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COMMITTEE ON ENERGY AND COMMERCE

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

TESTIMONY OF RONALD J. BINZ

CHAIRMAN, COLORADO PUBLIC UTILITIES COMMISSION

"RENEWABLE ENERGY: COMPLEMENTARY POLICIES FOR CLIMATE LEGISLATION"

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CHAIRMAN, COLORADO PUBLIC UTILITIES COMMISSION

Good morning, Chairman Markey and Members of the Subcommittee. My name is Ron Binz and I am the Chairman of the Colorado Public Utilities Commission. It is my privilege and great honor to appear before you today to discuss how renewable energy will be an essential and significant part of the nation's strategy to address global climate change. I congratulate the Chairman and the Subcommittee for examining this issue and appreciate the opportunity to talk about a real success story – the New Energy Economy in Colorado.

Here are the main points of my testimony:

- Colorado is moving forward aggressively to adopt renewable energy as a major portion of our generating resources in the state. It is easy to date the beginning of Colorado's significant move towards renewable energy: Election Day in 2004 when the state's voters approved a ballot measure that created Colorado's Renewable Energy Standard (RES).
- After initial opposition to the RES, Colorado's investor-owned utilities now support this approach. In fact, the utilities are running ahead of the compliance requirements of the RES. Xcel Energy is now the leading wind energy provider in the nation. The Company and has already acquired enough renewable energy to satisfy the Colorado RES for several years to come, even as they continue to acquire more renewable energy.
- Two years after voters passed the original RES, newly-elected Governor Bill Ritter championed legislation, passed by the general assembly, which doubled the RES requirement to 20% by 2020, and expanded its application to all Colorado's rural electric cooperatives. The legislation increasing the RES was <u>supported</u> by the state's utilities.
- During his campaign for office in 2006, Governor Ritter promised to build a "New Energy Economy" in Colorado. Through his leadership and the work other political and

business leaders, that vision is being realized. Colorado has attracted many new and relocating renewable energy firms, creating an estimated 22,000 direct "green collar jobs."

- Colorado's investments in renewable energy are also helping the state make progress towards the goals of the Governor's Climate Change Action Plan. Significant amounts of wind and solar energy are reducing the carbon emissions of the state's utilities, on the way to planned emission reductions of 20% by 2020. Our renewable strategy, along with energy efficiency and the development of advanced generation technologies, make up the foundational policies required for major reductions in greenhouse gas emissions.

- Colorado's experience shows that a state can move quickly to exploit its natural renewable energy capacities. Colorado ramped up from about 60 MW of wind generation in 2003 to 1200 MW in 2008 and 2000 MW projected for 2014. Distributed solar deployment has followed a similar tack; in addition, we expect to have between 200 and 600 MW of solar thermal capacity on line by about 2017.

- In Colorado, renewable resources are mainly wind and solar power. In other parts of the country, biomass, geothermal, new hydropower and hydrokinetic power will be added to the mix. A state RES effectively creates demand for these generation technologies, accelerating the cost reductions for these technologies that only volume and experience will produce.

- Photovoltaic electricity can be widely deployed in the United States. The Southwestern U.S. obviously has superior solar resources. But photovoltaic opportunities are not limited to the Sunbelt. New Jersey -- second only to California in PV installations – shows that photovoltaic electricity can successfully be developed even when solar insolation levels are less than ideal.

- As Chairman of the Colorado Public Utilities Commission, I can unreservedly endorse the benefits of a renewable energy standard. Because of the actions of 28 states with RES policies, the costs of renewable technologies are falling as experience with these energy sources grows. A RES provides the needed boost to that development. In our experience, a RES enjoys strong consumer support and can be implemented with reasonable impacts on electric rates.

The Development of Colorado's Renewable Energy Standard

In November 2004, Colorado voters passed Amendment 37, a citizen-initiated change to the Colorado Revised Statutes, adopting Colorado's Renewable Energy Standard (RES). This was the first time in the country that a state's voters had passed an RES. The ballot measure succeeded after legislative attempts failed to produce a law in three successive years. The ballot measure was championed by the Republican Speaker of the House, and had broad support from environmental, citizen and rural and farm organizations.

