

**Statement of Robert L. Misback  
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**Quadrennial Energy Review Task Force Meeting  
“Enhancing Energy Infrastructure Resiliency and Addressing Vulnerabilities”**

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Good afternoon. I am Bob Misback, Vice President in charge of the Power Systems Group at Mitsubishi Electric Power Products. I appreciate the opportunity to participate in this first public meeting of the Quadrennial Energy Review and serve on this distinguished panel.

Mitsubishi Electric is a global company of 120,000 employees worldwide. Our energy infrastructure products include the high voltage transformers and circuit breakers which form the backbone of the US Grid. We have been supplying this critical equipment to US utilities for over 50 years. For the last 25 years, high voltage electrical transmission equipment has been manufactured at our factories in Pittsburgh.

We also offer our customers in the US advanced energy solutions such as solar panels, smart grid systems, and power electronics technologies that facilitate the deployment of renewable generation such as wind and solar power.

Today, I would like to focus my remarks on the investments that Mitsubishi Electric is making to help our customers strengthen physical grid security and cost-effectively integrate renewable energy into the electricity grid.

Mitsubishi Electric has invested over \$90 million in a smart grid demonstration project at three of our factories in Japan. We have used it to learn how to transform wind and solar energy into high quality stable power that can satisfy demanding industrial and residential applications using advanced controls, power electronics, and energy storage. Our customers are excited by the value this could create in their systems, and we are exploring a similar effort in the US.

Last April, we opened a new factory in Memphis, Tennessee, which represents an investment of over \$220 million. This is the largest transformer factory in the US and is the only one that can make the highest voltage transformers (up to 765kV) used in the electric grid. The transformers manufactured in Memphis support high voltage transmission facilities which enable large quantities of power, generated by wind or other low cost sources, to be transported long distances to reach large cities where it is needed.

We selected Memphis as the site of this factory for several reasons, but none more important than the logistical and strategic advantages that it provides. In Memphis, we have direct access to 5 major rail carriers and barge access to the Mississippi River which facilitates efficient transport of these very large transformers.

Large power transformers are a major investment for a utility and take a long time to build and ship. By manufacturing in Memphis, we have taken a major step forward in shortening the response time to an event that threatens the integrity of the grid by reducing the time to transport a critical machine to our customers from several months to as little as one week.

The attack on the Metcalf substation in San Jose occurred one week before we opened the Memphis plant, and brought increased focus by our utility customers to the exposure of the grid to man-made threats. We are collaborating with our utility partners to harden both our products and their substations against potential attacks and natural risks like Geomagnetically Induced Current (GIC) events. We were among the first to test transformers to understand the risks posed by GIC. We have standardized a GIC resistant design so that all units made in Memphis will withstand a GIC event.

We have also undertaken new technology initiatives to support grid resiliency, including the development of a mobile gas insulated substation, a universal spare recovery transformer, and a 'smart' transformer that improves the survivability and resiliency of this critical equipment.

Thank you for the opportunity to appear before you today. I look forward to working with the Department of Energy and the power sector on this important initiative.