

Smart Communities In Focus

Spotlight: Denver, CO



Denver's smart community effort is aided through its partnerships with Xcel Energy, Colorado Regional Transportation District, Denver International Airport, Northern Reliability Inc., Panasonic, Silver Spring Networks, Sunverge Energy, U.S. Department of Transportation, and Waze.

Denver's Goals

- Advance renewable energy and energy grid resiliency
- Improve air quality and mobility
- Demonstrate new technologies

Smart communities are built on smarter energy infrastructure and leverage the power of data and technology to improve sustainability, spur economic development, help drive efficiencies, and enhance the overall quality of life for their citizens. This summary focuses on specific opportunities where communities and electric companies can collaborate to make communities smarter, including projects that advance: Smart Street Lighting, Smart Transportation, Smart Buildings, Distributed Energy Resources, and Data Analytics and Intelligent Services.

What Makes Denver Smart?



Smart Street Lighting—Saves energy, improves safety, and reduces traffic congestion.

- Xcel is upgrading 15,000 streetlights to LEDs across Colorado with more than one-third of them located in the Denver metro area.
- The Peña Station Next mixed-use development community being developed near the Denver International Airport will include motion-activated self-dimming LED streetlights powered by solar cells, and HD security cameras to enhance safety.



Smart Transportation—Improves safety and mobility, reduces carbon footprint, and provides greater access to services.

- Denver installed two DC fast charger and 10 Level 2 chargers throughout the city. The Denver International Airport installed 10 electric vehicle chargers.
- Colorado's Regional Transportation District expanded its electrified light rail transit in 2016 to include a line from downtown Denver to the Denver airport—with stops including the Peña Station Next development.



Smart Buildings—*Save energy and improve sustainability.*

- Denver was the first municipality in Colorado to enter into a Joint Energy Efficiency Program with Xcel Energy. The program establishes target goals for city energy reduction efforts.



Distributed Energy Resources—*Improve sustainability, efficiency, and reliability.*

- Xcel Energy leads two battery storage demonstrations as part of the Innovative Clean Technology program. One is a partnership among the City of Denver, Xcel Energy, and Panasonic designed to prove the efficacy of high-capacity batteries to provide energy grid services and deliver multiple value streams. The project includes a 1-megawatt (MW)/2-megawatt-hour energy storage system and a 1.3-MW-AC canopy photovoltaic installation. The battery storage system will provide reliability to a Panasonic facility by forming a microgrid in the event of a grid outage.
- Xcel Energy's second battery storage pilot program is in the Stapleton neighborhood, which has some of the highest penetration of private solar in the Denver area. This pilot is testing six 15.5-kilowatt-hour in-home, behind-the-meter battery units, and six large-scale units along the feeder to prevent reverse power flows and to enable solar 'time shifting' by storing and discharging solar energy during the residential feeder's peak demand. The behind-the-meter battery systems are operational and the large-scale batteries will begin operations in the fall/winter 2017.



Data Analytics and Intelligent Services—*Increase efficiency, improve city services, and enhance quality of life.*

- Denver received a \$6 million U.S. Department of Transportation grant to deploy technology that will address traffic congestion and safety.
- Denver is installing dedicated short-range communications in 1,500 city fleet vehicles and is partnering with Waze to create a connected traffic messaging channel and operational environment that supports connected vehicle applications.
- Denver also is developing a dedicated short-range communications-enabled freight signal priority program to improve travel time reliability and to reduce freight congestion during peak travel periods.

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