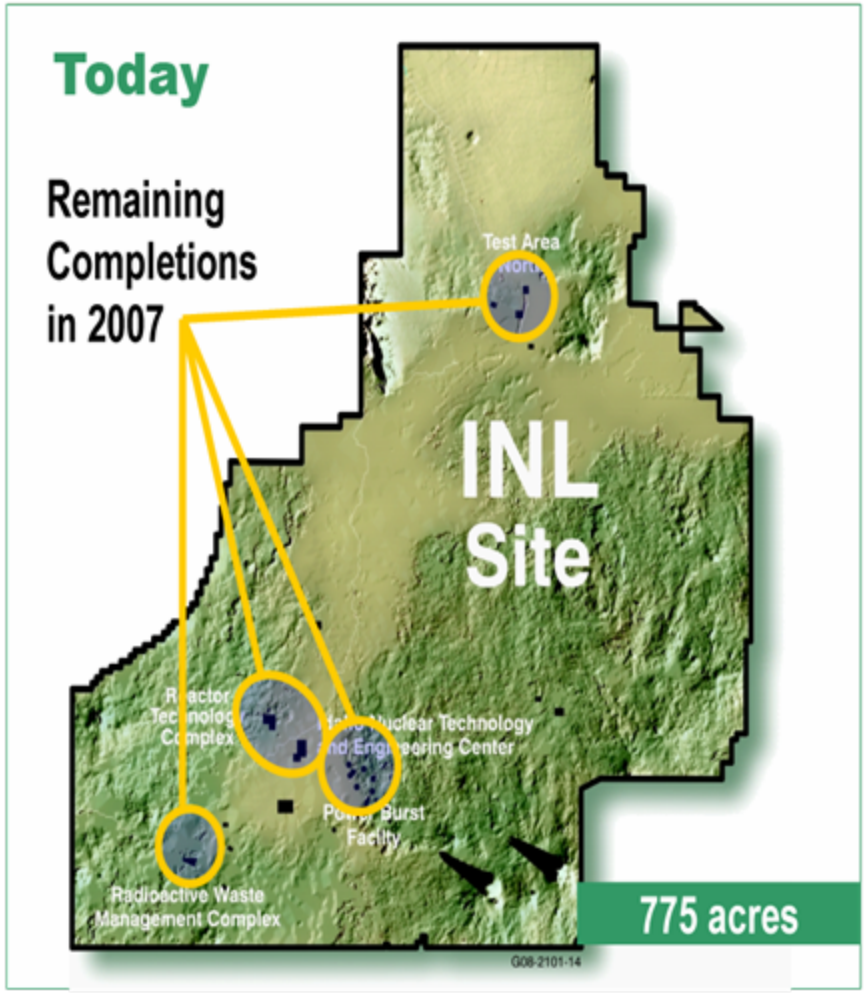


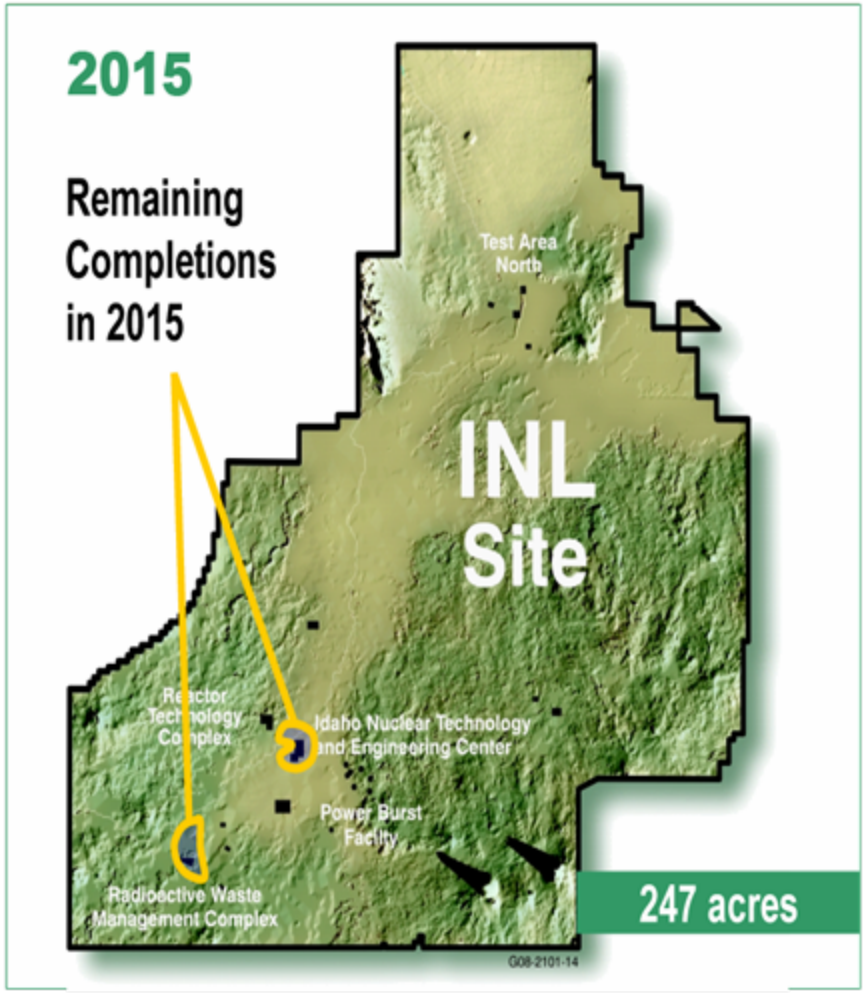
Savannah River Site Footprint Reduction Proposal





