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To Whom It May Concern:

Texas incident was like a mini Fukushima moment-

- Did not plan for a high-enough tsunami (although it is hard to plan every day for tsunami).
- Allowed common-mode failures to happen (multiple lines failed at the same time without a plan for proper load shedding to sustain the normal operation quickly; had no contingency plans readily available and no hedging for catastrophes).
- Excessive failure of conventional natural gas plants due to cold weather.
- Excessive natural gas usage by buildings for heating (i.e., less gas was made available for gas power plants).
- Weak ties to the eastern and the western interconnections.
- Installed wind turbines did not function in extreme Texas weather (usually do, if they are properly weatherized).

While some put the blame on cold weather, I would rather focus on the engineering planning. Long term planning for both reliability and resilience, which involves hedging against societal risks, and ironically defies short-term corporate profits, was ill-considered in Texas. The Texas incident demonstrated that we should consider the whims of global warming and the necessary weatherization as strong components of system studies. It is also apparent the weather-related common mode outages played a significant role in Texas outages. We should accordingly separate reliability from resilience studies and identify subsystems within a utility system where costly resilience hardening strategies should be the index for operation planning, and other subsystems where a lower cost reliability index will suffice.

I know there are some media outlets which rushed to blame wind generating units, energy sustainability, and decarbonization in the case of Texas. However, the proliferation of renewable energy, energy sustainability, and a sound decarbonization plan will require the power industry to move quickly from traditional business and operating models which have focused on disconnected and siloed deployment of renewable energy, and/or energy storage, and/or microgrids and behind the meter technologies, and/or energy efficiency, and/or electric vehicles and/or demand response, to a focus on integrating and dynamically optimizing all of these resources onto the smart grid holistically. Then we can have a sustainable decarbonization plan (the one that the new Washington administration is promoting) blended into the U.S. economy while continuing to have reliable, affordable, secure, and resilient electric power for all. Ensuring that the industry navigates this transition successfully is the critical component to staving off the worst impacts of climate change while enhancing the grid reliability, security, and sustainability.

Some consider stronger interconnection between Texas and the Eastern Interconnection. However, the question is whether the Eastern Interconnection would have had enough generation reserves available to save the Texas system. If a utility would like to import dispersed renewable energy to Texas, it might need a pot full of long transmission lines in addition to the ones which are deemed necessary to cover outages. The planning of the additional lines could be expensive and would have to bear much of ROW opposition and face state PUC scrutiny. In general, as the world shifts towards more renewables, it could need a lot of transmission line capacity to move massive amounts of wind and solar energy around the country. Although Chinese have been able to implement massive renewable power transfers from their western region to the east (load centers) at a very high cost, its socioeconomic and political viability would have to be scrutinized more intensely globally.

Migrating progressively to distributed power systems and microgrids like those planned at IIT and Bronzeville in Chicago could play a significant role in launching the smart grid plan as they allow local loads (hospitals, police stations, airports, universities, residential zones) to be managed properly and accordingly, in extreme circumstances, as power system resorts to a significant load shedding for sustaining the 60HZ frequency locally. Microgrids can be islanded and local lights can be turned on quickly inside the microgrid using local resources (battery, generators, renewables, building load prioritization) while the rest of the grid outside the microgrid is off. Microgrids promote the role of customers and their participations in managing the power system constraints at steady state and during outages. Microgrids can be networked locally to help each other in critical circumstances by adjusting loads locally. Microgrids can also be set up as DC or AC systems to enhance the energy efficiency as we add more uncertainty to the grid. However, would the advent of microgrids solve all the utility problems? The answer is no. You would still need a strong transmission grid as a backbone of power systems. However, as we look into enhancing the electricity infrastructure in the United States, we should bear in mind that it would be much easier, more sustainable, and ultimately more economical, to plan for a safe of “grid of grids” than a safe State of Texas grid, before the next tsunami appears in the horizon.

I believe, rather than presenting one plan for the whole State, the Texas incident demonstrated that we should address technical and regulatory concerns by allowing electric utilities to increasingly consider switching to transactive energy systems which promote a rather mild addition of bulk generation (nuclear/hydro whenever available but not the fossil-based) and transmission assets along with significant distributed energy systems with distributed resources (e.g., those which are controlled locally by local resources) to manage critical systems and loads in our cities and communities.

Sincerely,

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