



<http://energy.state.nv.us/>

**Developing Nevada's Renewable Energy Resources
September 18, 2008
JMAC Meeting**

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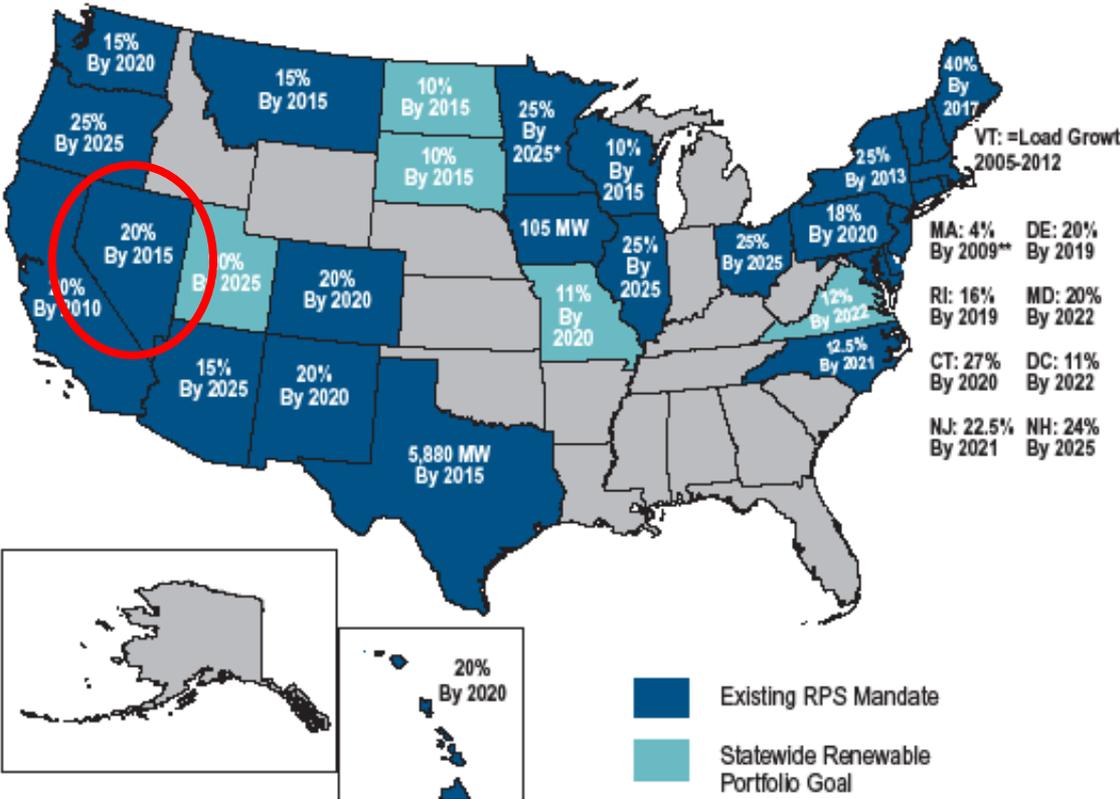
Renewable Energy Development

- Demand (Energy Independence, Going Green, Reducing GHG-e)
- Supply
 - Resources
 - Affordable (\$\$\$)
 - Efficient and cost effective technology – capital cost
 - Incentives (federal and state) – capital and operational cost
 - Delivery
 - Infrastructure (transmission)
 - Timely (permitting)

Nevada's Facts

- Growing State
- Net energy importer (Total = \$11.34 Billion)
- Purchase ~45% of electricity from other states
- No coal, no natural gas, almost no oil, no nuclear
- ~86% of land are federal land
- Two climate zones
- **Renewable resources**
- **Proactive elected officials**
 - **Mandates** (RPS – 20% by 2015, home energy rating, energy efficiency standards for lights)
 - **Incentives** (business and renewable energy tax incentives, green building tax abatement for commercial properties, demand side programs)
 - **Governor's Executive orders** (renewable energy development)
 - **Local policies**

State Renewable Portfolio Standards Programs



Nevada RPS: 20% by 2015

- At least 5% from solar
- Energy efficiency up to 25%

Governor's Energy Executive Orders

1. Streamlining the permitting process for renewable energy projects – Feb 16, 2007
2. Nevada Climate Change Advisory Committee – April 10, 2007
3. **Renewable Energy Transmission Access Advisory Committee (RETAAC)**
 - Phase 1- May 9, 2007
 - Phase 2 – June 12, 2008

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The Purpose Of The RETAAC Phase I Committee

1. Identify commercially developable locations for renewable energy, rank them based on size and viability and compare them to Nevada's energy needs and demand,
2. Assess existing and planned transmission access to these resources, and
3. Make recommendations for additional transmission lines.