Idaho Footprint Reduction Proposal





Energy Parks Initiative: Kind of Assets

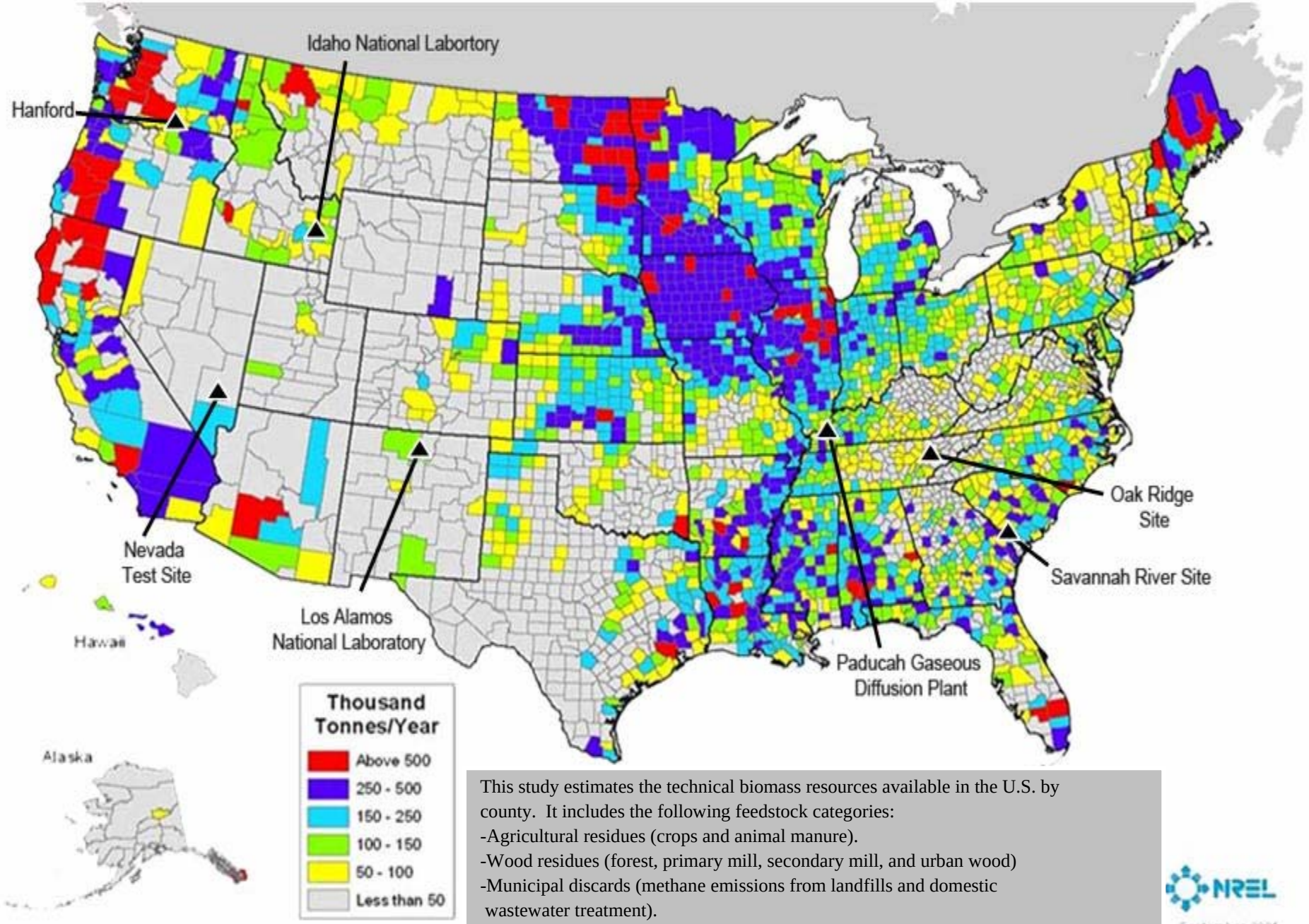
- ✓**Infrastructure** (roads, buildings, equipment, utilities, barge & rail access, transmission systems, and specialty features and capability)
- ✓**Natural Resources** (land, water, and renewable energy)
- ✓**Institutional Controls** (physical control, security, water rights, NPDES and other permits, buffer area, environmental & seismic characterization, and security)
- ✓**Human and Economic Capital** (knowledge of regulatory environment, highly trained workforce, transition to succeeding missions, and return of valuable assets to the local tax base)
- ✓**Diversity, Size, and Remoteness** (allows consideration of many uses, and protection of critical infrastructure)
- ✓**Applied Tools** (technology, loan guarantees, purchasing power)

