

TESTIMONY OF
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ON BEHALF OF THE
SOLAR ENERGY INDUSTRIES ASSOCIATION**

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Senators, good morning. My name is Maura Yates and I am the senior manager of government affairs for SunEdison, a member company of the Solar Energy Industries Association (“SEIA”). SunEdison is the fourth largest solar developer in the world and owned by MEMC, a polysilicon and semiconductor manufacturer with manufacturing facilities here in Texas.

I also serve as the Texas member lead for SEIA. SEIA is a national trade association of the US solar energy industry. As the voice of the industry, SEIA works with its 1,000 member companies to make solar a mainstream and significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy.

SEIA thanks you for this opportunity to provide comments on Texas’s Renewable Portfolio Standard (“RPS”). First and foremost, we applaud the legislature and the Public Utilities Commission of Texas (“PUC”) for the overwhelmingly successful implementation of the RPS. Texas’ RPS has catapulted Texas to be one of the leading wind producers in the world, adding a new dimension to Texas’ leading energy production profile.

Texas’ RPS is a model RPS. It was originally crafted to help jump-start an industry to the point where it could compete in the free-market and brought economic development to a state already known for its business-friendly environment. Further, by siting these facilities largely in West Texas, the RPS assisted in increasing the rural tax base.

Despite these successes, there are some shortfalls associated with the RPS. Because it was an omnibus RPS without technology requirements, the RPS resulted in heavy wind development. This served as the impetus for the passage of SB-20 in 2005, which set a 500 MW non-wind target. While SB-20 was intended to help diversify the fleet of renewables, it did not spur development of non-wind renewable technologies, as it was a target, not a mandate.

Furthermore, SEIA recognizes the perceived challenges the full implementation of the RPS has presented in Texas. The introduction of wind into Texas’ free-market has created both pricing and variability challenges while still leaving Texas with peaking resource needs.

Solar can help address these needs, as well as enhance elements of the grid operation. With the RPS driving wind development, solar has primarily been installed in the Texas market to meet municipally-owned utilities’ (“MOU”) demand. Approximately 80 MW of solar have been deployed to date, of which approximately 75 MW have registered with ERCOT and are sited mostly in the southern zone. However, solar has some unique characteristics, and can help address some of the Texas market’s concerns:

1. Solar’s production follows extreme-weather patterns and is a peaking resource;
2. Solar uses little to no water, depending on the technology;
3. Solar has no fuel cost, therefore it is not subject to the pricing volatility other generators experience;

4. Solar can be sited in load pockets, through the deployment of distributed solar, but can also be deployed at the commercial and utility scale, and is less subject to Not-In-My-Backyard (“NIMBY”) concerns;
5. Solar can behave as a load-side or generating resource, depending on how it is interconnected.¹
6. When coupled with storage or any firming resource, solar plants (concentrating solar power and photovoltaic), can provide firm capacity to the power system.

The above resource characteristics make solar a necessary part of the generating portfolio in Texas, especially its coincident peak and low water intensity. Solar has faced challenges that include upfront capital costs, variability, and the need for longer-term contracts. However, SEIA is optimistic that these challenges can be eliminated or mitigated while still maintaining the integrity of a free-market.

In the interim charge, we were also asked to address the cost-effectiveness of solar. When comparing a bilateral solar power purchase agreement (“PPA”) to market clearing prices, solar would need to be priced around \$75/MWh. Prices like this are entirely possible for solar; however, the current ERCOT market structure is proving difficult for any generation resource to execute long-term bilateral agreements. These challenges include the omission of peak capacity value as well as the lack of long-term contracting.

Based purely on resource characteristics and state-wide electricity needs, SEIA recognizes solar has a role in Texas. We understand that reliability and resource adequacy are the primary objectives of both the legislature and the PUC. However, system quality is another essential component to reliability and resource adequacy, which is where solar plays a critical role. System quality examines the *types* of generation to be deployed to ensure that they meet the time- and location-specific nature of the load. Solar has resource characteristics, such as geo-targeted deployment and natural coincident peak, that allow the resource to behave differently on the operating system, and provides an opportunity for the resource to be leveraged for more than just energy production.

SEIA recognizes and acknowledges that natural gas is currently cheap, and we are not advocating that solar become the dominant resource in Texas. But, Texas should embrace an all-of-the-above energy strategy and tap into all of its available natural resources to diversify its generation portfolio. The reason solar isn’t being deployed today is mainly two-fold:

¹ If solar is sited on the customer-side-of-the-meter, then the solar offsets on-site load first, effectively reducing system load: this is known as distributed renewable generation (“DRG”). If the solar is interconnected on the utility side of the meter, then it behaves as a wholesale generating resource.

