



## **Texas Renewable Energy Industries Association (TREIA)**

### **Testimony before the Senate Business and Commerce Committee Regarding the Interim Charge Concerning ERCOT Protocols**

**July 10, 2012**

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The Texas Renewable Energy Industries Association (“TREIA”) appreciates this opportunity to provide testimony related to improving the reliability of the ERCOT grid and the competitiveness of the electric market in Texas. TREIA is a trade association with some 500 members representing nearly 300 companies, organizations and institutions involved in all aspects of the renewable energy industries in Texas.

TREIA supports ERCOT’s efforts to proactively address resource and transmission adequacy risks and its mission of ensuring a reliable grid and efficient electricity markets for the public. TREIA believes increased development and use of renewable energy will play a valuable part in ERCOT’s realization of these goals. TREIA also supports the Committee and other state policy makers in addressing the overall power supply needs of the state as our economy and population continue to grow.

The open ERCOT stakeholder process allows all market participants to engage in market rules development (such as the ERCOT protocols) and to address technical and market issues – a unique and positive feature of this market. TREIA agrees that it is prudent to review and analyze all current and pending ERCOT protocols as they apply to all generation technology and we particularly value this endeavor as a means to ensure that no one specific generation by fuel type is provided with operational, administrative, or competitive advantages in a way that would detrimentally affect growth or application of other types of generation, in particular renewable energy. While we have seen great progress and accomplishments in addressing key issues to allow renewable energy to participate fairly in the market, we have work to do to

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further enable full participation of renewable energy in ERCOT; addressing market issues through ERCOT protocols is one of the important and crucial means to allow this participation to mature.

While TREIA is focused on the development of renewable energy in Texas, we do not claim that renewable resources alone can or should meet all electric power needs of the state. However, we do believe renewable generation plays an important, complementary role together with conventional fuels in cost-effectively and quickly addressing the challenges facing the electricity market in Texas, including improving grid reliability and preserving reasonable electric rates for the public as the economy and population in Texas continue to grow.

### **Renewable Energy Improves Grid Reliability and Lowers Electric Rates**

**The Generation Resource Adequacy Problem:** The immediate threat to grid reliability is generation resource adequacy. ERCOT has projected reserve margins at 12 percent at summer peak season in 2012 and 2013 – below the 13.75 percent target that ERCOT uses to ensure reliable operation of the grid during higher-than-normal temperatures and generator outages.<sup>i</sup> To deal with the generation resource adequacy issue, ERCOT has recognized the need to attract new power generation.

**Renewable Energy Generation Should be Part of the Solution:** In addition to the most apparent benefits of renewable energy (wind, solar, biomass, geothermal, hydrokinetic)—utilizing an abundant, non-depletable native resource to generate power while producing minimal to zero-emissions—renewable energy generation offers several other benefits, many of which cannot be adequately monetized in the current ERCOT market structure:

- **Fuel Diversity Helps Ensure Grid Reliability:** Fuel diversity helps ensure stability in the electricity supply, thereby supporting the reliability of the grid and can also reduce the risk of price volatility. Renewable energy in particular, with *de minimus* marginal costs of production, helps stabilize energy prices over periods as long as 20 or 30 years.
- **Renewable Energy Is Faster to Develop and Deploy and can address resource adequacy concerns:** Texas needs new generation online quickly to address the resource adequacy problem. Solar and wind generation can be commercially operational in a fraction of the time that it takes to develop conventional generation facilities and can be installed quickly in grid congested regions of the state to help provide power during resource constrained times of the day.<sup>ii</sup> As these resources can and will contribute to offsetting demand during peak hours their quick (and particularly distributed) deployment will allow immediate contribution to improving the State's resource adequacy concerns.
- **Utility-Scale Renewables Contribute Energy Supply During Peak Demand Times:** Large-scale wind, solar and other utility-scale renewable energy resources contribute valuable generating capacity during peak periods. In particular, solar energy maximum

production coincides with peak demand times, when the grid is most likely to be strained. Wind energy generation along the gulf coast also tracks peak demand and played a significant part in helping ERCOT avoid blackouts last summer.