Energy Parks Initiative: Technologies

Options include conventional & advanced energy technologies, such as:

- ✓ **Renewable energy: solar, wind, biomass, geothermal**
- ✓ **Fossil fuels: clean coal, gas turbines**
- ✓ **Electricity generation, transmission, distribution**
- ✓ **Hydrogen generation**
- ✓ **Emission controls, carbon sequestration**
- ✓ **Specialty manufacturing**
- ✓ **Nuclear: power, fuel cycle, waste management**

Biomass Resources



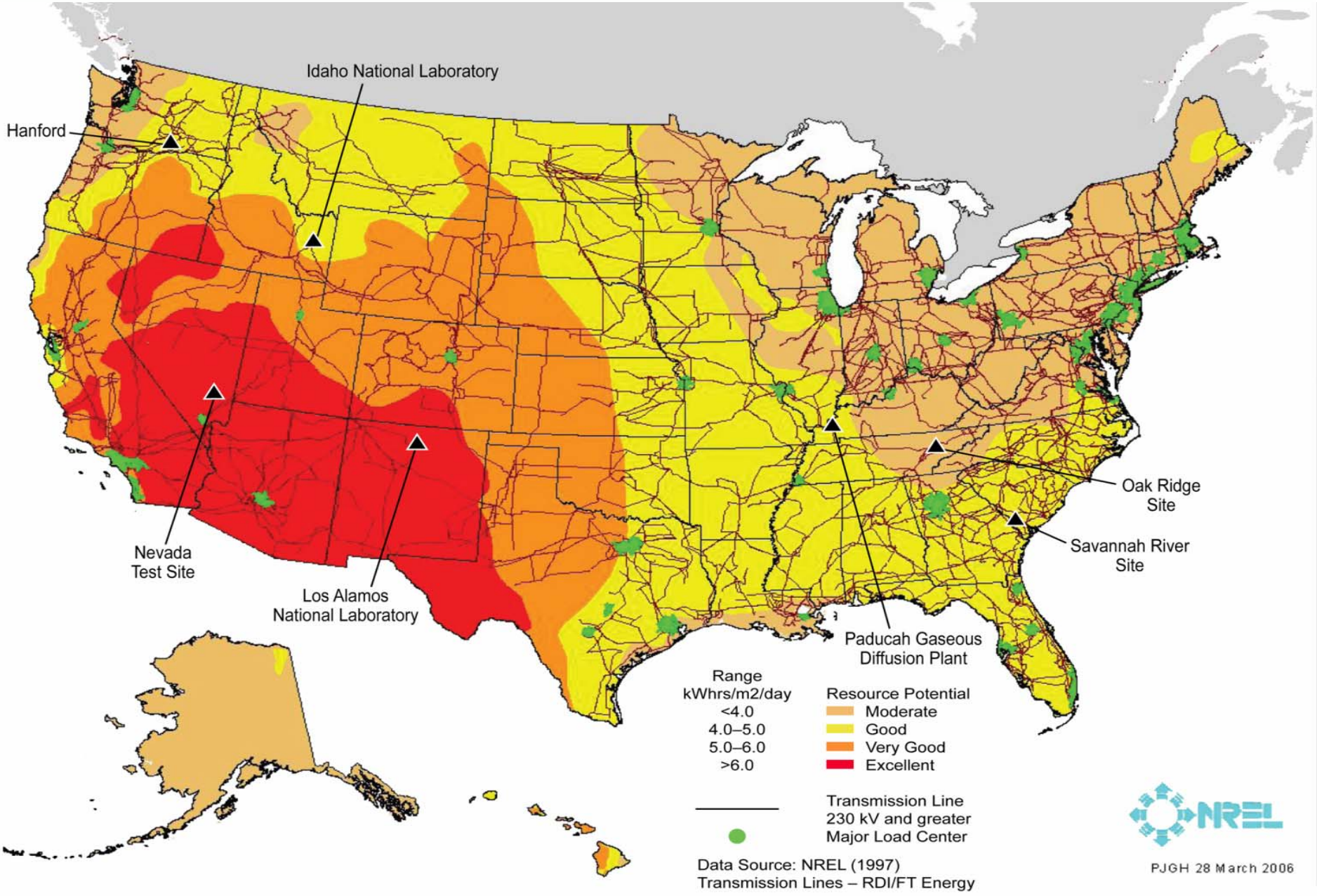
This study estimates the technical biomass resources available in the U.S. by county. It includes the following feedstock categories:

