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The way forward: A vision for Nevada's energy future

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The Way Forward

A Vision for Nevada's Energy Future



Thomas R. Fair

Vice President Renewable Energy, NV Energy

Presented to: UNLV Renewable Energy Symposium

June 10, 2009

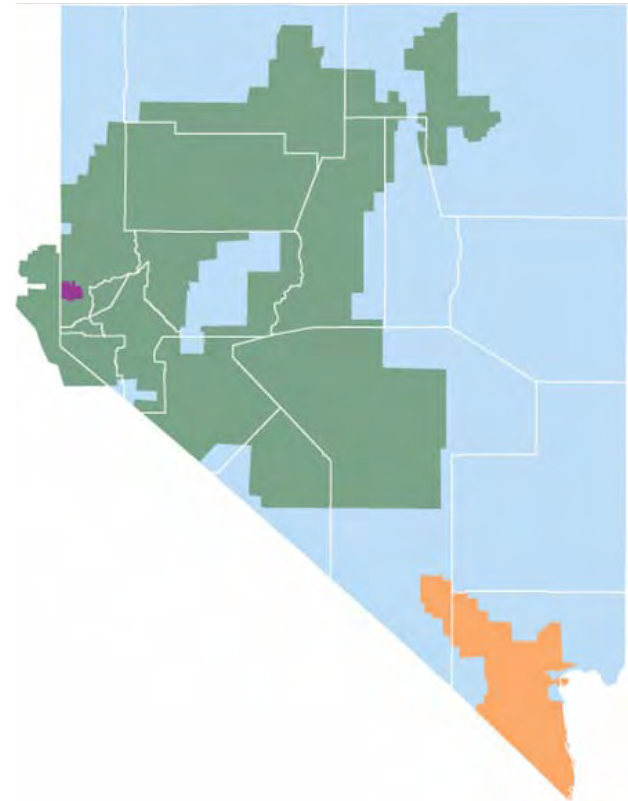
NV Energy, Inc.

❖ Ticker symbol “NVE”



NV Energy

- ❖ Consolidated as single brand
- ❖ Serves 2.4 million Nevadans
- ❖ A Vision for Our Energy Future



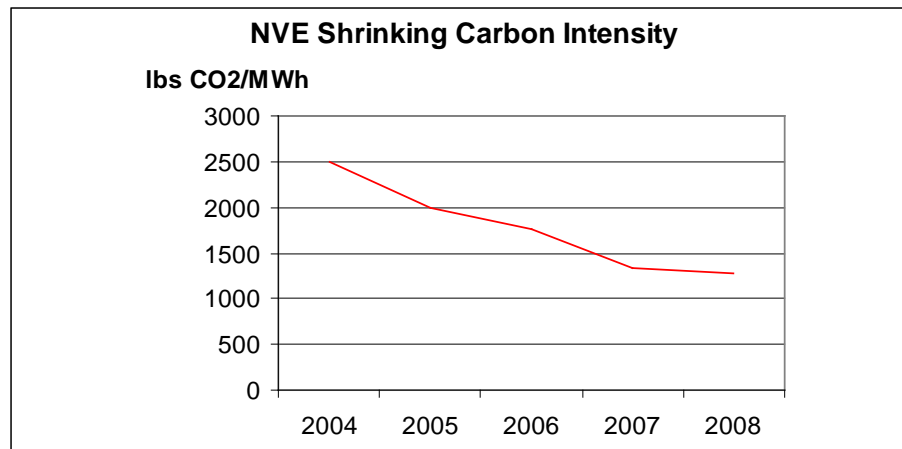
Three Part Energy Strategy

- ❖ Increasing investments in energy efficiency & conservation
- ❖ Expanding renewable energy initiatives & investments
- ❖ Adding highly efficient dispatchable generating plants



Strategy Leading to:

- ❖ **Energy independence**
- ❖ **Safe, reliable supplies**
- ❖ **Predictable prices**
- ❖ **Smaller carbon footprint**



Guiding Vision

- ❖ To be the premier provider of energy for Nevada



Investing in Energy Efficiency

- ❖ 435 million kWh saved
- ❖ Enough for 34,000 homes
- ❖ Carbon cut by 278,000 tons



Energy Efficiency Programs

- ❖ **\$55 million invested**
- ❖ **7 million CFLs since 2003**



Renewable Energy Commitment

- ❖ Committed to large & small projects
- ❖ Contracts for over 500 MW
- ❖ Direct investments



Nevada Leads the Way

- ❖ Legislation in 1997
- ❖ Early commitment to renewables
- ❖ Costly to build but no fuel needed



