

DRAFT Oral Testimony
“Unlocking America’s Energy Resources: Future of Renewable Energy”

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Committee on Science
Energy Subcommittee

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Mr. Chairman and Members of the Committee:

I represent the Electric Power Research Institute, which is a non-profit collaborative R&D organization conducting electricity-related research in the public interest. EPRI has been supported voluntarily by the electricity industry since our founding in 1973. Our public and private members account for more than 90% of the kilowatt-hours sold in the U.S., and we now serve more than 1000 energy and governmental organizations in more than 40 countries.

EPRI appreciates the opportunity to address the future prospects for renewable energy. I would like to make several key points in my oral testimony, and leave a more detailed package of information for the subcommittee.

Key Points

The U.S. must keep all of its energy options open to meet the uncertainties of the future. For electricity, this means improving the economics, integration and utilization of renewables and energy efficiency as well as building and sustaining a robust portfolio of clean, affordable generating options for the future - ensuring the continued use of coal, nuclear and natural gas.

EPRI believes that prudent investment decisions for power plants in the future need to include considerations of the economies associated with generating power in a carbon constrained future. Whether decision makers assume the future cost of CO₂ to be zero as it is today in the US, or \$30/ton, or \$50/ton, dramatically changes the relative cost of the various supply options. A carbon-constrained future could make renewable energy more economically competitive and more important.

Currently renewable generation, excluding large hydropower, contributes less than 2% to the nation's electricity supply. Until recently the expected future role of renewable energy in the U.S. - based on projections from Energy Information Agency (EIA), the National Energy Modeling System (NEMS), and other models - has not been significant. Long-term estimates for the contribution of renewables to total electric energy have remained around 2%. Even when the current renewable portfolio standards adopted in 23 states are applied through 2017, the contribution of renewable resources would not likely exceed 3% of the total electric energy that will be needed in 2017.

However, recent EPRI modeling shows that the role of renewable, as well as all other low and non-emitting resources, could be expected to increase substantially. New renewable energy resources, primarily wind, solar and biomass, are expected to exceed the current portfolio standard requirements. In a base case scenario EPRI estimates renewable contribution to electric energy by 2050 in the range of 5-6%. This represents a 700-800% increase over today's contribution of 100 MMW-Hs, reaching roughly 750 MMW-Hs by 2050.

Various distributed generation technologies - which include renewable energy sources, such as roof-top solar - are being developed that will enhance the current distribution system. These will add power system flexibility, increase end-use efficiency with technologies such as combined heat and power, and reduce power delivery losses. Distributed generation and central station generation are not either/or alternatives; EPRI believes they will complement one another in the future power delivery system.

There needs to be recognition that future renewable technologies as solar, wind and, eventually, ocean energy are not dispatchable resources and that there will be a cost to integrate these resources into the electricity system. The cost is for the supporting generation that will be needed to match supply and demand instantaneously, to follow energy demand ramping, and to provide the reserves required to maintain grid reliability. This cost is small when a significant portion of available generation resources are dispatchable, such as hydro and gas turbines. However, as the percentage of renewable generation increases so will the cost of grid integration.

Technology breakthroughs will undoubtedly enable renewable energy to meet electricity demand in new and better ways. For example, economic roof-top solar, clean fuels from biomass, effective energy storage with hydrogen, or advanced batteries, would help diversify U.S. energy resources and bring new opportunities to the electric industry.

Summary

Given expected growth in the demand for electricity and the many uncertainties in our energy future, we believe that developing diversity in electric generation is a critical objective for the country. Also, striving for cleaner and more sustainable resources will bring more renewable energy into the mix. Future breakthroughs in cleaner fuels, photovoltaics, and energy storage will change the nature of the electric grid. These will not replace the need for the electric grid but will increase its flexibility and value to the country.

Thank you for the opportunity to provide these comments to the Subcommittee.