-Agricultural residues (crops and animal manure).

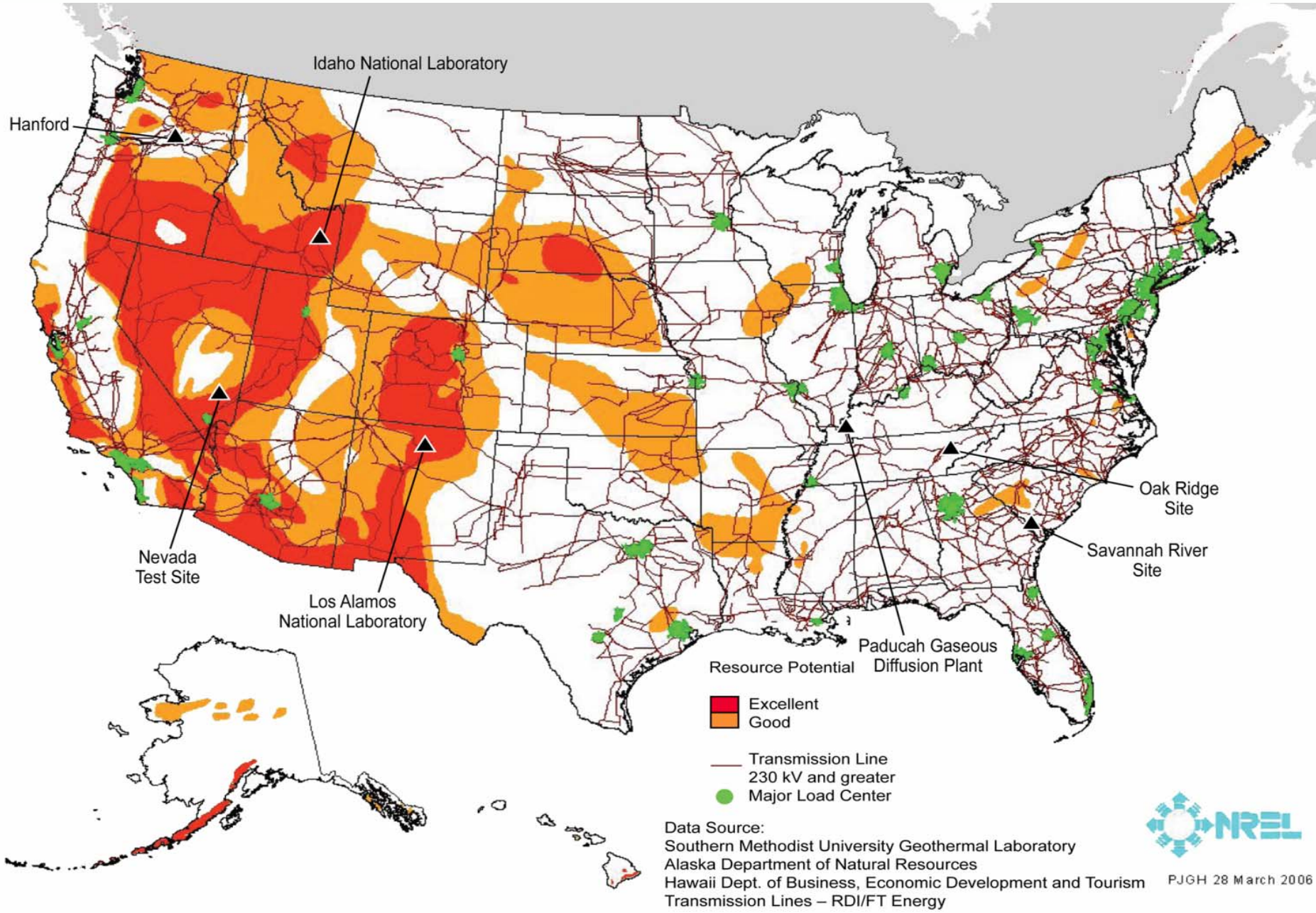
-Wood residues (forest, primary mill, secondary mill, and urban wood)