Portfolio Standard

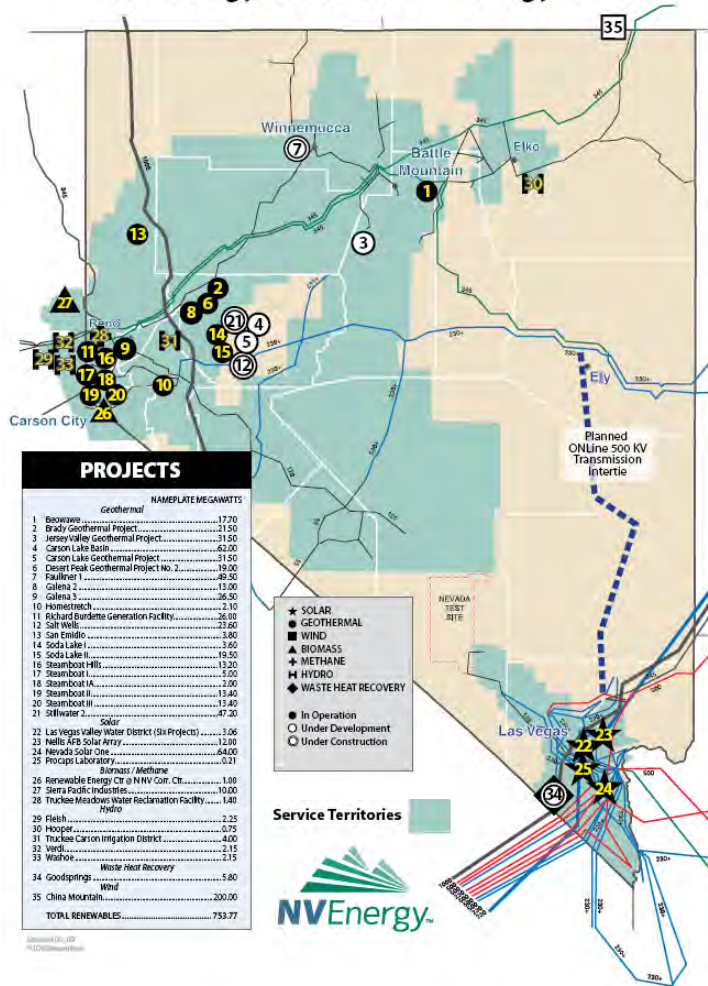
- ❖ 20% of kWh sales by 2015; 25% by 2025
- ❖ 1/4 from energy efficiency & conservation
- ❖ 3/4 from solar, geothermal, wind & other



NVE Renewables Portfolio



NV Energy's Renewable Energy Sources

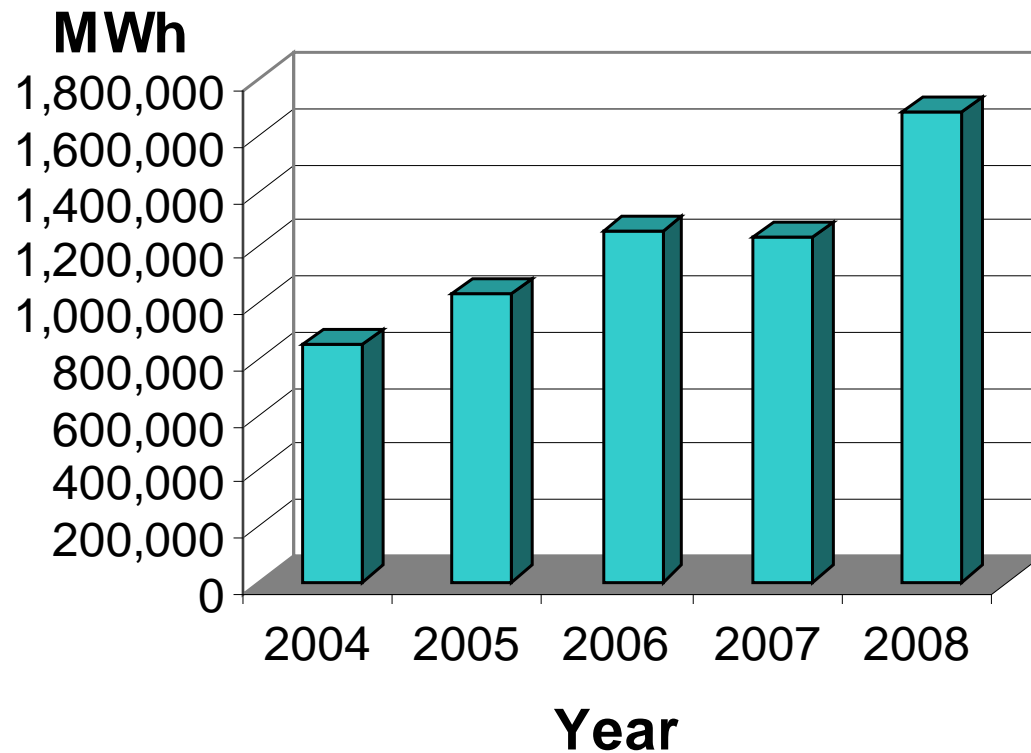


- ❖ 35 projects totaling 750 MW; 300 MW in-service; 125 MW under construction
- ❖ 2 of the U.S.'s largest operating solar plants
- ❖ Nevada leading the way in solar & geothermal
- ❖ Also adding 200 to 400 MW of wind
- ❖ Adding 2 PV projects larger than Nellis

