

# The New Mexico Green Grid Initiative

*New Mexico and Japan Working Together*

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*(On assignment from Los Alamos National Laboratory)*

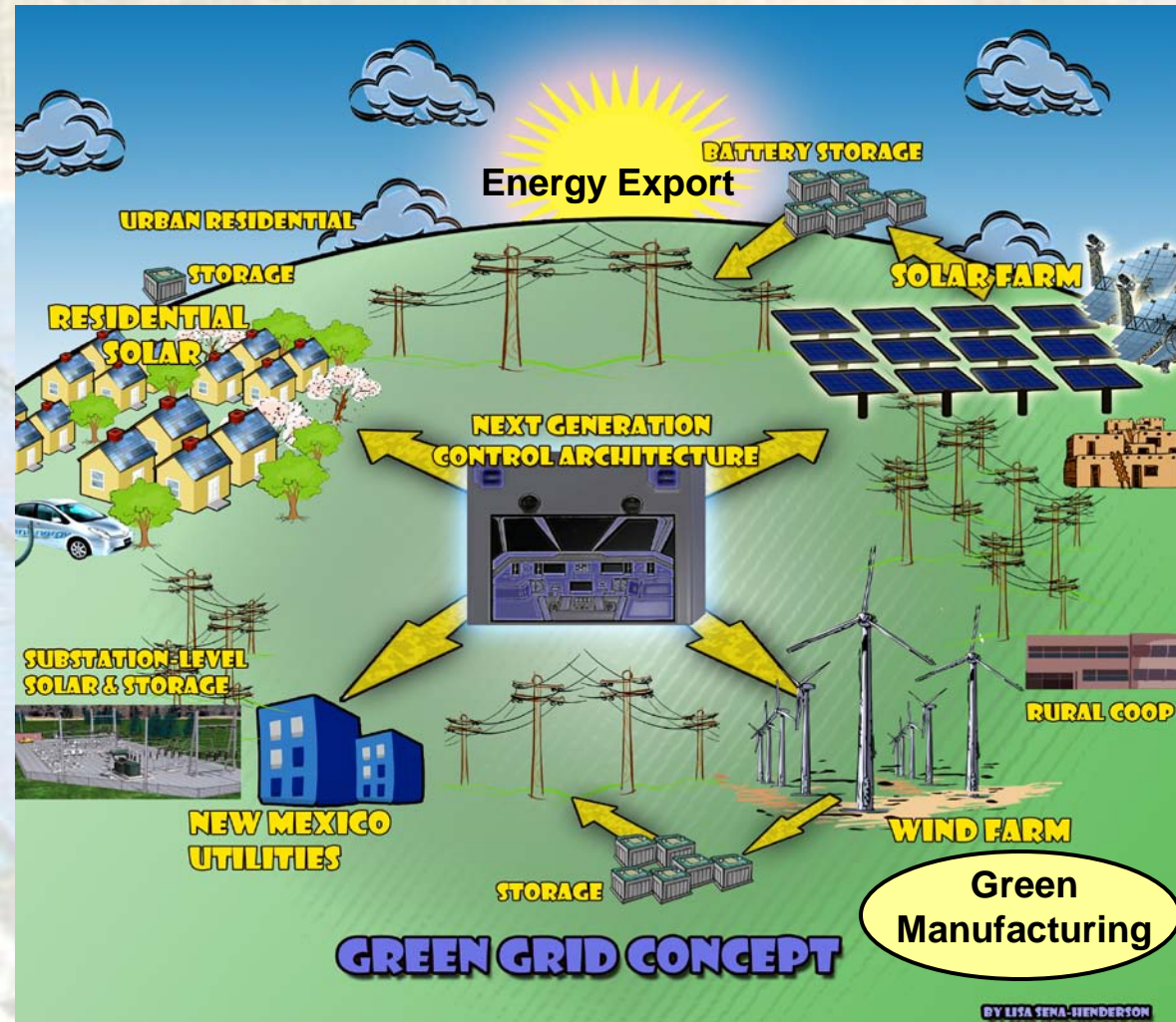
*Gridweek International Symposium*  
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# New Mexico Green Grid Initiative

NM Green Grid: 100% smart grid with as much clean and renewable energy as current fossil energy