1. No generation of any kind has had sufficient market dynamics to build. This is not exclusively a “solar issue” and is the impetus behind the PUC’s current efforts in Project No. 40000.
2. The market construct was designed when traditional generators were the only resources in the portfolio. With the introduction of renewables, because they are a different type of fuel source, the market does not have all of the appropriate mechanisms in place to properly value the resource.

Simply put, we’re working to insure that the market structure can accommodate robust solar development and that solar’s unique characteristics and advantages are recognized.

As mentioned before, SEIA is involved in discussions in Project No. 40000. These conversations are dynamic and SEIA’s main effort is to ensure that the market designs facilitate deployment of *all* generation and also value resources for their system quality attributes. For solar specifically, system quality valuation would include some monetization of the following, unique solar, characteristics:

1. Quick to market deployment: Utility-scale solar can move from contract to online-and-generating in less than two years while typical distributed renewable generation resources can be constructed in less than 2 months.
2. Little to no water to operate: Given the current drought conditions in Texas, existing generating resources may be affected. Solar electric plants can reasonably and sustainably generate electricity using no water to generate power since they use sunlight.
3. High coincident peak factor: solar’s peak production is closely aligned with ERCOT’s summer system demand. Because of this, solar has a high coincident peak factor and an effective capacity value of 33%. Concentrating solar plants with thermal energy storage have capacity values in the range of 90% to 95%, similar to conventional thermal generating plants. This coincidence helps reduce the need to run older, expensive peaking units, reduces the risk of emergency events during high demand periods and reduces the need to drop industrial load. Further, when solar is paired with on-site firming resources such as battery storage or standby generation, system demand and generation can be aligned and the effective capacity value of solar can be improved to be a non-peaking resource, too.
4. Geo-targeted deployment of solar can help alleviate transmission constraints: Solar can be deployed in load pockets, largely facilitated through distributed renewable generation development. That said, the solar industry does recognize that there is an optimal balance to be struck in terms of DRG deployment in a node in order to ensure events are still triggered.

5. Solar hedges against volatile fuel prices. Because solar converts sunlight into energy and does not use any traditional fuel sources over the life of the equipment, solar is not subject to the risk associated with volatile fossil fuel prices.

In conclusion, the solar resources in Texas offer unique benefits in the Texas market and can help Texas continue to lead the nation in energy development. So now it is time to expand the local Texas energy production portfolio by supporting opportunities for solar to compete on a level playing field. SEIA is not asking for subsidies or incentives, simply the removal of barriers and the introduction of mechanisms that correctly value resources at what they are worth to ERCOT over the life of the asset.