Growth of Renewable Energy Supply



NVE Renenewable Energy



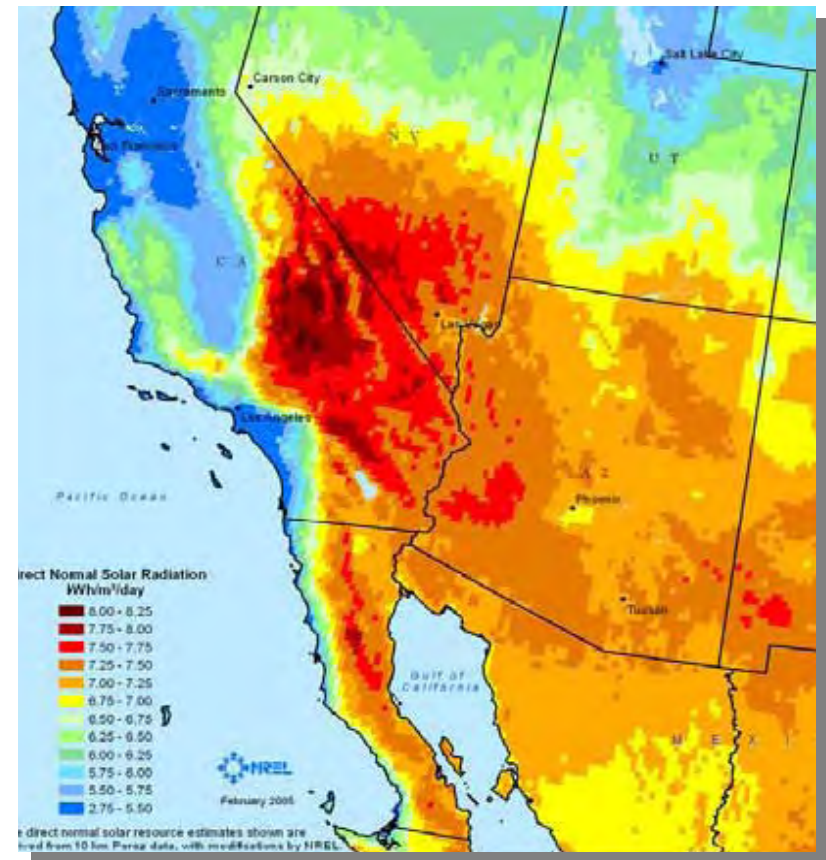
Existing Solar Plants

- ❖ Nevada Solar One: 64 MW thermal
- ❖ Nellis AFB PV : 14 MW(DC)
- ❖ LVVWD PV: 6 projects totaling 3 MW



Solar Power in Nevada

- ❖ Mojave Desert is the U.S.' prime solar resource
- ❖ Most expensive energy source
- ❖ Technologies improving
- ❖ Contracts announced for 2 new large PV projects in Clark Co







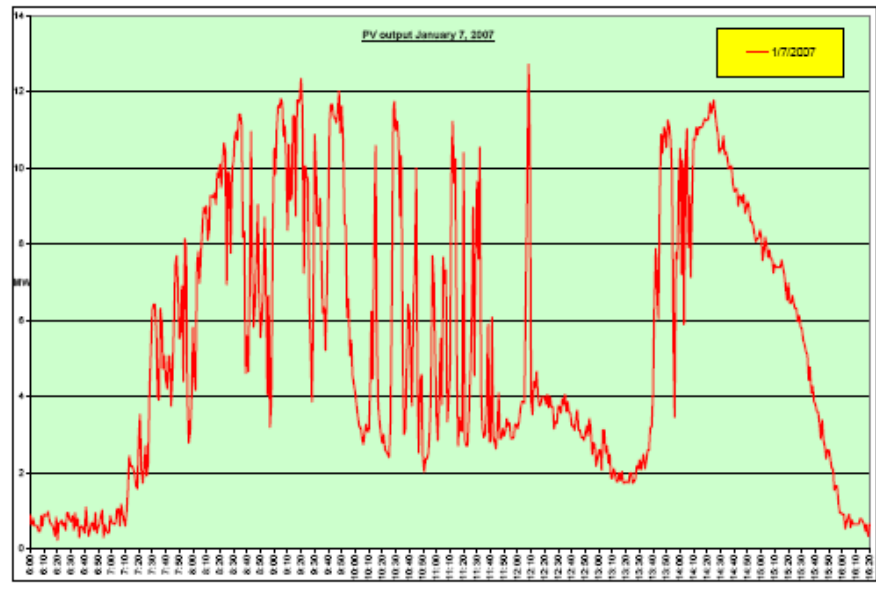
RenewableGenerations

- ❖ **SolarGenerations rooftop photovoltaic**
 - Closing in on 3,000 kW and 500 projects
- ❖ **Expanded to include wind and hydro**



Photovoltaic Plants Don't Like Clouds!

- ❖ Minute to minute variability of plant output caused by transient clouds
- ❖ Solutions needed for smoothing and/or firming solar
- ❖ NVE seeking DOE funding with SNL and ABB