The main features of Amendment 37 included:

- Applied to investor-owned owned utilities, rural electric cooperatives and municipal utilities that serve at least 40,000 customers.
- The measure required affected utilities to generate or acquire a specified minimum amount of renewable energy each year:
  - 3% of retail sales by January 31, 2006
  - 6% of retail sales by January 31, 2010
  - 10% of retail sales by January 31, 2015

  In addition, at least 4% of the renewable energy must be produced from solar energy, half of which must be generated at the customer's location.

- Defined renewable energy to include energy generated using biomass, geothermal, solar, small hydroelectric, wind, and hydrogen derived from renewable energy sources.

- Permitted rural electric cooperatives and municipal utilities to exempt themselves from the RES requirements by a vote of their customers.

- Limited the rate impact of the RES to no more than 50¢ per month for residential customers.

Despite opposition from the state's electric utilities, voters approved Amendment 37 in 2004, and the Public Utilities Commission promulgated rules to implement the new law in 2005. Xcel Energy, the state's largest utility, began actively to solicit new wind and solar resources. One electric cooperative exercised its option to "opt-out" of the new law.

In the 2006 gubernatorial campaign, Bill Ritter, Jr. outlined his vision of a "New Energy Economy" as part of his "Colorado Promise" campaign. He was elected Governor in November 2006 and began to work with legislative leaders to expand the RES law. In early 2007, the General Assembly passed HB 1281 that effectively doubled the RES requirements and brought more of the smaller utilities under the RES requirement.

Colorado's new RES law has the following features:

- 20% renewables by 2020 for investor-owned utilities
- 10% renewables by 2020 for rural electric associations and municipal utilities
- No opt-out provision
- For IOUs, 4% of renewables must be solar, at least half on-site
- There is a 1.25 REC multiplier for using in-state resources
- There is a 1.5 REC multiplier for community-based projects
- There is a 3.0 REC multiplier for REAs use of solar
- The maximum rate impact is 2% for IOUs, 1% for Munis and REAs

The Experience with Colorado's Renewable Energy Standard

The passage of the state's Renewable Energy Standard served to jump-start Colorado's renewable energy industry. The tremendous growth in the state's renewable industry can be illustrated by highlighting these few examples:

- In the past two years, Colorado has quadrupled the amount of wind-generated electricity. Three new wind farms opened in 2007 alone, generating nearly 750 megawatts of electricity, enough energy to power 250,000 homes.

- The PUC estimates that the total amount of wind generation will grow to at least 1250 MW by 2010 and 1950 MW by 2015.

- Colorado grew from essentially no solar power in 2006 to a ranking of fourth in the nation in 2009 for installed solar capacity, almost entirely photovoltaic.

- At the end of 2008, Colorado's solar capacity stood at 24.5 MW. Xcel Energy has just issued a contract for a new 25 MW solar facility, and the PUC has approved Xcel's proposal to acquire at least 200 MW and as much as 600 MW of utility-scale solar generation with energy storage. At the same time, homeowners and businesses continue to install customer-sited photovoltaic panels.

- The PUC is aware that several unregulated utilities are making plans to acquire more renewable energy. Two large municipal utilities are planning to purchase additional wind resources or renewable energy credits (RECs). Other utilities are negotiating contracts for new wind projects in addition to those I've already listed.

- Tri-State Generation and Transmission Association has announced a project to augment its Escalante coal plant in New Mexico with steam produced from a solar thermal installation. Xcel Energy is looking to partially re-fuel a smaller existing coal plant near Grand Junction with steam from a concentrating solar facility to be built on the same site.

The desire by state and local governments in Colorado to assist homeowners with energy efficiency and renewable energy installations is evidenced by recent ordinances and pending state legislation:

- Boulder, Colorado recently passed an ordinance that will allow residents to finance new distributed generation by borrowing from the city and repaying the loan through property tax payments.