- **Distributed Renewable Generation Saves Utilities and Customers Money:** Distributed renewable generation (“DRG”) within a load service entity’s (“LSE”) territory lowers the amount of electricity the LSE needs to purchase from the wholesale market. DRG technology such as rooftop solar, which produces energy behind the meter during peak demand, allows the LSE to avoid purchasing the power offset by the DRG energy at times when electricity prices are at their highest on the wholesale market. Taking into consideration the recent raising of the offer-caps this equates to substantial cost-savings to the LSE and its rate-payers. Additionally, increased peak DRG reduces the “load ratio share” assigned by ERCOT to the LSE. By lowering the LSE’s “load ratio share” the payment made by the LSE for transmission and other ERCOT load associated costs is reduced equating to even more savings to the Texas rate-payer.
- **Biomass, Landfill Gas and Geothermal Energy Can Provide Baseload Power:** Generation from biomass, landfill gas and geothermal sources can be available 24/7 adding much needed capacity during peak periods and helping to meet growing demand.
- **Low to zero water use:** Most renewable energy technologies use little or no water. In addition to conserving Texas’ strained water resource, this characteristic enables renewable energy to be quickly implemented, provides greater flexibility in siting new generation, and ensures reliability in the sense that the generation that is independent of access to water. At a time when much of the state is still experiencing drought conditions water is a critically important consideration.
- **The Renewable Energy Sector is Active and Fast-Growing, and Investment in Renewable Energy is Catching Up with Fossil Fuel Capacity Investment:** Renewable energy industries are growing faster than the economy overall, with solar PV leading the trend at a 60 percent global annual growth rate.<sup>iii</sup> This trend appears to be continuing in 2012—developers installed 85 percent more solar panels in the U.S. in the first quarter than a year earlier, according to the Solar Energy Industries Association (“SEIA”).<sup>iv</sup> Global investment in renewable energy has increased substantially in recent years and has been narrowing the gap with fossil-fuel capacity investment.<sup>v</sup>

### **Increased Renewable Energy Utilization Reduces its Price, Increases its Value to Consumers and the State and Local Economies:**

- **Renewable Energy Continues to Decline in Price:** Renewable power is increasingly competitive on a levelized cost of energy basis with conventional generation sources and has experienced consistent price declines over time. The price of solar panels dropped 50 percent in 2011, and the cost of wind energy over the next two years is expected to be as much as 39% below the previous low in 2002.<sup>vi</sup>
- **Solar Generation Could have Reduced Electric Rates Last Summer:** According a recent study by the Brattle Group, entitled “The Potential Impact of Solar PV on Electricity

Markets in Texas”, solar generation could have significantly improved electric rates in Texas in summer 2011. Using the study’s statistical modeling approach, the Brattle Group estimated that “1,000 MW of solar PV could have reduced the average energy prices by approximately \$1.2/MWh for the hours between 7am and 7pm, resulting in an average price decrease of \$0.6/MWh across all hours (including the nighttime hours). The price effect increases somewhat proportionally with higher MWs of solar PV additions; i.e., 2,500 MW of solar PV reduces the average prices by \$1.5/MWh, and 5,000 MW of solar PV by \$2.9/MWh.” Under the study’s model-based approach, the Brattle Group estimated that “solar PV, depending on the level of installed capacity added, could have reduced the all-hours average energy prices by \$1.0-\$2.8/MWh for the summer of 2011.”

- **Stabilization of Energy Prices; Hedge Against Future Energy Price Risk:** Energy prices have been historically volatile and difficult to forecast. A more diversified energy portfolio dampens the impact of price fluctuations on both consumers and providers of energy. Renewable energy, whether on a grid-scale or on the demand-side, can be purchased at a set price under a long-term contracts that serve as a hedge against future energy price risk for the power purchaser.
- **Job Creation and Economic Impact:** Renewable Energy industries have created thousands of jobs for Texas and significantly impacted the broader economy as well. Consider a recent study by the National Renewable Energy Laboratory (“NREL”), which found that 1,000 MW of wind power development in the state of Texas accomplished the following: (i) generated over 2,100 full-time-equivalent jobs within the state of Texas during construction periods; (ii) currently supports approximately 240 permanent Texas jobs; (iii) generated nearly \$260 million in economic activity for Texas during the construction period; (iv) generates nearly \$35 million in annual Texas economic activity during operating periods; (v) generates more than \$7 million in annual property taxes; and (vi) generates nearly \$5 million annually in income for Texas landowners who lease their land for wind energy projects. Over 11,000 MW of wind generation has been built in Texas to date.