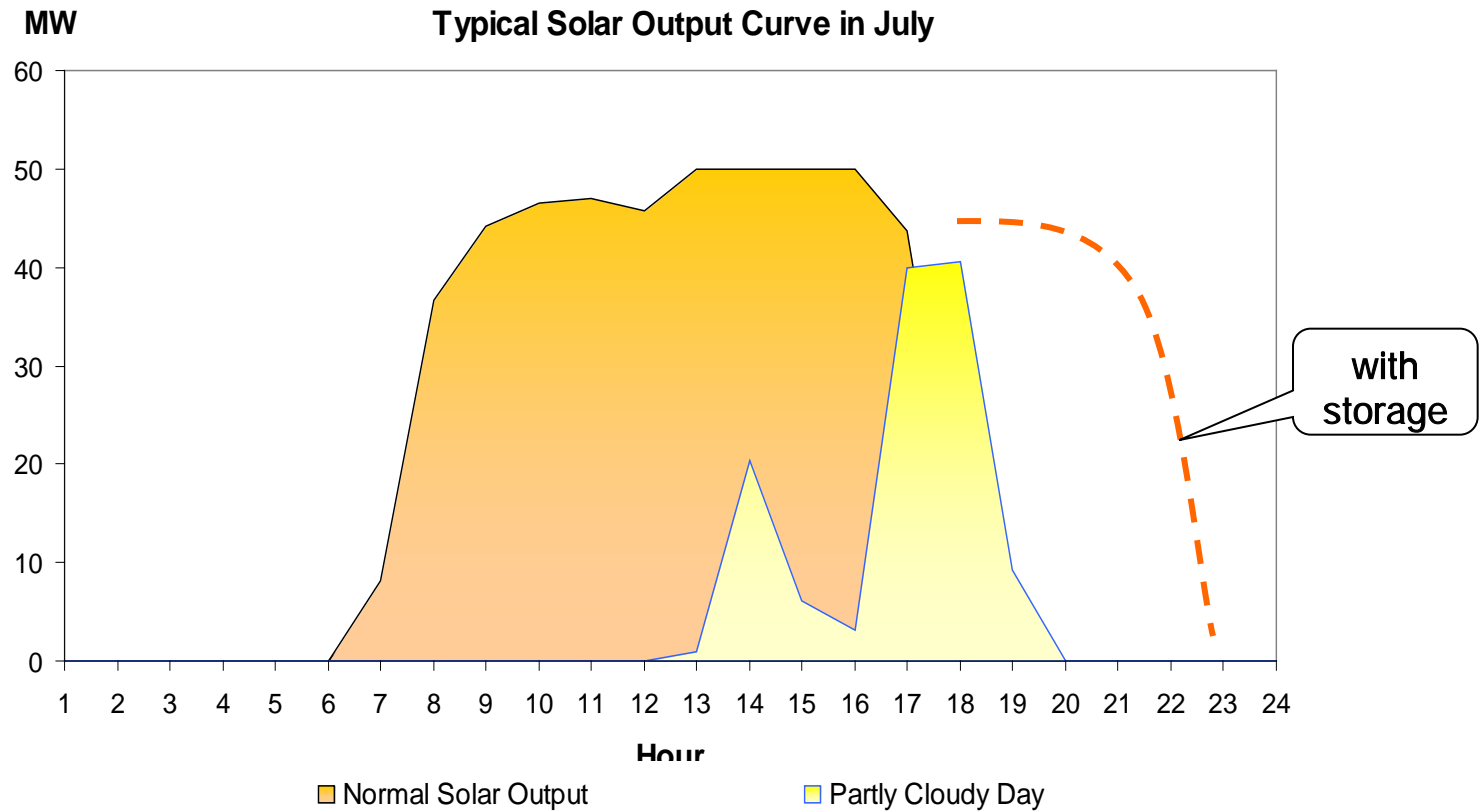


Large-Scale Solar Project Announced

- ❖ Memorandum of Understanding
- ❖ Experienced developer
- ❖ 250-megawatt plant
- ❖ Thermal solar storage using molten salt

