

BACnet® Helps City Save Money

By Nancy L. Robbers

The city government of Hollywood, Fla., needed an open system that supported direct digital controls (DDC) to replace the archaic, high-maintenance pneumatic controls installed in its buildings. The facilities maintenance operations manager wanted to develop an open system specification for the building controls to allow competitive bidding of future projects. Proprietary systems, he believed, left him at the mercy of manufacturers.

An open system also would integrate other building systems and consolidate sites to simplify monitoring and centralize control. With an intuitive interface, the operations manager could focus his staff on other areas and achieve greater efficiency in maintaining the city's facilities. On the suggestion of his HVAC consultant, the operations manager chose a BACnet-based system.

One of the biggest challenges to establishing an open system was getting project funding and convincing stakeholders to implement the plan. Because not every site could be renovated and upgraded at the same time, the operations manager outlined a timeline to bring the completed buildings online in sequence and within budget parameters. To convince city executives that an open

BACnet-based system was the best solution, he used the first renovated building (the public works facility) as a test site for the open system.

At the public works facility, the city set up a BACnet server, a global controller and field controllers for unit control and monitoring of the maintenance bay central office. The working test helped the operations manager illustrate BACnet's ability to accommodate all of the city's plans for new or upgraded installations.

The BACnet solution updated the aging and inefficient controls, integrated city facilities and provided centralized monitoring and control with remote access. To date, the ongoing city of Hollywood project includes BACnet servers, global controllers, VAV box controllers, variable frequency drive and constant volume air-handling units, fan-coil units, fresh air precooling units, chillers, pumps, cooling tower fans and split-system DX air handlers.



An open protocol controls system enables the City of Hollywood, Fla., to efficiently consolidate and control multiple sites.

After the controls system for the first building was in place, facilities staff underwent comprehensive training to ensure they felt comfortable and confident using it. The city next upgraded each of city hall's mechanical systems, beginning with the installation of BACnet-based global controllers. Field controllers oversee air and fan-coil units, chillers, cooling towers and VAV boxes. Once established, the city hall building controls integrated seamlessly with the existing Public Works system, communicating over the city's wide area network (WAN).

The city then renovated police department headquarters by installing a BACnet system. A global controller and field controllers manage fan-coil units, face-and-bypass air handlers, pumps and an air-cooled chiller. Adding the police department's system to the city's WAN was as simple as plugging in the global controller to the nearest network switch.

As the BACnet standard incorporated new capabilities, the city deployed them in its evolving system. The next project upgraded the city's WAN routing structure to an IP-based network using the standard's Annex J BACnet/IP, which transmits BACnet messages across IP networks in native IP format, enabling widespread connectivity anywhere in the enterprise. The server was centralized to the city's data center and more workstations were added. New laptop workstations and a Web server enable the city's facilities staff to monitor and adjust setpoints from anywhere.

Two older chillers in city hall were replaced with one new

chiller. Engineers upgraded controls with a dedicated global controller and field controllers that featured chillers, pumps, cooling towers, multiple flow stations and automatic isolation valves for the chiller plant operation.

The city next brought on-line the new headquarters of the Hollywood Fire Department. This site added a BACnet workstation and laptop, a global controller and multiple field controllers to control air-handling units, a chiller and VAV boxes.

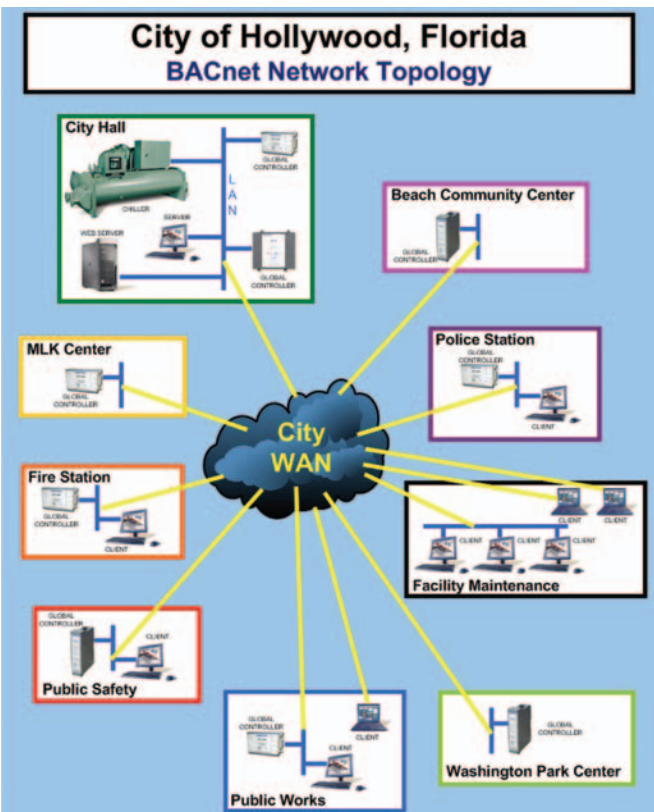
The city refitted the Hollywood Beach Community Center with a new cooling tower. The city's South Florida systems integrator upgraded the tower fan with a variable frequency drive, field controller and sensor for setpoint control. Now, instead of running full blast 24/7, the cooling tower operates at the minimum necessary speed, saving the city money and energy.

A second renovation of city hall increased the indoor air quality and upgraded more aging mechanical systems. State-of-the-art controllers added processing power and speed to improve system performance. The city converted constant-volume mechanical systems to VAV systems for more localized comfort control. Additional field controllers manage fresh air precooling units and VAV controllers.

Most recently, the city overhauled air conditioning system controls in the Martin Luther King Jr. Recreation Center. A new global controller and field controllers control split system DX air handlers and maintain humidity levels in its wood-floored basketball court and gymnasium.



Graphical interface for Martin Luther King Jr. Community Center.



Open protocol-based system easily connects disparate buildings and integrates third-party equipment.

The city of Hollywood continues to upgrade its existing buildings with BACnet solutions that first took root at a simple beta site. In five years, building controls in five major Hollywood sites were updated and brought on-line. From a workstation or laptop, the operations manager can monitor and adjust setpoints at multiple sites around the city. From their offices, facilities staff can troubleshoot issues as a team before going to the location, saving the city time and money.

Nancy L. Robbers is copywriter for Alerton in Redmond, Wash. ●

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