EXHIBIT A

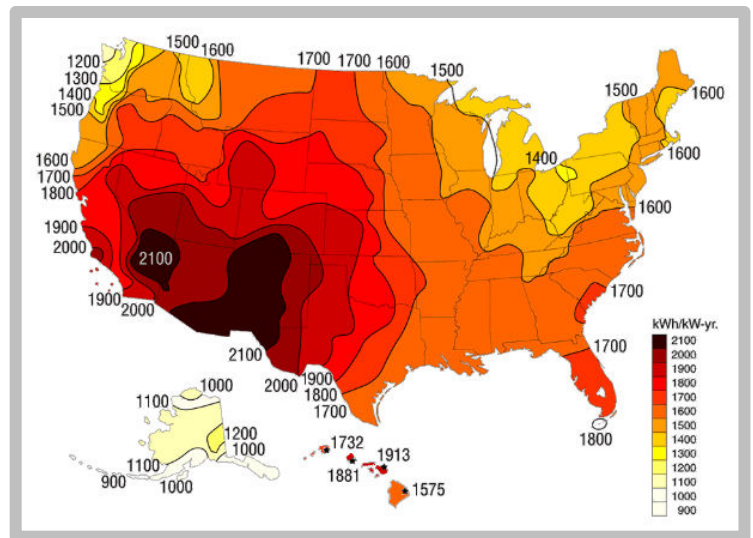
Solar Works in Texas

Solar is a natural resource to meet Texas's resource adequacy needs

Overview

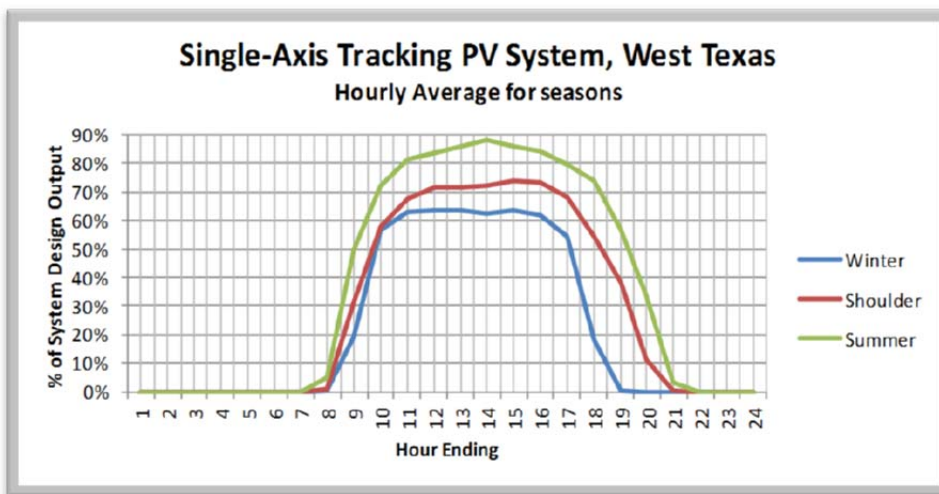
As the Texas economy continues to grow, electricity consumption has correspondingly increased. Environmental regulations and various market pressures have forced a significant amount of generation to exit the market in recent years while older generation sources continue to be retired. At the same time, Texas's electric demand has risen, with new peak demand records driven by the combination of strong, economic growth and hot summer months. As a result, since 2010, the state's reserve margin has declined precipitously. Thus, new generation capacity is required to meet the Texas market's demand. Texas's potential for solar combined with solar energy's characteristics make it a natural resource for Texas's current and long-term planning efforts.

In fact, Texas has the highest potential for solar in the nation, accounting for roughly 14% (38,993 TWh) of the entire estimated U.S. technical potential for utility-scale PV and 20% (22,786 TWh) for utility-scale concentrating solar power.ⁱ As a generating resource, solar has a high effective peak capacity value, is quick to market, can be located in a geographically targeted manner, is highly modular and scalable, uses little to no water, has minimal operating and maintenance costs, and has no fuel costs, thereby mitigating exposure to commodity price risks.



Solar energy production coincides with peak demand

Solar energy's peak production is closely aligned with ERCOT's summer system demand. Because of this, solar has a high coincident peak factor and an effective capacity value of 33%.ⁱⁱ Concentrating solar plants with thermal energy storage have capacity values in the range of 90% to 95%, similar to conventional thermal generating plants.ⁱⁱⁱ This coincidence helps reduce the need to run older, expensive peaking units, reduces the risk of emergency events during high demand periods and reduces the need to drop industrial load.





Solar energy is highly scalable and quick to market

Solar energy is unique in that it can be installed at the same rate as load growth, which, when combined with solar's quick development timeline, means solar can go online and meet load faster than any other resource. Unlike almost all other generation resources, solar is scalable and can be effectively deployed at both a residential, commercial and utility scale, which allows solar to provide ancillary services at both transmission and distribution service levels. Due to the modular nature of solar installations, as long as the space exists to expand, solar plants can continue to grow in concert with load growth, rather than having to wait for the sporadic deployment nature of central-station, conventional power plants.

Solar energy can be sited in a targeted geographic region

Solar PV allows for very targeted generation deployment, even down to a precise locations on an identified feeder. Conventional power plants do not have the capability to be installed in such a refined, geo-targeted way.

Solar energy can help maximize the return on investment in the CREZs

In the PUCT-created Competitive Renewable Energy Zones ("CREZs"), solar power plants could be sited especially fast given the transmission resources already in place or under construction and Texas's expeditious siting process. New solar generation in West Texas would contribute to near term resource adequacy needs improving utilization of transmission resources, and provide for a quicker return on investment on the already dedicated construction costs of building transmission in the CREZs.

Solar energy requires little to no water to operate

In general, all solar power technologies use little to no water. In fact, photovoltaic solar plants use no water to generate power since sunlight is converted directly to electricity; water use is limited to semi-annual panel cleaning for some plants.

Solar energy serves as a hedge against volatile conventional fuel costs

Finally, solar energy has minimal operations and maintenance costs, and no fuel costs, which eliminates the risks inherent in commodity prices. For instance, the Austin Energy Study quantified the value of PV as a hedge against volatile fuel to be approximately 50% of the current cost of generation (approximately \$0.03-\$0.05 per kWh).^{iv}

About the Solar Energy Industries Association®

Established in 1974, the Solar Energy Industries Association is the national trade association of the U.S. solar energy industry. Through advocacy and education, SEIA® and its 1,100 member companies are building a strong solar industry to power America. As the voice of the industry, SEIA works to make solar a mainstream and significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy.

For more information, please visit www.seia.org.