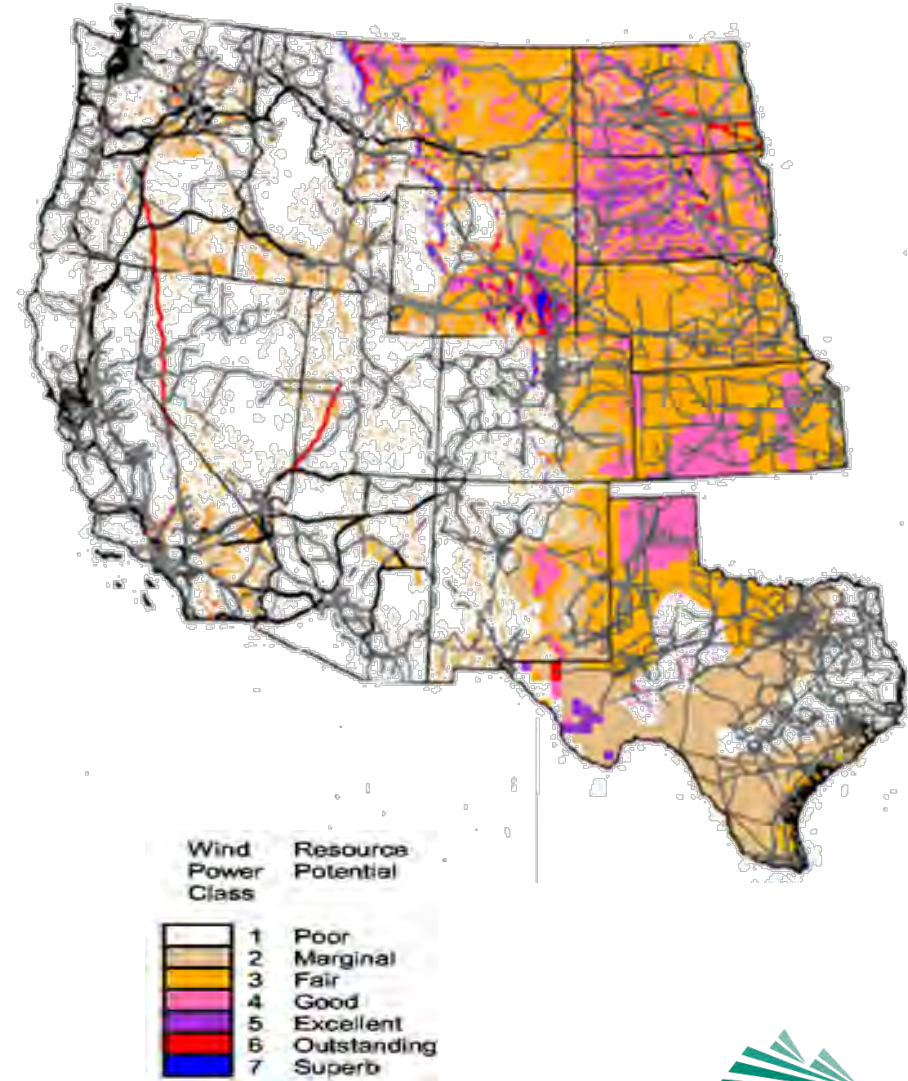


Solar Thermal Power Output



Wind Power in Nevada

- ❖ Resource not comparable to Great Plains, but some good sites
- ❖ Plan to add 200-400 MW of wind to our portfolio ~2012
- ❖ Siting issues:
 - rough terrain for construction
 - federal lands & permits
 - military use of airspace



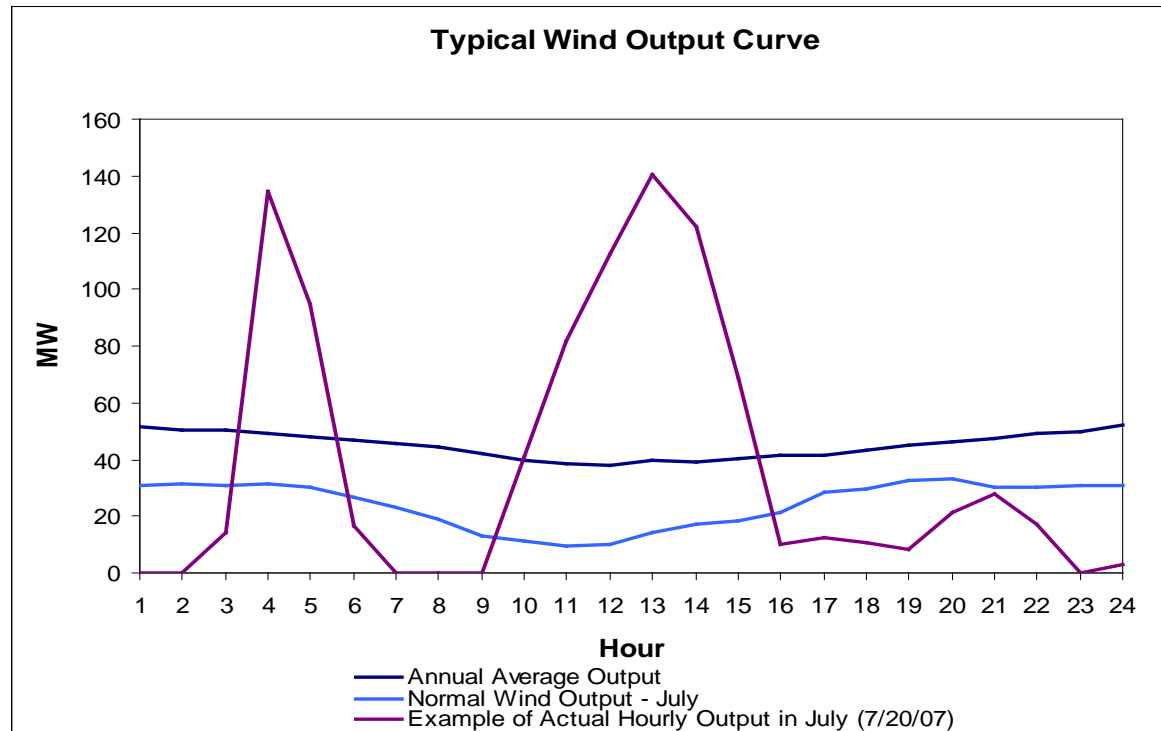
China Mountain Wind Project

- ❖ 200 MW
- ❖ 80-100 turbines
- ❖ 30,000 acre site west of Jackpot
- ❖ Partnering with RES Americas



