Brown to Green
Brownfields Redevelopment for Green Power

New Mexico Progress & Case Studies

Wednesday, April 22, 2009
Today’s Topics

- New Mexico Background
  - Contaminated lands
  - Redevelopment experience
  - Renewable energy resources

- Emerging Brown-to-Green Opportunities
  - Mine site ➔ Chevron Molybdenum Mine
  - Trading post ➔ Santo Domingo Pueblo
  - Other potential sites

- Brown-to-Green Guidelines
New Mexico Background

- Rich in natural resources with long history of development
- An energy provider/exporter
- Oil, natural gas, and electricity
- Strong & balanced regulation of extractive industries
- Extractive industries are important to New Mexico’s economy
- Environmental impacts must be contained
New Mexico

Oil & Gas Development

- **Green** is oil
- **Red** is gas
- **Yellow** is oil & gas
New Mexico

Mining Development

Black is coal mines
Blue is metal mines
Purple is industrial minerals
Yellow is aggregate & stone
New Mexico—Mine “Brownfields”

Before (2003)

Reclamation of coal mine, near Raton

After (2008)
New Mexico—"Brownfields" Re-use

Coal mine shop facility, near Raton
Experience in redeveloping brownfields
Avoid energy development on sensitive lands
Avoid environmental & wildlife impacts
Transmission corridor development is key area
New Mexico = Clean Energy State
Excellent renewable resources
Governor Richardson’s clean energy policies
Renewable Portfolio Standard
Production Tax Credit
Renewable Energy Transmission Authority
Renewable Portfolio Standards

- New Mexico’s Renewable Portfolio Standards—requires major utilities to produce 15 percent of their power from renewable resources by 2015 and 20 percent by 2020.
- NM Public Regulation Commission “solar carve-out”—requires a minimum of 20% of a utility’s renewable energy supply mix to be solar.
New Mexico Renewable Energy Resources

- Solar: 2\textsuperscript{nd} in potential
- “World Class” wind on NM’s Eastern Plains
- Geothermal: 7\textsuperscript{th} in potential
- Biomass (forest material and dairy/feedlot wastes)
- New Mexico has in excess of 10,000 MW of renewable energy generation resources
Renewable Resources

New Mexico
The New Mexico Wind Energy Center

Located near Fort Sumner; built by Florida Power & Light.
Solar Opportunities

Solar PV Power Plant in Southern Colorado

Solar Thermal Power Plant in southern California
Geothermal

- Potential may be huge
- Relatively small “footprint”
- Water impacts and siting in sensitive areas is an issue → Valles Caldera in NM
- Use previously disturbed lands instead
Emerging Brown-to-Green Opportunities
Chevron Molybdenum Mine

- The Mine—
  - Northern NM: Village of Questa
  - In operation almost 100 years
  - Large tailing impoundment

- Chevron—
  - Evaluating ~40 concentrating solar photovoltaic technologies
  - Self-financing being pursued
  - Site PV system on oldest tailing
  - Comply with state requirements for operating and closure plans
Santo Domingo Pueblo

- Trading Post redevelopment potential—
  - Historic site – 1880s building (2000 fire)
  - Biodiesel commuter rail – depot planned
  - Wood processing site – contamination known
  - Inactive landfill (site for solar PV???)
  - Electrical substation – serves entire Pueblo

- The Pueblo—
  - Non-gambling tribe
  - Sustainability plan established
  - Solar feasibility study – NREL-Sandia Labs
Santo Domingo Pueblo, NM
Other Potential Sites - Solar

- NASA Jet Fuel Testing Site
  - Southern NM, near Las Cruces
  - Long-term electricity needs – pump & treat
  - NMSU feasibility studies – wind and solar PV

- Freeport McMoRan copper mines (Phelps Dodge)
  - Southern NM, near Silver City
  - thousands of acres – tailing & waste piles
  - excellent solar resources
Other Potential Sites - Biogas

- Dairy manure to biogas
  - So. NM, near Roswell (Pecos Valley Biomass Co-op)
  - Energy Innovation Fund – anaerobic digester process
  - Address manure storage and water quality issues
  - Proposed production tax credit - $2.92/MMBtu
  - ~1,000,000 MMBtu per year estimated production

- City of Santa Fe, wastewater treatment
  - Northern NM, Santa Fe
  - Clean Energy Project – sample biogas, implement
  - Use biogas byproduct for process heat needs
Brown-to-Green Guidelines

- Collaboration – New Mexico, NREL, EPA
- Avoid greenfields – sensitive environmental/wildlife issues
- Reduce renewable energy development costs
- Use existing transmission infrastructure
- Green jobs in rural areas
- Large contaminated areas ➔ SOLAR
- To be completed 2009
Brown to Green

Thanks for your attention!