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Panasonic office targets smart-city efficiencies

The term “smart city” is getting a lot of attention as we hurtle through the age of information. What makes a city smart? Smart cities are developments that take information related to assets, energy and infrastructure and combine it in a secure manner through communications technology, providing an effective infrastructure management system that can adapt as the city evolves. The end goal is to improve the quality of life and reliability of infrastructure for those who live and work there, and provide flexibility for future yet-to-be-invented technology.

This big picture thinking is exciting for those of us in the architecture, engineering and construction industry. The benefit of leveraging technology on a broader smart-city development is an exciting opportunity to maximize our resources and expertise beyond a single project.

The U.S. Department of Transportation took notice, announcing a national Smart City Challenge Competition for up to \$40 million to support smart-city implementation in December 2015. The response was impressive: 78 cities entered the competition. And Denver ended up among the seven semifinalists. Though the eventual winner city was Columbus, Ohio, the competition helped spur some compelling lessons learned that the DOT is sharing.

We can take a look at a few current and local “smart city” projects to get a better understanding of what makes a city smart. At Peña Station NEXT, located adjacent to the 61st Avenue and Peña Boulevard rail stop on the Regional Transportation District’s new University of Colorado A-Line, Mortenson recently completed multiple projects including solar, battery storage and the first building on the site: The Panasonic Enterprise Solutions Co., known as PESCO, Operations and Technology Center for Westfield Co.

This highly visible building in Fulenwider’s transit-oriented development houses more than 100 PESCO engineers, scientists and management personnel of the Energy Solutions Group and Sensory Solutions Group of PESCO, as well as Panasonic CityNOW, which is Panasonic’s North American smart-city initiative. The facility is a showcase for Panasonic products, as evidenced by the LED lights



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incorporated into the design and includes a 24/7 network operations center that monitors a nationwide network of large-scale solar photovoltaic installations.

PESCO will be pursuing LEED Gold certification for the building, and energy use is an important consideration for the design of any vertical component of a smart city.

One of the many important pieces of the overall smart-city concept at Peña Station NEXT is a micro-grid, which is the first of its kind in Colorado and the first that Xcel Energy will own.

Adjacent to the PESCO Operations and Technology Center is the site of Mortenson’s first battery storage scope supporting this grid, which is being delivered as part of the Panasonic, Xcel Energy and Younicos team. This 1 megawatt/2.22 megawatt-hour battery energy storage system helps provide backup energy for peak demand times.

Power to the Panasonic building also will be supported by a 1.3 MW solar energy collection project in the form of a carport, owned by Denver International Airport. Our company is part of SunPower’s team, which was contracted by Panasonic to build the carport.

The PESCO Operations and Technology center minimizes waste and environmental impacts and was constructed in less than 10 months by utilizing investment-grade, tilt-up concrete panels, structural steel and extensive glazing in the office areas. Specialty electrical systems were constructed to service the testing and development needs of the audiovisual and ECO labs inside the warehouse and the roof-mounted solar panels. The result is a flexible and energy-efficient office and warehouse space that supports productivity and allows for future flexibility for PESCO.

Part of the plan for Peña Station NEXT that is generating a lot of excitement includes the implementation of a driverless shuttle system that will take people from the rail stop to the building and future locations within the development.

Another project provides many of the same benefits of smart cities in



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The Panasonic Enterprise Solutions Co. Operations and Technology Center is part of Peña Station NEXT, a smart-city development, located adjacent to the 61st Avenue and Peña Boulevard rail stop on the University of Colorado A-Line.

other parts of the metro area. At the 3,400-acre Sterling Ranch project in northwest Douglas County, we are providing all nonresidential infrastructure construction and design and construction of a new water and wastewater system as well developing the first commercial project.

Sterling Ranch is the last large-scale urban development in all of Douglas County. At full build out, the development will include 12,000 single- and multifamily homes and over 2 million square feet of commercial development, with 37 percent of the land being dedicated to open space. We will break ground on one of the first vertical components at Sterling Ranch this spring – the 30,000-square-foot Civic Center, which will include office space among other amenities. Additional commercial office development will follow in the future as part of the Sterling Ranch master plan.

Siemens is a key member of the team, helping deliver an infrastructure that includes an immense fiber network connected to every home and business to provide a minimum of 1 gigabyte service, up to 10 gigabytes.

For a building to adapt to future needs, it needs to have an expandable fiber-optic network. This is important as the Denver metro area is seeing variability in office vacancy rates as businesses look for options outside of the central business district. Reliable communications infrastructure is a key factor in site selection in today’s competitive business climate. It also will allow for effective teleworking and open the door to improvements in telemedicine. With Business Insid-

er Magazine projecting that there will be 34 billion devices connected to the internet in 2020, the fiber capacity is crucial, as it is the most reliable infrastructure available.

Energy-efficient measures such as fiber-enabled LED lighting on streetlights provide not only a “smart” lighting solution, but also security benefits by enabling the ability to brighten or dim lights as needed or help a family locate a child or family member, provided they opt in to the system. The residences, some of which are under construction, are all expected to have home-automation systems that will help residents manage and control their heating and cooling, lighting, internet and entertainment systems. Homes also will have separate metering for indoor and outdoor water.

Smart cities can attract businesses looking for new geographic locations to grow their operations and can be a selling tool for economic development corporations. These smart cities provide a smart infrastructure to help businesses improve operations, outreach and reputation through better connectivity to related community stakeholders, including health care facility operators, schools, retail and the services those living and working in these area demand.

These are some of the local examples of the advantages of integrating infrastructure, connectivity in transportation and information, water, energy and power as part of an overall building and development solution at present. The smart city concept is becoming reality in Colorado! ▲