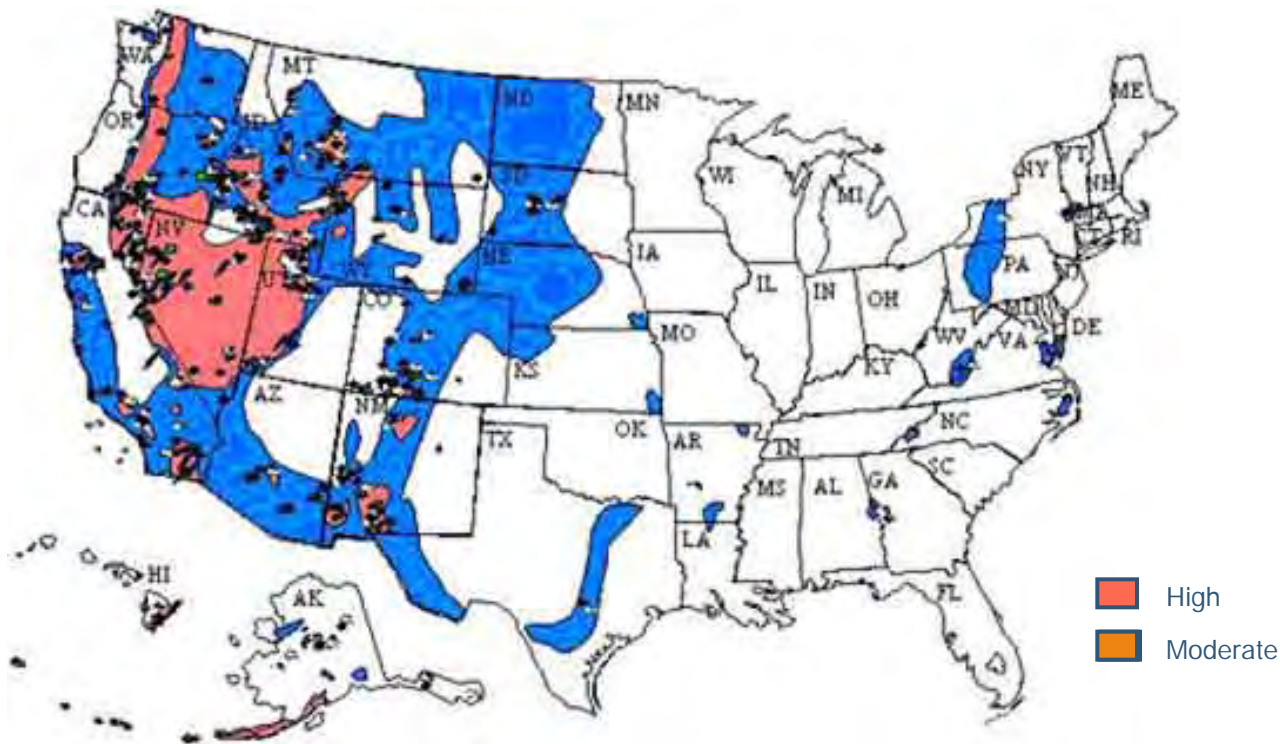
Wind Power

- ❖ Intermittent - requires balancing by other generation



Geothermal Energy

- ❖ Nevada ranks 2nd in resources behind CA
- ❖ Nevada's ultimate potential thought to be over 2,000 MW



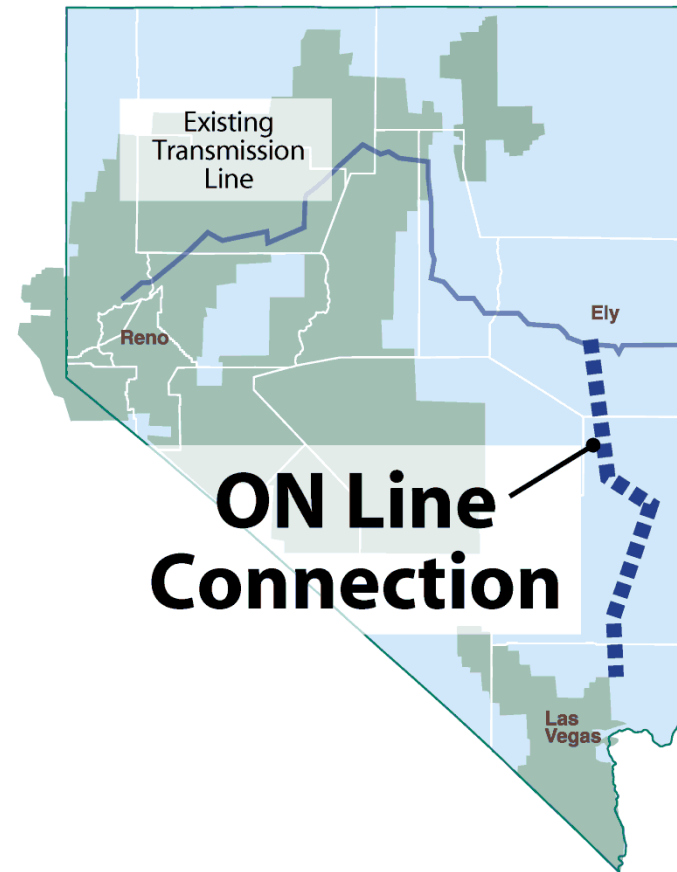
Geothermal Development

- ❖ 200 MW, 16 plants in-service
- ❖ 3 plants under construction add 120 MW
- ❖ Over 100 MW more under development

