Going for gold, nuclear plants contribute to a resilient electricity system

Over the years, when talking about the pros and cons of various generating assets, we have talked about economics, environment and reliability – but more recently a new word has entered the energy lexicon – **Resilience**. As defined by Oxford, "***resilience*** *is the capacity to recover quickly from difficulties; toughness, the ability of a substance or object to spring back into shape*"

Well, if you are anything like us, you have been glued to your TVs watching the winter Olympics in PyeongChang Korea over the last two weeks. Watching these athletes whose hard work knows no bounds do their best to represent their countries and try to secure a medal is truly inspirational and their **resilience** is what keeps them going above all odds. With close to 3,000 athletes competing and only 307 medals earned, most were disappointed in their quest for gold, yet they are all proud to have represented their countries and performed at their best. They never quit. They work for years to make it to a global competition where most do not win medals and then go back home, work even harder, and then hope to have the chance to do it all over again in another four years. I find that every time the Olympics are on, I feel inspired to work harder and do more to achieve my own goals.

The following Olympic ad by Toyota shows how shear determination and hard work can overcome the one billion to one odds of winning Olympic gold. It still brings tears to my eyes every time I watch it.

https://www.youtube.com/watch?v=sefscV3GvWM

Now that we have all been inspired, what do we mean when we

talk about **resilience** of generating assets like nuclear plants? We mean being able to continue to operate through difficult and extreme external events, usually weather related. We first took notice a few years ago in 2014 when North America experienced the polar vortex and it was clear that gas couldn't meet generating requirements in the extreme cold, but that America's nuclear plants continued to run and keep Americans' lights on.

Last year, the US Department of Energy completed a study that emphasized the importance of **resilience** to our energy infrastructure. The cover letter from the Secretary of Energy started "*A reliable and **resilient** electric grid is critical not only to our national and economic security, but also to the everyday lives of American families.*" It also introduced the idea that **resilience** has value to energy customers stating, "*We also need to recognize the relationship between **resiliency** and the price of energy. Customers should know that a **resilient** electric grid does come with a price.*" Ultimately the Energy Secretary recommended to FERC that they compensate nuclear and coal generators for their **resilience** based on fuel availability on site. Unfortunately, this approach failed but did start an important conversation.

This past fall during hurricane season, we used this word again when there were extreme storms in Houston, Florida and Puerto Rico. At the time it was noted that even though communities suffered greatly, the South Texas Project nuclear plant continued to run during the hurricane in Houston and that most nuclear plants were able to ride out the storm in Florida. On the other hand, even today, about 5 months after hurricane Maria devastated Puerto Rico, approximately one third of the island's residents are still waiting for power to return. Much of the reason for lack of power is the collapse of the transmission and distribution system, but this clearly demonstrates the importance of the electricity system as critical infrastructure in being able to successfully recover

from natural disasters.

Then as we entered the new year, it was once again extreme cold that impacted the supply of electricity in the North East. Wind and solar don't do well in these extreme conditions and gas is directed to homes first for home heating. The result – New England was saved by oil, yes it was oil that provided a third or more of New England's electricity needs. And even that was at risk if the cold spell would have lasted much longer as reserves started to dwindle. Yet there is still a discussion of closing nuclear plants that just keep on generating during these events. So let's remember what Secretary Perry said, "*Customers should know that a **resilient** electric grid does come with a price.*" What should really be said is that not having the **resilience** needed comes at a significant cost for us all should the electricity we need not be there when we need it.

So why talk about this now? We were thinking of writing about the importance of **resilience** to the electric grid for some time since the DOE study came out last year. We know that nothing continues to operate in extreme conditions better than our nuclear plants. But having been inspired by our Olympians, we realize it is not only the **resilience** of the nuclear plants we build that are so important to all our lives; rather, it is the **resilience** of those that work in the nuclear industry that will ensure our success. Just like those Olympic athletes, the people that work in the nuclear industry have unlimited passion for what they do – because they know they are working to make the world a better place, providing abundant economic, reliable, low carbon – and yes – **resilient** – energy to power our dreams for a better future.