RETAAC Committee Structure

14 voting members representing state and regulatory agencies, utility, and renewable energy developers. It is chaired by Dan Schochet (ORMAT).

This committee created 7 subgroups involved **46 additional contributors**

- Geothermal
- Solar
- Wind
- Biomass
- Transmission Recommendations and mapping
- Environmental, Wild Life, and Permitting
- Report preparation

Generation of Resource Maps

- In 2006, Nevada Commission on Mineral Resources
 - Maps for Mineral and energy development in Nevada
- In 2007, Senator Reid convened a meeting with Federal and State Agencies, Assembly Speaker Buckley, Senator Townsend, Governor's Energy Advisor, State Renewable Energy Task Force, and many other stake holders
 - Develop the set of maps of Nevada's developable renewable energy resources
 - Four maps of state geothermal, solar, and biomass resources (high, medium, low)
- Governor's RETAAC Phase I committee funded these maps through the State Division of Minerals and Vice chair of the Committee (Christy Morris) coordinated the map development efforts
- Significant contributors were USGS, NBMG, GBC, BLM, USFS, Naval Air System Commands, National Geospatial Intelligence Agency, Airforce

<http://www.unr.edu/Geothermal/Renewables.htm>

RETAAC Phase I Defined Energy Zones (medium to high potential)

- **Twelve wind zones,**
- **Four solar zones,**
- **Six geothermal zones, and**
- **Four biomass zones**

Transmission Subgroup

- **Proposed new transmission paths which could access priority renewable energy zones,**
- **Eliminated zones which had existing transmission access from consideration**
- **Considered existing transmission from 230 kV to 500 kV (though some projects could utilize lower capacity lines)**
- **13 needed inter-connections identified (excluding the proposed north-south transmission lines)**

Figure 1

Environmental Subgroup

- **Examined constraints for ROW for new transmission**
- **Constraints based upon land use, environmental issues and military interference**
- **Information from land management and environmental agencies provided in GIS format**
- **Renewable energy zones and proposed transmission interconnects overlain on constraints map**

Figure 2 and Figure 3

RETAAC Phase I Final Report

- **Report recommends new transmission to access renewable energy zones**
- **Report does not address transmission line construction funding and recommends this be addressed in a Phase II**
- **Report assumes developers will need to fund interconnect lines up to 25 miles from their project site**

Typical Nevada Project Developer's Interconnection and Radial Line Cost

Interconnection with 25 Miles of new 120kV radial line

Communications equipment / installation	\$ 75,000
Generator metering	95,000
ROW Permitting & Acquisition	2,000,000
25 miles of new single circuit 120kV T line	8,600,000
Sub station & Protection 120kV Terminal	800,000
Additional Relays	30,000
SUBTOTAL	<u>\$ 11,600,000</u>

Committee Recommendations

Recommendation #1

The Governor's Office should support the construction of transmission lines and collector systems to enable access for renewable energy development in each of the identified Renewable Energy Zones.

- There are renewable energy zones that have enough resource density to require transmission lines and collector systems.**
- The collector systems should be located, where feasible, within 25 miles of sites within zone,**
- Allowing developers to build their own radial line to the collector system.**

Recommendation #2

The Governor's Office support the construction of a transmission line to connect the state's northern and southern electric grids of sufficient capacity to provide Nevada Power with their non solar renewable energy requirements from the abundant geothermal and wind resources in northern Nevada and provide Sierra Pacific Power access to the abundant solar resources in southern Nevada.

Recommendation #3

Initiate Phase II of the RETAAC to define the environmental and physical feasibility issues, costs and potential financing mechanisms associated with the recommended transmission routes beginning.

- **Further study of the identified renewable energy zones capability**
- **Further study of constraints to building proposed transmission**
- **Further study of cost and financing vehicles**
- **Analyze information for a cost-benefit analysis and prioritization of the thirteen proposed transmission lines**

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RETAAC Phase II

- **Determining the capacity of renewable energy zones**
- **Environmental and Land Use ROW Feasibility Issues**
- **Developing Cost Estimates to Construct New Transmission**
- **Non Rate Based Financing Mechanisms**
- **Developing Overall Feasibility Criteria**