- Legislation is pending in the Colorado general assembly to allow the state treasurer to invest in bonds issued by banks, credit unions and other public and private lenders that make "clean energy loans" to individuals and businesses.

The Economic Impact of Colorado's New Energy Economy

Besides providing more clean energy to Colorado consumers, the RES and the Governor's New Energy Economy have provided many related economic benefits to the state. The economic development can be illustrated by a few examples:

■ **Wind**

- Denmark-based Vestas Blades opened its first North American manufacturing plant in Windsor in March 2008 and plans to open three additional production facilities in Colorado (two in Brighton and one in Pueblo). Vestas' total commitment to Colorado represents a $700 million capital investment and 2,500 new jobs.

- Renewable Energy Systems America Inc. relocated from Texas to Colorado in March 2008. The company designs, builds and operates wind farms.

- Texas-based Dragon Wind will open a plant in Lamar to build wind towers.

- Siemens Energy, the second largest global wind turbine developer, announced Colorado will house its North American Research and Development Center.

- Woodward Governor announced in March 2008 it will add up to 100 employees in Northern Colorado. The company manufactures wind turbine inverters.

- Connecticut-based Hexcel Corp, a producer of carbon fiber and other advanced composite materials and a Vestas supplier, is building a new facility in Windsor.

- **Solar**

    - Abengoa Solar has located its U.S. headquarters in Lakewood.

    - Ascent Solar plans to build 1.5MW and 25MW production facilities in Lakewood.

    - AVA Solar plans to build a solar manufacturing plant in Longmont.

    - PrimeStar Solar of Golden received more than $3 million in public-private funding to develop thin-film solar technologies.

    - SunEdison's new photovoltaic facility generates power for 1,500 homes in the San Luis Valley and in 2008 was the nation's most productive photovoltaic solar plant. SunEdison opened an operations center in Westminster in 2008.

    - Fort Carson opened the largest solar plant on a U.S. military base, and the Denver Federal Center, DIA, and the Belmar shopping district all opened large solar facilities.

    - Arvada's SkyFuel Inc. unveiled its new SkyTrough, a high-performing, parabolic, concentrating solar array.

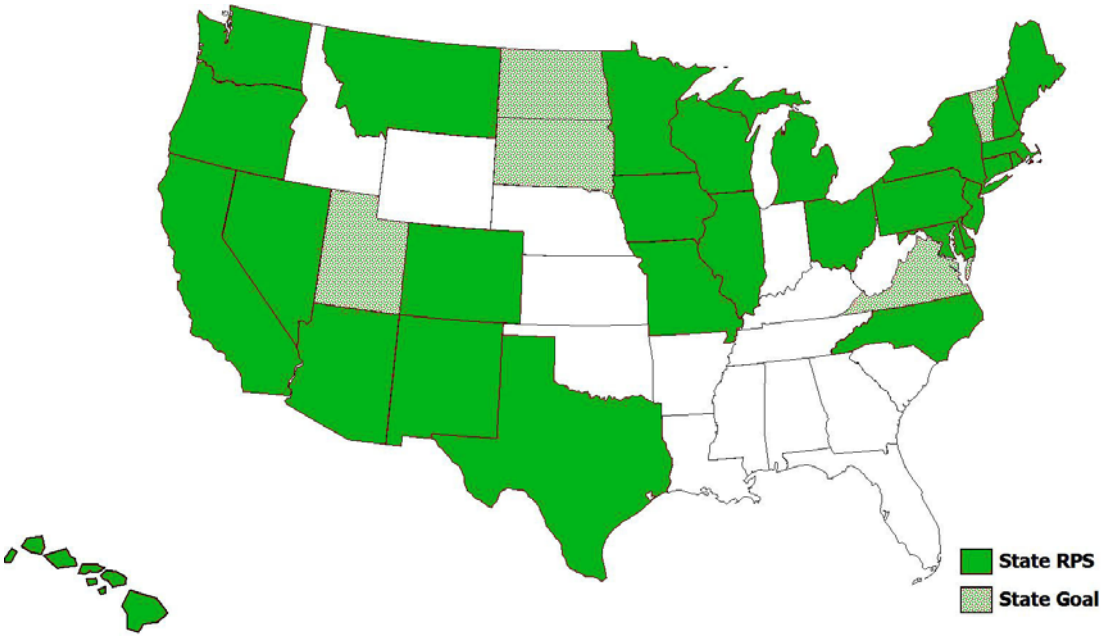
    - Solar Technology Acceleration Center (SolarTAC) announced it will build the nation's largest public-private partnership for solar-energy development in Aurora.

