

# PANASONIC BATTERY DEMONSTRATION PROJECT

INFORMATION SHEET  
COLORADO



## Project overview

Battery storage systems have demonstrated that they provide multiple benefits to the electric grid. Given the price of the systems today, using batteries to support the grid in multiple ways can often help make battery systems more cost-effective investments. For example, when battery systems can help integrate more renewable energy, manage grid and feeder issues and provide back-up power to customers it provides value to utilities and customers alike.

Through a unique public/private partnership, Xcel Energy, Panasonic and Denver International Airport (DEN) are partnering on a battery demonstration project. The pilot project—located at Panasonic’s Denver operations hub within the new 400-acre Peña Station NEXT development just southwest of the airport—examines how a battery storage system helps:

- Facilitate the integration of renewable energy
- Enhance reliability on the distribution system
- Assist in providing voltage management and peak reduction
- Provide power to Panasonic in case of a grid outage by functioning as a microgrid

The demonstration project is composed of four primary components:

- A 1.3 MW ac carport solar installation. The carport is owned by DEN, but the solar system is owned by Xcel Energy.
- A 0.20 MW ac rooftop PV system at Panasonic’s facility, owned by Panasonic.
- A 1 MW/2 MWh lithium ion battery system supplied by Younicos, owned by Xcel Energy, and maintained by Panasonic.
- The switching and control systems to operate the energy storage system and microgrid functionality, owned by Xcel Energy.

During a two-year demonstration period, the system will be tested under multiple scenarios to determine how it can be used to increase reliability and resiliency for both Xcel Energy’s electric grid and Panasonic’s operations. After the demonstration is complete and the collected data analyzed, the battery will operate at its optimal settings for the rest of its life span—which is approximately eight additional years or about 10 years total.

## Xcel Energy’s Innovative Clean Technology program

The Panasonic demonstration project is one of our Colorado Innovative Clean Technology (ICT) programs. The ICT Program provides a regulatory mechanism for Xcel Energy to evaluate, select, propose and implement demonstration projects involving innovative technologies that appear promising in terms of achieving economic and environmental goals. Since the Colorado PUC approved the ICT program in 2009, a total of four have been funded.



The 1 MW/2MWh battery storage system and associated switchgear.



The 1.3 MW ac carport solar installation started producing power in March 2017.

Past ICT projects include the Colorado Integrated Solar Project in Palisade, Colo., and the community energy storage project at SolarTAC in Aurora, Colo.

For additional information on our Innovative Clean Technology program, please visit [xcelenergy.com](http://xcelenergy.com).

### Project schedule

Construction on the Panasonic demonstration project started in November 2016. The Younicos battery arrived onsite for installation in early March 2017. The lithium ion battery is comprised of multiple Younicos Y. Cubes, and was manufactured and tested at the company's Austin, Texas location before being shipped to Colorado. System installation and commissioning was completed and the battery array placed in service in 2017.

The installation of the solar system on the DEN carport began in December 2016 and became operational in March 2017. The rooftop PV system on the Panasonic building was also in service in 2017.

### Battery operation

During the demonstration period the battery system will provide several benefits to the electric grid:

- **Renewable integration** – the system will provide voltage regulation and ramp rate control to mitigate the high penetration of solar generation on this distribution feeder.
- **Peak demand reduction** – energy stored in the battery can be dispatched to address peaking conditions, either at the feeder level or system level.
- **Energy arbitrage** – the storage system can be used to take advantage of fluctuations in wholesale energy prices, charging when prices are low and discharging when prices are high.
- **Regulation services** – the battery is dispatched to respond to low frequency events.

### Microgrid function

In the event of a grid outage, an "islanding" switch will automatically form a microgrid, allowing the battery to provide power to the Panasonic building. In microgrid mode, both the battery and the rooftop PV will provide power to Panasonic. Its intelligent building can prioritize and shed non-critical loads to keep critical services—such as its network operations center (NOC), which monitors and manages a nationwide network of large-scale PV projects totaling hundreds of megawatts—up and running. Should power from the PV system exceed the building's needs, excess generation will be stored in the battery.

Once grid power has been restored, the microgrid will seamlessly transition out of islanding mode and back to grid mode.



Xcel Energy employees look at a bank of Younicos Y.Cubes that compose the Panasonic battery.

### Contact us

If you have questions about this project, email us at [EnergyStorage@xcelenergy.com](mailto:EnergyStorage@xcelenergy.com).