-Municipal discards (methane emissions from landfills and domestic wastewater treatment).

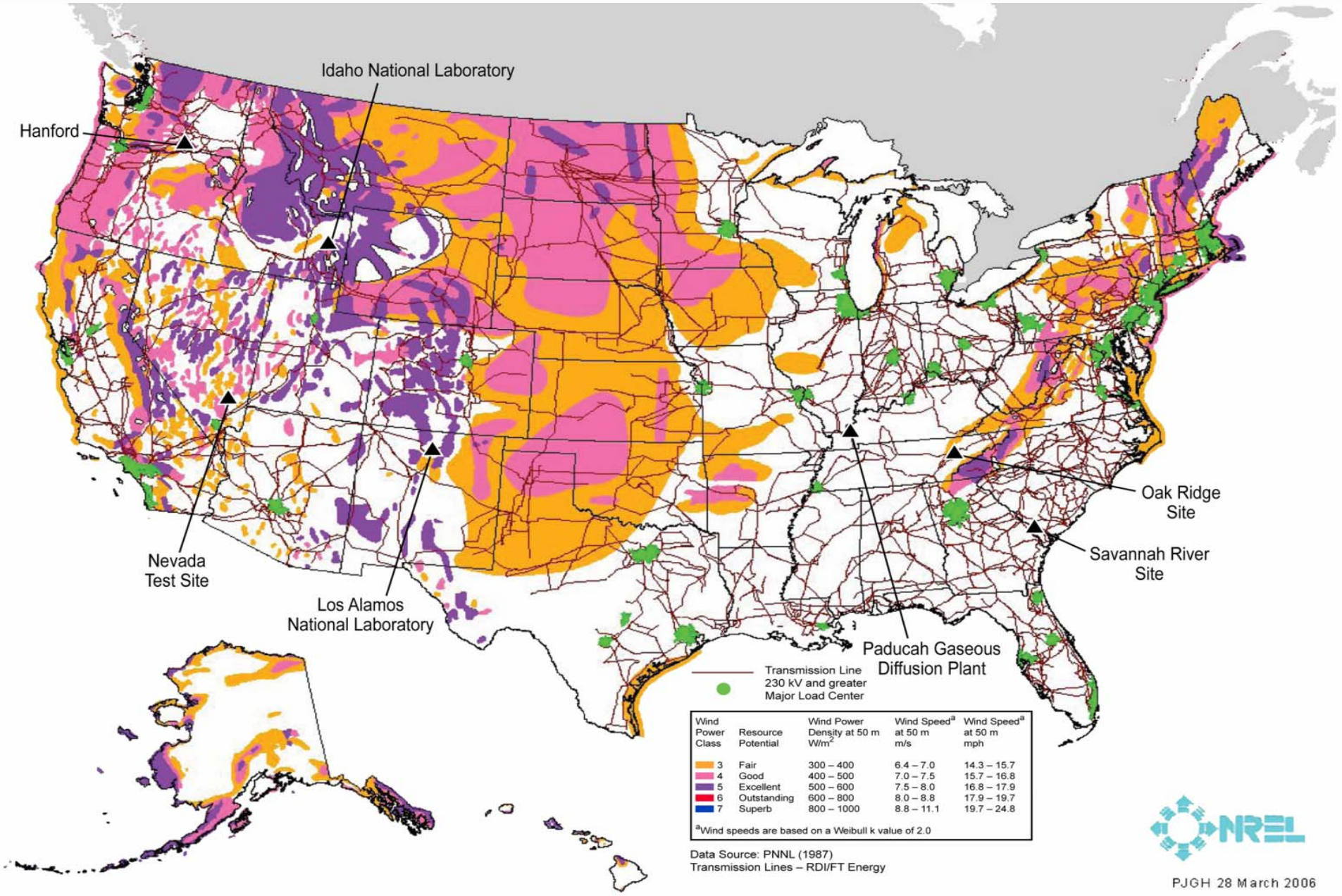
Solar Resources



Geothermal Resources



Wind Resources



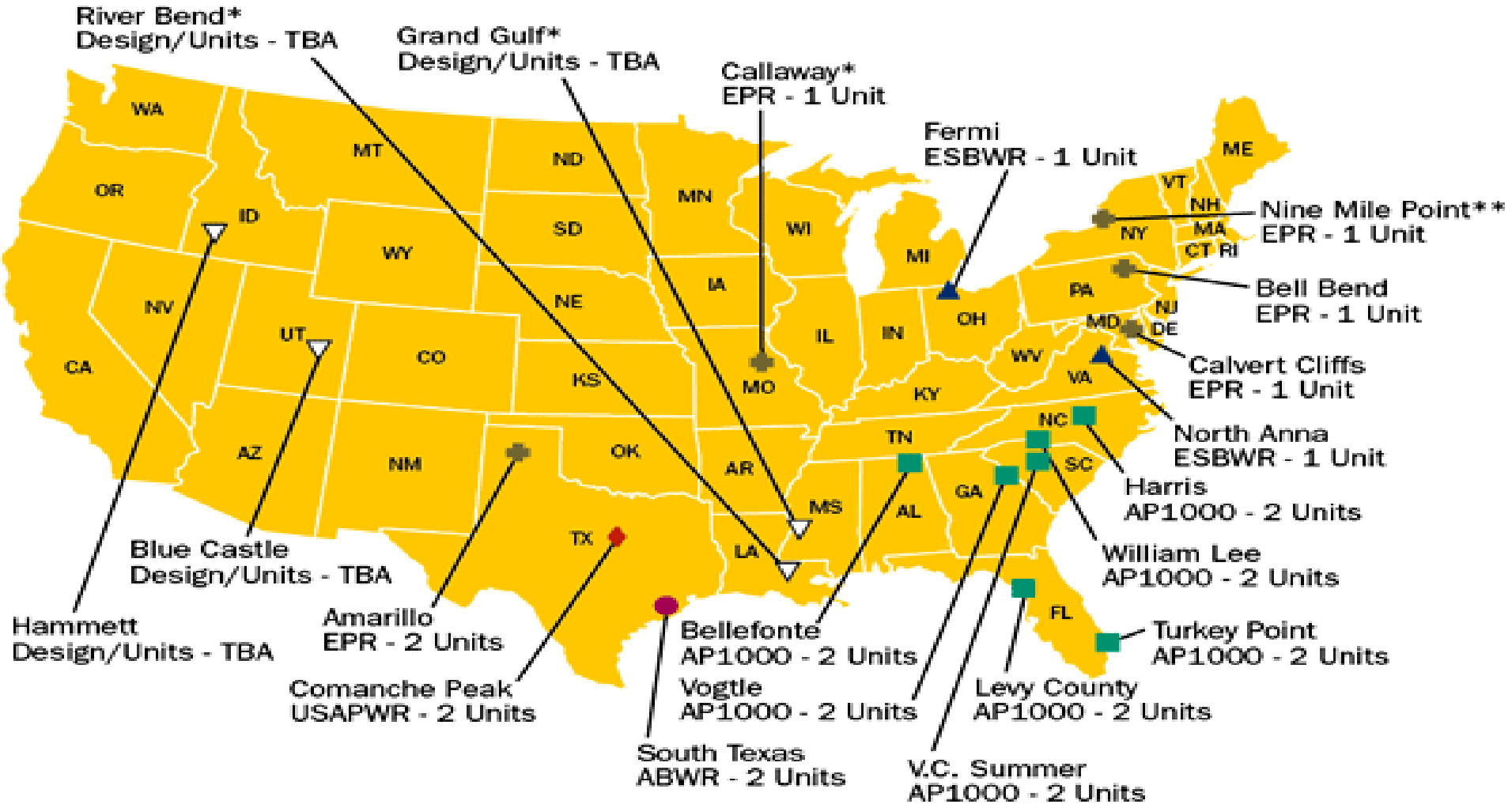
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m^2	Wind Speed[a] at 50 m m/s	Wind Speed[a] at 50 m mph
3	Fair	300 – 400	6.4 – 7.0	14.3 – 15.7
4	Good	400 – 500	7.0 – 7.5	15.7 – 16.8
5	Excellent	500 – 600	7.5 – 8.0	16.8 – 17.9
6	Outstanding	600 – 800	8.0 – 8.8	17.9 – 19.7
7	Superb	800 – 1000	8.8 – 11.1	19.7 – 24.8