    - The Governor's Energy Office is offering rebates for residential and commercial solar electric, solar domestic hot water and other systems.

The Colorado Office of Economic Development and International Trade estimates conservatively that Colorado's New Energy Economy has produced 22,000 direct "green collar" jobs in the state. To put this number in perspective, a gain of 22,000 jobs in Colorado is equivalent to a gain of 1.28 *million* jobs at the national level, all from the clean energy sector.

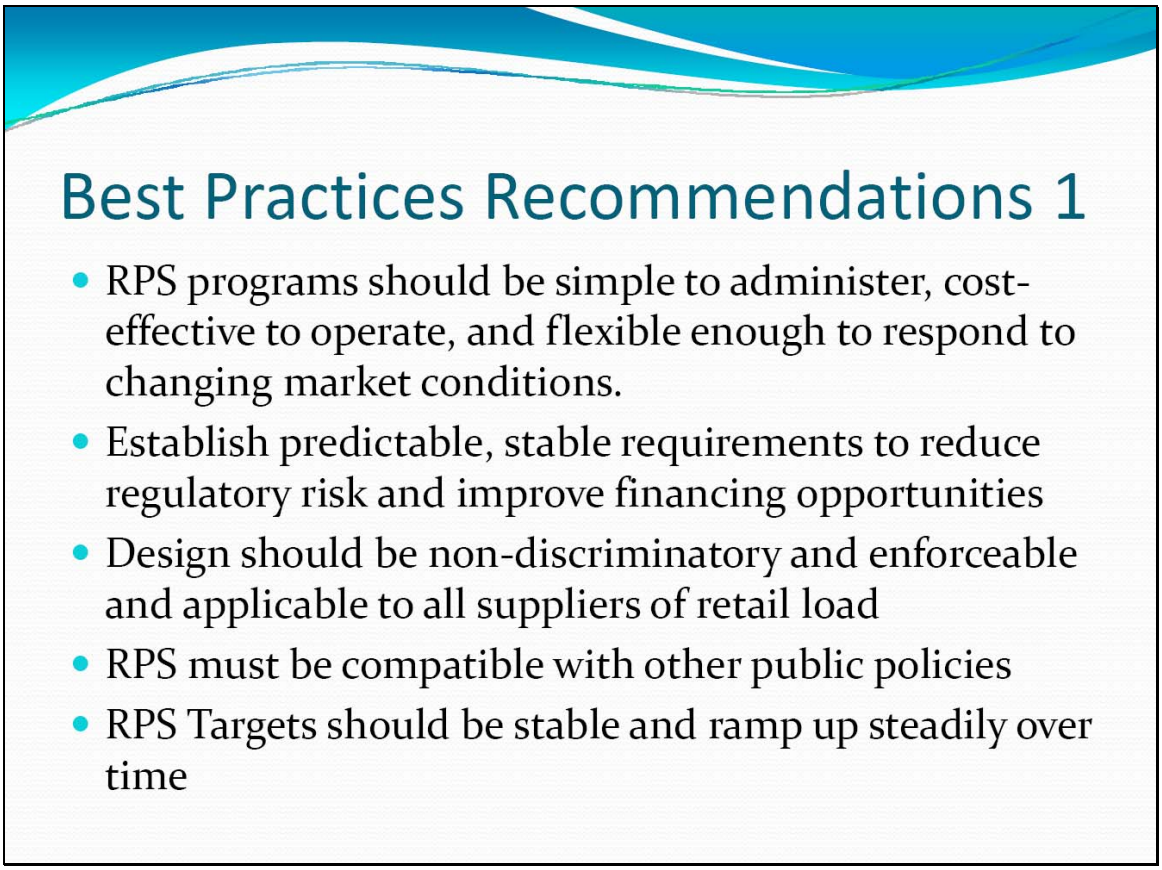
Design of State Renewable Energy Standards