TREIA appreciates the opportunity to serve as a resource for the Committee and other policymakers and stakeholders in the process of making policy choices towards the goals of resource adequacy, grid reliability, and reasonable electricity rates for consumers. In addition to these goals, TREIA hopes that policy makers will continue to keep in mind the considerable benefits of renewable energy that are not accounted for in the energy market, including the environmental benefits of clean energy, increasing self-reliance, and the economic potential of Texas’ leadership in renewable energy and resource, technology, and business development. Renewable energy technologies, inclusive of grid-scale deployments and renewable demand side technologies, create benefits that accrue to all energy consumers by stabilizing energy prices, hedging fuel price risk, conserving water, improving air quality, and reducing losses associated with long-distance transmission and distribution. These technologies can and should play a greater role in meeting Texas’ energy needs.

## Endnotes and References

<sup>i</sup> **The Generation Resource Adequacy Problem:** ERCOT News Release, December 01 2011: “ERCOT 10-year outlook indicates need for additional generation; Reserve margin lowered by 5 percent” available at [http://ercot.com/news/press\\_releases/show/459](http://ercot.com/news/press_releases/show/459).

<sup>ii</sup> **Quick to market; Growth of Renewable Energy Sectors:** Modularity/scalability, diversity of deployment options, lack of reliance on scarce water resources, and zero emissions all contribute to speeding renewable capacity additions. These attributes account in part for the astounding rate of growth of renewable energy resources globally:

Renewable Energy Technology	Global Annual Growth Rate, 2005-2010
Biofuel	18%
Biomass power	7%
Hydropower	5%
Solar PV	60%
Wind power	27%

(Clean Energy Progress Report, International Energy Agency (IEA) 2011, Table 1, see [http://iea.org/papers/2011/CEM\\_Progress\\_Report.pdf](http://iea.org/papers/2011/CEM_Progress_Report.pdf).)

<sup>iii</sup> *Ibid.*

<sup>iv</sup> “U.S. Solar Grew 85 Percent in First Quarter, SEIA Says” Bloomberg (June 12, 2012) available at <http://www.bloomberg.com/news/2012-06-13/u-s-solar-grew-85-percent-in-first-quarter-seia-says.html>

<sup>v</sup> **Renewable Energy Investment Trends.** In a report released last year by Bloomberg New Energy Finance, global investment in renewable energy increased 32% in 2010, to a record \$211 billion. The gap between investment in renewable and fossil-fuel capacity investment also narrowed substantially. In 2010, total investment in fossil-fuel power plant was \$219 billion, some \$31 billion more than that in renewable energy (excluding large hydro). By comparison, the gap in 2009 was \$74 billion. See “Global Trends in Renewable Energy Investment 2011: Analysis of Trends and Issues in the Financing of Renewable Energy”, United Nations Environment Programme and Bloomberg New Energy Finance (2011), available at [http://www.unep.org/pdf/BNEF\\_global\\_trends\\_in\\_renewable\\_energy\\_investment\\_2011\\_report.pdf](http://www.unep.org/pdf/BNEF_global_trends_in_renewable_energy_investment_2011_report.pdf).

<sup>vi</sup> **Renewable Energy is Cost-Competitive:** The costs of new renewable energy technologies continues to decline, while worldwide deployment of these technologies and jobs associated with manufacturing, construction and operation continue to rise. Solar provides but one example. The price of new solar modules dropped 50 percent in 2011, making solar installations vastly more affordable for an increasing number of applications. (Solar Energy Facts: Correcting Old Myths, Solar Energy Industry Association, calculated using contract and spot prices from <http://pv.energytrend.com/>.)

A February 2012 LBNL-NREL analysis and projection of wind energy costs showed that wind energy technology improved greatly in the past decade, and estimated that the levelized cost of wind energy is now trending toward an all-time low. A key finding was that levelized cost reductions are estimated at 24-39% since 2002-2003. (Recent Developments in the Levelized Cost of Energy from U.S. Wind Power Project, NREL and LBNL, February 2012, <http://eetd.lbl.gov/ea/ems/reports/wind-energy-costs-2-2012.pdf>.)