

A comprehensive approach for managing energy development and implementation with a Smart Electric Grid and a County Energy Park

The CEC offers a concept paper that is more than merely an alternative to the Rancho Viejo Solar Project currently proposed by AES Corporation. As the County is aware, CEC opposes the AES Project not because it is solar and not because it has BESS, but because it attempts to place solar and BESS in a risky location without benefit to the community. As an alternative, we offer here a concept paper for a comprehensive approach to energy development and management, one that will deliver to all residents and businesses in Santa Fe County the benefits of an optimized approach that...

- Is modular and offers scalability through federated and distributed design,
- Is consistent with the land use principles of the Sustainable Land Development Code,
- Aligns with guidelines for community and commercial renewable energy projects,
- Shares responsibility and cost with Santa Fe energy customers and potential investors and partners,
- Easily fits into the Santa Fe County Sustainable Growth Management Plan (SGMP),
- Most important, is future-proof and safe for all communities within Santa Fe County.

The hope is that this concept paper will begin serious discussion around disrupting the current state of the electric grid in the county. Not one of these concepts is new or unproven. Enabling these concepts will take time, resources including money, innovation (public and private), changes in Laws, Regulations and Policy (LRP), and leadership.

Now is the perfect time for the County to enact a new vision for energy development, management, and delivery by transitioning to a Smart Electric Grid. The current electric grid is aging and monolithic, there is an urgent need to respond to climate change, and there are also many useful state and federal renewable-energy initiatives and incentives available. To move to a Smart Electric Grid, the County can partner with current electricity providers, local communities, and private entities to manage its electric power production, transmission, distribution, and demand. With a centralized energy management capability, a **Santa Fe County Smart Electric Grid** will allow the County, represented in the paper as the Grid Manager, to coordinate and respond to available and future renewable-energy initiatives, resulting in a coherent, effective system that provides electricity affordably, reliably, and sensibly in both the short- and long term.

The basic element of the **Santa Fe County Smart Electric Grid** is the system **Node**. There are two types of Nodes. The **Standard Node** is the existing customer who is completely dependent on the electrical distribution system to supply electrical energy to their home or business. The **Smart Node** is connected to the electrical distribution system; however, it also has solar generation and battery storage. The Smart Node has also agreed to share information about the state of the system with a centralized Smart Electric Grid Data Manager. As well as sharing information, the Smart Node has agreed to allow some level of control to be managed by the Smart Electric Grid. It is the ability of the Smart Electric Grid to manage the flow of renewable energy production and storage at the node level that is unique and provides Santa Fe County with the resiliency that will optimize and protect electrical energy usage in the county.

Standard and Smart nodes will aggregate around communities, buildings, or electrical distribution circuits into electrical **Distribution Networks or micro-grids**. Becoming part of the Distributed Network as a SMART Node is incentivized by the benefits of the electrical energy distribution optimization such as power assurance and availability, and lowered costs. Distributed Networks can occur around larger contexts such as energy suppliers like PNM, regions, cities and towns or geo-political boundaries such as districts.

Core to this approach is the operations center, the **Santa Fe County Smart Energy Management Center (SEMC)**. The SEMC contains the SEMC Data Center, where the individual Node and Network usage data is collected and analyzed. The SEMC can control the flow of power across the distributed networks to fulfill usage needs in areas in need of power and optimize the generation of power in areas with excess capability. The SEMC will have an awareness of the power being imported into the county from outside the County and will have the ability to perform energy management functions. There are three other elements of the Smart Electric Grid that are critical to its operations. These three elements are: 1) connectivity to the New Mexico Electrical Grid, 2) Santa Fe County could construct a **Santa Fe County Energy Park** with a bulk renewable energy generation and storage capability to fill the gap between energy demand and the energy produced from within the Distributed Networks (micro-grids), 3) intra-county energy transmission of bulk energy production.