[a]Wind speeds are based on a Weibull k value of 2.0

Data Source: PNNL (1987)
Transmission Lines – RDI/FT Energy

NREL

Location of Projected New Nuclear Power Reactors



You may click on a design name to view the NRC's Web site for the specific design.

ABWR | AP1000 | EPR | ESBWR | USAPWR | Design/Units - TBA

*Review Suspended

**Review Partially Suspended

Reutilization of Assets/Energy Parks

- EPI will convert EM liabilities (contaminated sites, facilities, and materials) into assets to solve critical national energy and climate change challenges.
- EPI can demonstrate effective partnering of DOE, other Federal agencies, private industry, state and local governments, local and regional communities, and stakeholders.
- EPI can preserve and enhance economies of regional and local host communities of DOE/EM sites with energy reindustrialization

EM's unique resources can be leveraged to address some of the Nation's energy security and climate change concerns

Recent & Upcoming Activities

Oak Ridge Workshop

Tennessee Valley Energy Enterprise – “Corridor Partnerships in Action“ - March 12, 2009 in Oak Ridge, TN

Energy Communities Alliance (ECA) Meeting

"Energy Parks Peer Exchange: The DOE EM Footprint Reduction Plan and Energy Parks Initiative“ – April 23-24, 2009 in Las Vegas, NV

Proposal from Southern Ohio Clean Energy Parks Alliance (SOCEPA) for Portsmouth Site – June 12, 2009

Mound Workshop

“Energy Roundtable and Exhibition” – June 26, 2009 in Miamisburg, OH

TRI-DEC Letter Supporting EPI and Proposing a Range of Energy Projects

Savannah River Site Workshop

“Energy Parks Initiative Workshop” tentatively scheduled for August 18, 2009 in Aiken or North Augusta, SC

BACK-UP SLIDES

SRS BIOMASS PLANT

- The new Biomass Cogeneration Facility has a design capacity of 240,000 pounds per hour (PPH) of steam and 20 megawatts (MW) of electric power which will replace the existing D-Area coal-fired cogeneration plant.
- The primary fuel source for all of the new boilers will be clean biomass and bio-derived fuels (BDF). The clean biomass consists of various types of forest residues, and the BDF consists primarily of scrapped vehicle tires.
- Key environmental benefits of the project include:
  - Over 2,000,000 MBtu/yr of thermal renewable energy production and a minimum generation of 77,000 mWh (264,444 MBtu) of green power.
  - Annual Energy Savings of approximately 500,000 MBtu/yr
  - No-cost Renewable Energy Credits (RECs)
  - Decrease of water intake from Savannah River by 1,412,000 kgal/yr supporting water conservation efforts in the regional drought situation.
  - Reduction of 400 tons/yr of Particulate matter (PM) emissions
  - Reduction of 3,500 tons/yr of Sulfur Dioxide (SO2) missions
  - Reduction of 100,000 tons/yr of Carbon Dioxide (CO2) emissions
  - Support of the South Carolina Biomass Council Goals