As the Committee knows, 27 states plus the District of Columbia have adopted RES policies and five additional states have non-binding renewable goals, as reported by the Interstate Renewable Energy Council (IREC). The following map illustrates which states have adopted RES policies or goals:



Although these state plans have the same essential goal, there is variation in the state RES statutes as to goals, timing, credits, and definitions. For the past two years, a State/Federal RPS Collaborative, funded in part by the Department of Energy, has been examining many aspects of state RPS (RES) policies. The RPS Collaborative has developed a draft document detailing state RPS "best practices" and has begun to examine the interplay between existing state RPS plans and a potential federal RES.

Members of the National Association of Regulatory Utility Commissioners (NARUC) recently received an update of the activities of the State/Federal RPS Collaborative from Commissioner Phyllis Reha of the Minnesota Public Utilities Commission. Here are four slides from Commissioner Reha's presentation that set out the four major "best practices" for state RES design and operation identified by the State/Federal RPS Collaborative:

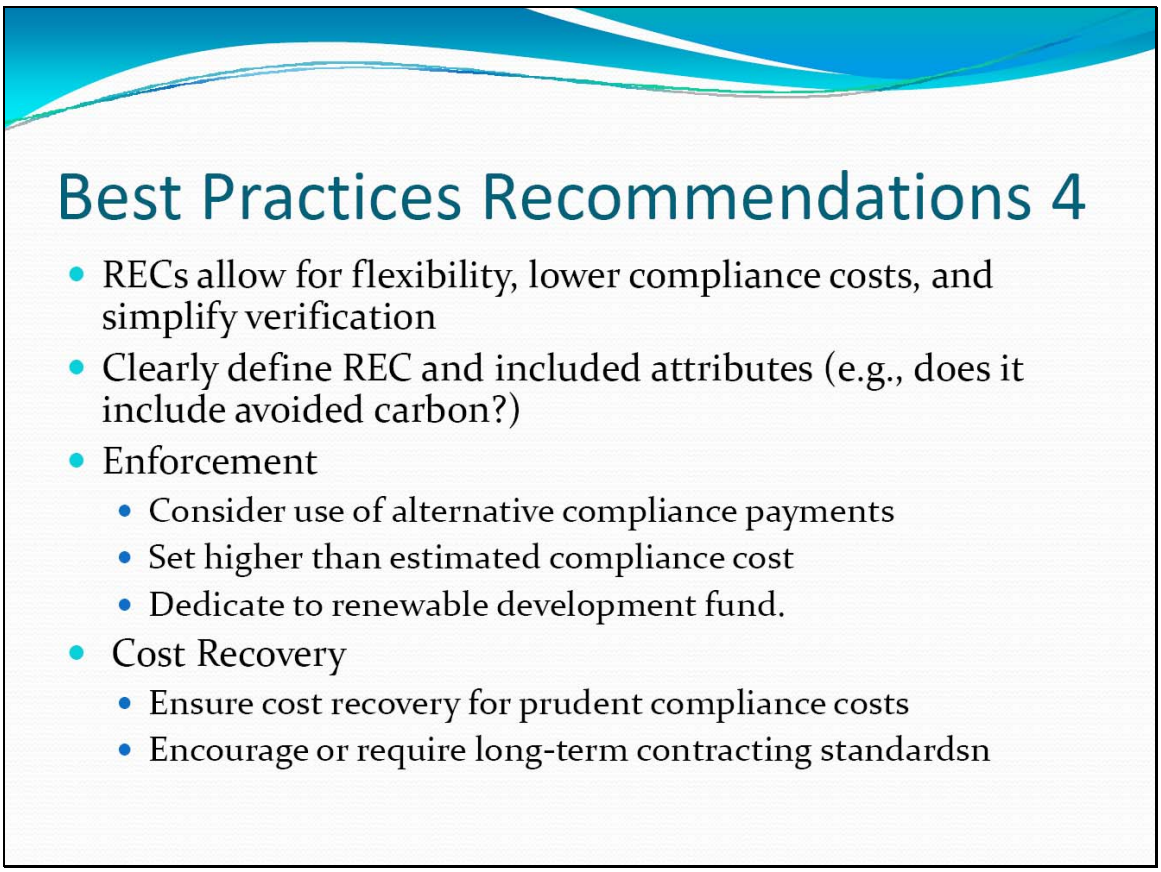


