

# Grid-Interactive Efficient Buildings/Providing Energy Demand Flexibility for Utilities in the Southwest: SWEEP Project Report



**Walter Wright, Jr.**  
wwright@mwlaw.com  
(501) 688.8839

09/19/2019

The Southwest Energy Efficiency Project (“SWEEP”) issued an August 2019 report titled:

*Grid-Interactive Efficient Buildings: Providing Energy Demand Flexibility for Utilities in the Southwest (“Report”)*

The *Report* is authored by Justin Brant with funding provided by the United States Department of Energy through a contract between SWEEP and the Pacific Northwest National Laboratory.

The *Report* notes the changes in electric utility systems due to:

- retirement of coal generation;
- low natural gas prices,
- decreased prices for energy storage;
- decreased prices for renewable energy resources; and
- increased investments in energy efficiency.

Such developments are stated to result in flat or decreasing utility sales. In turn, utilities’ generation portfolios are changing concurrently while peak electric demand increases:

- on both the electric system as a whole
- on certain portions of the transmission and distribution system

Industry changes are requiring investment in modernization of the electric grid.

Electric industry changes are stated to be a challenge for grid operators because of the “high penetration of renewable resources.” Renewable energy generation is stated to at times reduce load to below the levels of baseload generation resources. These are described as being not “easily turned off and on.” As a result, there may be instances where electricity generated is greater than demand – causing negative electric prices. Nevertheless, it is noted that:

. . . once the sun goes down and solar generation decreases, utilities must have fast response resources that can rapidly fill the generation gap left by renewable resources coming offline.

The *Report* describes these issues as the “duck curve.”

The *Report* contends that United States buildings are a major driver of these trends as they consume approximately 75% of electricity. However, they are denominated a potential solution because their

electrical load is “flexible” and can be managed to operate at specific times and at different levels. It is argued that adding advanced controls and communications systems to building equipment, building managers and grid operators can adjust power to meet grid needs through controlling existing equipment such as HVAC systems, lighting, hot water heaters, and pool pumps.

The U.S. Department of Energy is cited as indicating there are four modes with which buildings can provide demand flexibility:

- Efficiency
- Load Shed
- Load Shift
- Modulate

The *SWEEP Report* provides a summary of the residential and small commercial grid-interactive building demand-side management programs at the major utilities in the Southwest. It highlights existing programs in the region that are using grid-interactive buildings as a resource to help with the integration of variable renewable generation and to provide other grid services that create value for customers. Programs that are at the “forefront” of utilizing GEBs to provide value to the grid are highlighted.

A copy of the *Report* can be downloaded [here](#).