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Integration of Renewables: A Utility Roadmap

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OVERVIEW

CPS Energy is an integrated utility owned by the City of San Antonio.¹ It serves 861,000 electric and 358,000 natural gas customers in Bexar County and in portions of 7 surrounding counties. CPS Energy did not opt-in when the retail market in ERCOT was opened to competition in 2002, so it is the only provider of retail electric service in its large service territory.²

It is a vertically integrated utility and one of the largest generators in ERCOT. It owns 40% of the two South Texas Project (STP) nuclear units in Bay City, Texas, and owns and operates 17 non-nuclear generating units, all of which are in Bexar County except for one plant located in Seguin, Texas. These non-nuclear units include 2 coal units and 15 gas-fired units, for a total owned generating capacity of 5744 MW. It also has 1631 MW of purchased renewable capacity – local solar, west Texas solar, west Texas wind, coastal wind and local landfill gas.

CPS Energy closed two older coal plants in 2018 after almost 6 years of planning. It has two large coal units still in service, one that is only 10 years old. These two plants (Spruce 1 and 2, totaling 1345 MW) have provided reliable, low cost base load power to cover the CPS Energy load but are facing increasing pressure to close by environmental stakeholders.

With the unique perspective of being a fully integrated utility in ERCOT (i.e., being a generator, a transmission and distribution provider, and a provider of retail electric service for a large number of customers), CPS Energy is currently facing many critical issues:

1. How can we integrate renewables into our generation mix?
2. How can we plan an orderly transition away from dependence on our fossil fuel plants?
3. What is the timeline for that transition and what is the effect on our workforce?
4. What options are available to firm up the renewable power we utilize?
5. Is natural gas generation an acceptable firming source?
6. At what point will battery and other forms of energy storage provide sufficient capacity with long enough duration to be relied on for firming purposes?

¹ By 1932, during the Great Depression, 8 large holding companies controlled approximately 73% of the investor owned operating utilities in the U.S. The Public Utility Holding Company Act of 1935 (PUHCA) was passed as one step to deal with the nation's economic distress. American Light and Traction Co. was one of the utilities that was required by PUHCA to sell its operating utility systems, including its system in San Antonio. The sale to the City of San Antonio in 1942 occurred as a result of that mandate. Another part of the American Light and Traction Co. system was sold in the same period of time to the City of New Braunfels. PUHCA was eventually repealed and replaced by the passage of the Energy Policy Act of 2005.

² CPS Energy also provides retail natural gas service to customers in Bexar County, but it has no monopoly service area. There are several other competing providers.

7. Who bears the cost of the plant closures and the debt that remains on CPS Energy's newer coal plants?
8. Will renewables and energy storage provide the reliability of power that San Antonio area customers have come to depend on?
9. At what point will energy storage and renewables be economically viable?
10. How much are our customers willing to pay to support these transformative changes in our electric generation business?
11. How much transmission capacity needs to be built (and at what cost to our customers) to ensure that new renewable electricity we purchase is delivered to our load?

Answering these questions is what everyone in the industry is focusing on today. In Texas, ERCOT (the organization) is responsible for ensuring that a few of these questions are answered although they have no legal authority to order construction of new generation or transmission facilities and do not have full insight into the availability of demand response and customer-owned generation for planning purposes.

CPS Energy is, in a way, a microcosm of what ERCOT (the region) is facing. It has a peak load (set in 2019) of 5159 MW and total generation capacity (including purchased renewable capacity) of 7375 MW, approximately 78% of which is nuclear and fossil fueled. Aggressive conservation and demand response programs are employed to manage system peak demand and reduce the need for new generation. However, as aging fossil fuel plants are replaced by more solar capacity, the inevitable intermittency gaps have to be addressed.

CPS Energy is in the middle of a large power procurement process which has, as its goal, addressing some of these generation challenges. Our objective is to be as flexible as we can while technologies mature and workable solutions emerge so that we can meet our customers' power requirements without risking expensive technology mistakes. We call our process a *Flexible PathSM* and our procurement is called the *FlexPOWER BundleSM*.

FLEXIBLE PATHSM AND FLEXPOWER BUNDLESM

CPS Energy has 1700 MW of aging gas steam capacity retiring within the next 10 years. We also have a large portfolio of renewable capacity and are planning to double our solar capacity purchases this year. Our community is projected to increase by 1.1 million people between now and 2040. We are focusing on how to integrate more solar and still be able to provide reliable power when it is cloudy, when the wind dies down, when turbines ice over – all the normal things that happen.

On November 30, 2020, after completing an RFI (request for information) to get an idea of the kinds of technologies and proposals the market might be offering, CPS Energy issued an RFP (request for proposals) for a large amount of power to replace part of its aging fossil generation fleet. The RFP is called a "*FlexPOWER BundleSM*" because we

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