Best Practices Recommendations 2

- Targets should be achievable and encourage renewable resource development beyond existing available resources, given developable resource potential, transmission contraints, interconnection barriers, availability of complimentary mechanisms that support project development, and potential siting challenges.
- RPS should be of sufficient duration to allow for long-term contracting and financing.
- RPS rules should be stable

Recommended Best Practices 3

- RPS should apply to all load serving entities including Investor Owned, Munis and Coops.
- In restructured markets, all suppliers to retail loads should be obligated to participate.
- There should be well-defined eligibility.
  - Fuel, technology and vintage definitions guided by social benefits of particular resources
  - Customer-sited generation eligible
  - Restrict eligibility of "old" resources
  - Ensure rules on out-of state resources are legally defensible and recognize value of regional market development



Although these "best practices" describe state RES policies, most apply in turn to any proposed federal RES standard.

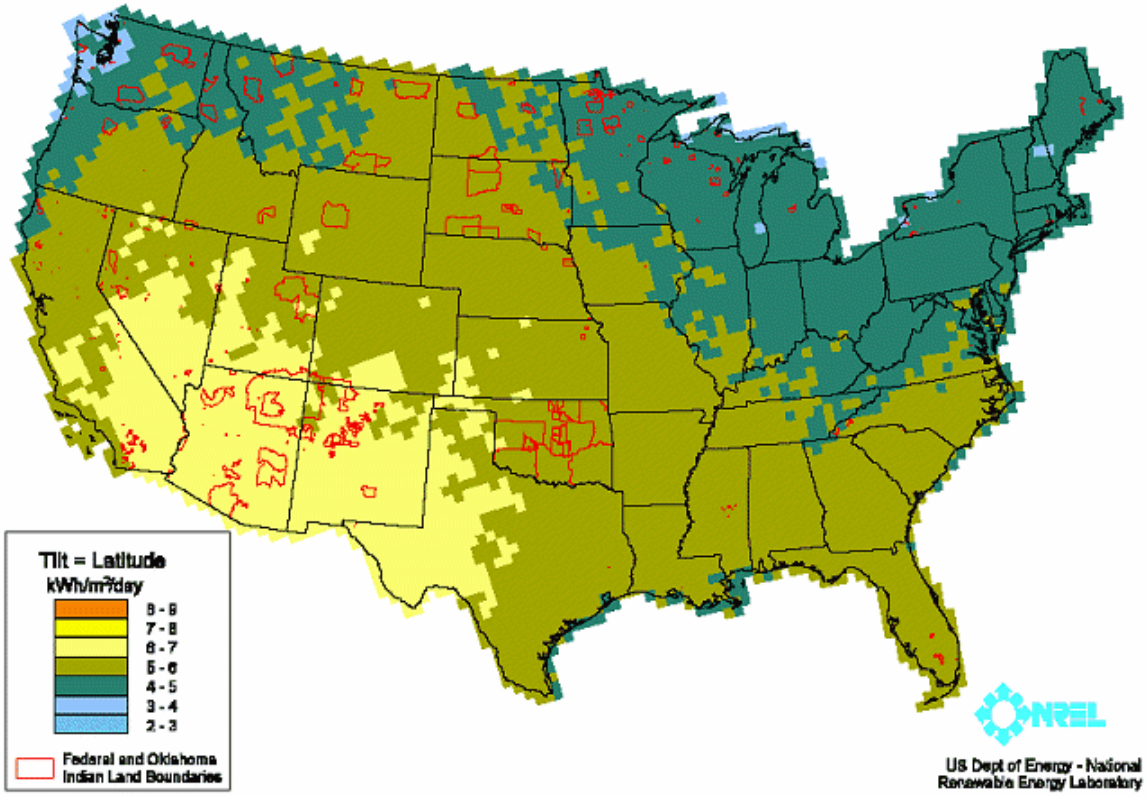
Interplay Between a Federal RES and State RES Policies

