

## At a glance

### Location

Lancaster, Texas, USA

### Commissioned

December 2014

### Fuel

Commercial Propane (HD-10)

### Technologies

- Capstone C65 Microturbine for Grid Connect
- Inverter based microgrid application with various other technologies for education and demonstration purposes

### Customer

- Oncor Electric Delivery Company
- A 150,000-square-foot (13,935-square-meter) complex consisting of five buildings

### Results

- Microturbine is able to parallel load with all technologies on site
- Microgrid system is fully operational
- Solar panels are effectively charging batteries
- Laboratory building is operating on 200kW inverters

## Oncor Electric Delivery Company

Operating the largest distribution and transmission system in Texas, Oncor is a regulated electric delivery business that delivers power to more than three million homes and businesses, and operates approximately 119,000 miles (191,512 km) of transmission and distribution lines statewide. Oncor also works with distributed generation customers to ensure safe and reliable interconnection with the state's power grid.

### Establishing Onsite Generation in a Microgrid Application

As an advocate for clean energy technologies, Oncor wanted to establish a resilient and innovative microgrid based at their facility in Lancaster, Texas. The system would serve to promote the adoption of alternative power generation capabilities within a microgrid application. Oncor also wanted to implement a technology that could easily parallel with their existing generators as well as future technologies.

With a plant design in place, Oncor turned to Horizon Power Systems, the Capstone distributor for the state of Texas, for a reliable and efficient Capstone microturbine. The propane-fueled 65kW microturbine was able to parallel load with all other technologies on site, including solar, wind and renewable power.



“Oncor selected a propane-fueled Capstone microturbine as one of the primary sources for our advanced microgrid project. The microturbine integrated easily into the microgrid and has performed beyond our expectations,” commented Lance Spross, P.E., Director of Engineering Standards and Maintenance Strategy at Oncor. “Horizon Power Systems has been very responsive and supportive and has been a key partner in the construction, integration and testing of the Oncor advanced microgrid.”

### A Showcase for Clean Energy Education

Commissioned in December 2014, the grid-tied system consists of nine different distributed generation resources, including a 65kW Capstone microturbine, two solar PV arrays, two energy storage units and four generators. The microgrid has a total peak capacity of 900kW; however, it is scalable to meet any load requirements. The system can operate at its peak capacity for two hours before dropping to a baseload of 550kW as solar generation falls off at night and the batteries deplete.

“Of all the components included in Oncor’s advanced microgrid, the Capstone propane-fueled microturbine was the simplest to integrate and has consistently operated as designed. The advanced controls and technologies associated with the Capstone microturbine have enabled demonstration of important capabilities like peak shaving and load shifting with very low emissions,” added Spross.

Along with commissioning the microgrid, Oncor completed its Technology Demonstration and Education Center at the company’s onsite System Operations and Services Facility. This facility showcases the role that distributed energy resources will play in the electric grid of the near future by providing reliable power to homes, businesses and schools. These transformative technologies are integrated into a larger system of four interconnected microgrids that allow for continuous site operation during extended storm outages and other critical events.

Oncor now offers public facility tours to showcase their clean energy generation sources, including the Capstone microturbine. Facility guests are able to visit three specific areas during the tour. First, a multimedia immersion room provides a high-level overview of questions Oncor is answering with their microgrid. Next, the demonstration room displays state-of-the-art

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control and monitoring technology to integrate and synchronize the diverse sources. Finally, guests head outside to see the battery system, solar arrays, Capstone microturbine and the distribution equipment that ties it all together. This firsthand view of how microgrid technologies work should serve as a foundation to enhance reliability for Oncor customers and promote microgrid technology.

“The selection of Capstone Turbine as an example of reliable onsite power generation, by an entity of Oncor’s reach, will open new conversations concerning distributed generation and fault-tolerant grid improvement for years,” commented Bryan Hensley, Vice President of Sales and Marketing at Horizon Power Systems. “We are pleased to be part of these exciting conversations.” ■

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Oncor*