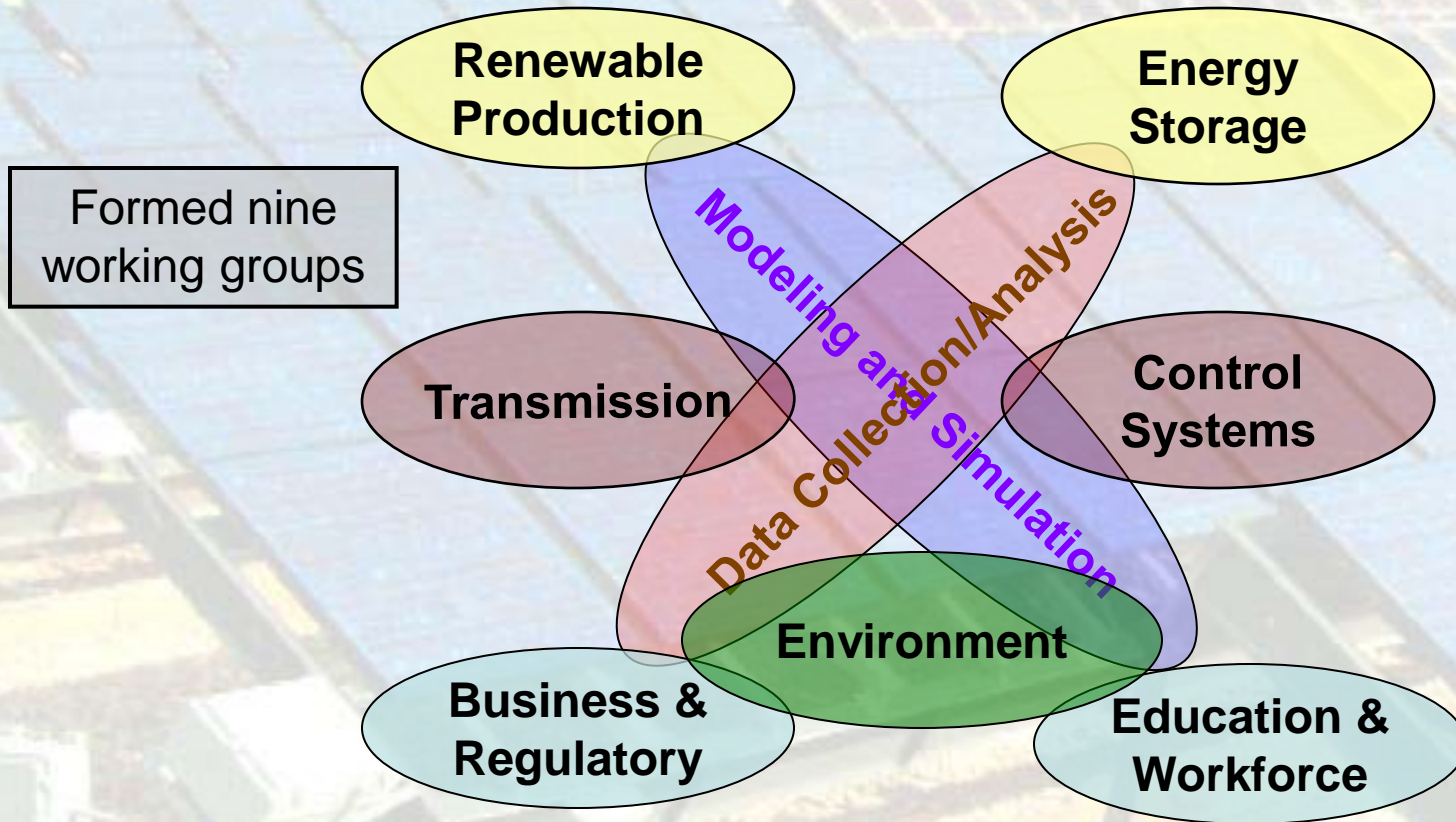
The New Mexico Green Grid Initiative was formed in August 2008 to make New Mexico the first state with a Green Grid



**Goal: High penetration of renewables into the smart grid**

# Green Grid Goal

Demonstrate to business and venture capital firms that risks are understood and that it is possible (and profitable) to build out a statewide green grid



*Providing a fully integrated approach*



# Green Grid Partners

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## PARTNERS

[New Mexico Computing Applications Center](#)

[New Energy and Industrial Technology Development Organization \(NEDO\) of Japan](#)

[CH2MHill, Intel, New Mexico State University](#)

[Los Alamos National Laboratory, Sandia National Laboratories](#)

[Kit Carson Electric Cooperative](#)

[Los Alamos County Department of Public Utilities](#)

[Roosevelt County Electric Cooperative](#)

## PARTICIPANTS

NM Economic Development Dept

NM Research Applications Center

NM Energy, Minerals & Natural Resources Dept

NM Public Regulation Commission

NM Renewable Energy Transmission Authority

New Mexico Institute of Mining and Technology

University of New Mexico, Mesa del Sol

El Paso Electric Company, Public Service Company of New Mexico

Galvin Electricity Initiative, General Motors, Hunt Energy

Schweitzer Engineering Laboratories, Siemens

Viridity Energy, Whirlpool



# NM Green Grid Sites

## Los Alamos

Suburban w national lab;  
hi elevation mountainous terrain;  
Municipal Utility: residential use  
of fossil and hydro;  
Smart grid with > 30% solar and  
storage; smart grid model home.