Coming from a state with a very successful Renewable Energy Standard in place, I would respectfully urge that any proposed Federal RES not interfere with state programs with more stringent standards than the Federal plan. In other words, a Federal RES plan should be a floor, not a ceiling applied to state efforts.

Assuming that a federal RES does not preempt states' ability to maintain a state-level RES, care must also be taken to harmonize the accounting for Renewable Energy Credits (RECs) between the two regimes. In particular, renewable energy purchases under state RES should count towards the federal RES, but purchases of RECs to meet a state RES beyond federal target should not be traded or banked for use in federal RES compliance. Concerns such as these were carefully explained in a February 10 letter to Chairman Markey from the Clean Energy Group.

Renewable resources vary across the country, so care must also be taken in a Federal RES to incorporate flexibility that recognizes those differences. While Colorado has superior wind and solar resources, our state has modest biomass opportunities, a resource that is much more abundant in other parts of the country. The amount of direct solar "insolation" is high in Colorado and the Southwestern U.S. On the other hand, as the NREL map below demonstrates, solar potential from bright skies – useful for photovoltaic generation – is relatively high across much of the nation and is not limited to the Sunbelt.

Figure 11. Solar Photovoltaic (PV) Resource Potential



The map shows that, except for certain parts of the northern U.S., solar insolation levels are above 5 kWh per square meter per day, a very good PV resource. But even in the northern areas, solar values are above 4 kWh/m^2/day, also good. Thus New Jersey – second only to California in installed PV capacity – shows that photovoltaic generation can successfully be developed even when insolation levels are less than ideal.

Conclusion

The existence of substantial U.S. photovoltaic potential, shown in the previous map, demonstrates why an RES is important. Everyone knows that solar electricity is today more costly that many other sources of electric supply. Everyone also knows that the cost of PV solar is falling and many predict that solar PV will achieve "grid parity" sometime in the future. But the cost of solar (and other renewable technologies) falls not simply with time, but, instead, as the volume of its deployment increases. Ramping up solar supply and demand will thicken the supply chains, enlarge the manufacturing base, grow the commitment to R&D, and increase competition in design and installation.

Enlarging the market and the deployment of solar PV will provide more clean energy. But more importantly at this stage, it will bring the "grid parity" date closer in time. Similar comments apply to other renewable technologies that today have only a small market share.

This salutary societal effect of a larger market for renewable energy technologies is one of the main reasons that I, as a regulator in Colorado, hope that other states adopt an RES and begin to include renewable energy in their states' energy plans. Bringing down the level of carbon emission and the cost of renewable technologies is a shared responsibility.

I appreciate the opportunity to discuss Colorado's experience with a Renewable Energy Standard. We are very proud of our achievements in Colorado in reducing carbon emissions through energy efficiency, renewable energy, demand response and resource planning. I hope this testimony is helpful to the Subcommittee as you continue your inquiry into complementary policies for climate legislation.