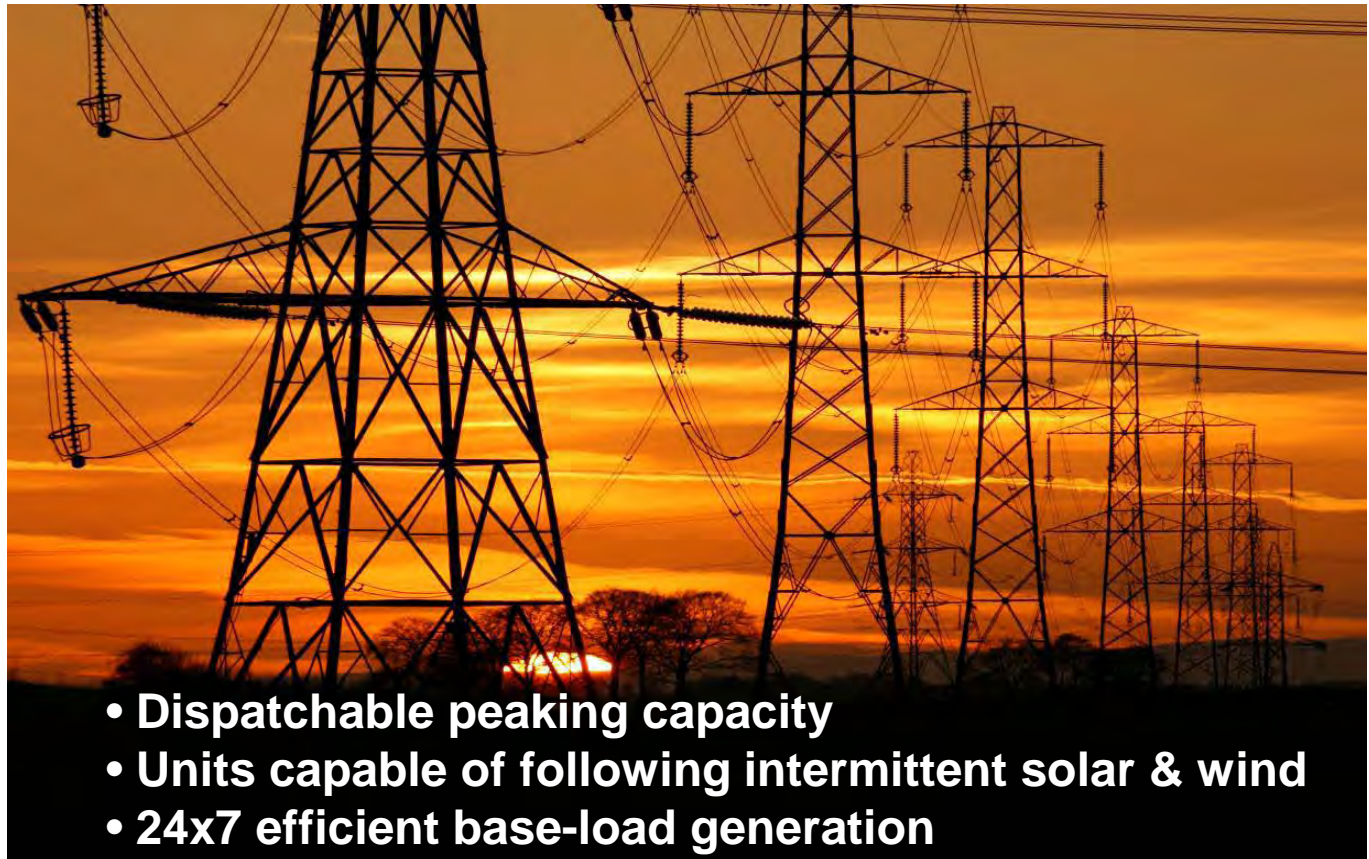


One Nevada Transmission Line – ON Line

- ❖ 235-mile high-voltage line
- ❖ Connects all of Nevada
- ❖ Facilitates renewable energy



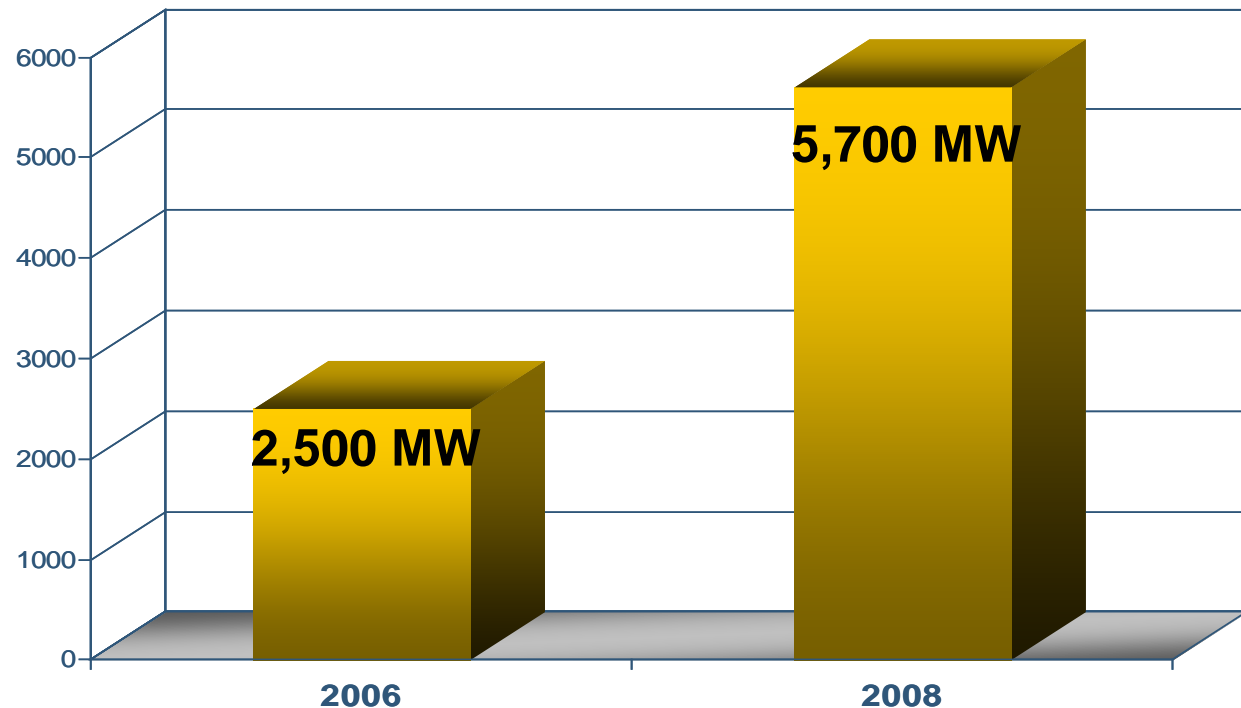
Part 3 of Strategy: Dispatchable Clean Generation to Assure Reliable 24x7 Power