## Mesa del Sol (Albuquerque)

Largest NM urban center;  
hi elevation semi-arid desert;  
State's largest IOU; average  
commercial demand; mostly  
fossil fuel generation;  
Site Objectives: Energy efficient  
buildings, smart grid with  
30-100% solar PV and storage.

## NMSU / Las Cruces

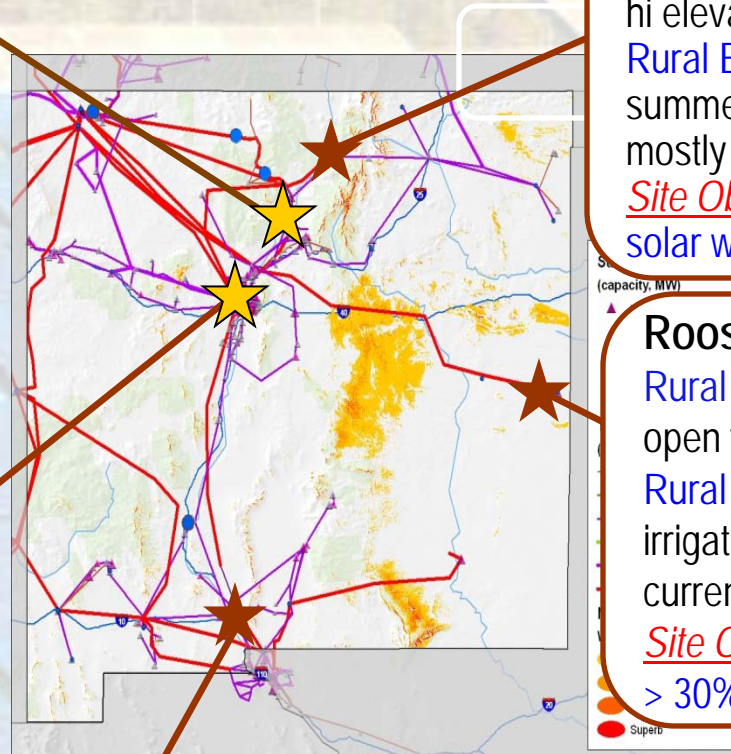
University campus; semi-arid desert;  
University-owned/operated utility with IOU provider;  
summer cooling demand; currently nuclear and fossil;  
Site Objectives: smart grid w advanced controls.

## Taos / Taos Pueblo

Rural county and Pueblo;  
hi elevation mountainous terrain  
Rural Electric Cooperative Utility;  
summer cooling/winter heating;  
mostly fossil generation;  
Site Objectives: smart grid with > 30%  
solar with 10 MW PV and storage.

## Roosevelt County

Rural agrarian community;  
open flat plains;  
Rural Electric Cooperative Utility;  
irrigation water pumping demand;  
currently mix of fossil and wind;  
Site Objectives: smart grid with  
> 30% wind/pumped water storage.



★ NEDO Sites



# Statewide Aspects

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- **Interoperability** - very important in the Request for Proposals
  - Requires a range of technical solutions that can be evaluated
  - A variety of technologies will be required to meet needs at different sites
- **Cybersecurity** - very important in the Request for Proposals
  - Requires a variety of approaches to hardware and software
  - Los Alamos and Sandia National Laboratories have unique capabilities
  - Strong interest in commercializing the technical solutions developed
- **Data Analysis** - coordinated with NEDO and project sites
  - Required to measure grid performance:
    - stability, reliability, cost performance, ...
  - Required to determine consumer engagement:
    - time-of-day pricing, use of energy management systems, ...
- **Modeling and Simulation** - requires new development
  - Development of new algorithms to incorporate distributed generation
  - Ability to scale demonstration project to regional initiative
  - Los Alamos and Sandia have very strong capabilities



# Green Grid Return on Investment

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- Will help consumers with energy costs:
  - *Reduce peak energy generation by 25% by 2025*
  - *Reduce per capita energy usage by 6%*
  - *Up to 50% penetration of renewables*
  - *15 - 25% increase in grid reliability*
  - *25% reduction in the state's carbon footprint*
- Provide clean, secure energy for New Mexico
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  - *Export of renewable energy to other states*
  - *Potential incubator/attractor for manufacturers of Green Grid technologies*
  - *Positions NM with business and industry when carbon taxes become a deciding factor in locating facilities*



# Conclusions

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New Mexico has many of the necessary characteristics to develop and implement the next-generation Green Grid.

– *A partnership with Japan allows us to cover all areas needed for the Green Grid*

The American Recovery and Reinvestment Act provides a tremendous jumpstart for the NM Green Grid Initiative

– *This is the start of a longer-term effort to make New Mexico the first state with a full Green Grid*

We have a great opportunity by partnering with our Japanese colleagues to create a leadership position in the Green Grid