- Dispatchable peaking capacity
- Units capable of following intermittent solar & wind
- 24x7 efficient base-load generation

New State-of-the-Art Plants

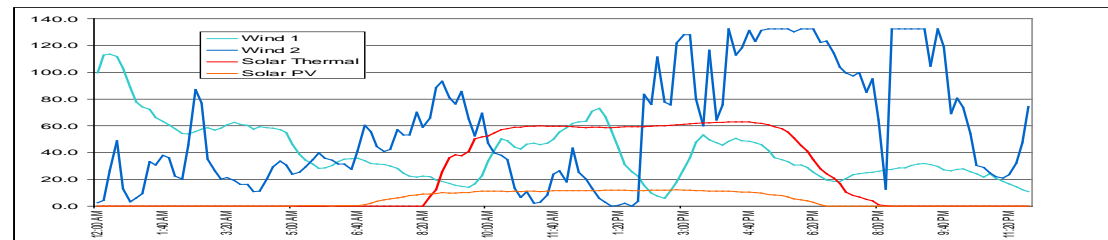
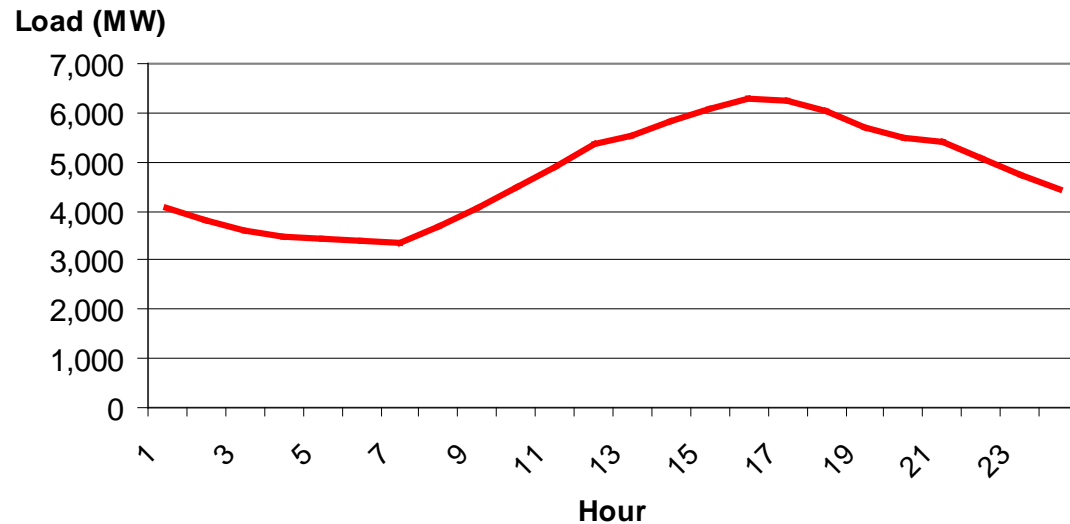
- ❖ Doubled owned capacity since 2006
- ❖ Highly efficient gas-fired plants
- ❖ Dispatchable to balance load and intermittent renewable resources



Controllable power supply constantly adjusted up and down to maintain balance with load and uncontrollable sources



Example - July Daily Load



Uncontrollable wind and solar output

Tracy Combined Cycle Plant

- ❖ 541 MW
- ❖ Energy self-sufficiency
- ❖ Top rating by Power Magazine



Clark Station Peaking Units

- ❖ Gas combustion turbines
- ❖ 600 MW
- ❖ Serve peak demand needs



Higgins Generating Station

❖ Acquired fall 2008

❖ 598 MW



Harry Allen Expansion

❖ 500 MW

❖ 2011 completion date



Combined Cycle Generating Plants

- ❖ Much more efficient than traditional boiler
- ❖ Air-cooled - low water use





NV*Energy*TM