# Greening Spring House Innovation Park with Flexible Outdoor Bluetooth Mesh Control

Spring House Innovation Park, a 1960s style commercial campus, is being re-imagined for today's life and work needs. Providing flexible outdoor lighting control throughout the 133-acre campus was a challenge met by collaboration partners mwConnect and Luminosity Lighting. The project team designed and implemented a flexible qualified Bluetooth mesh control network that affords management fingertip adjustability while offering occupants responsive lighting regardless of the time of day or night.

## Creating a Control Network

The Spring House Innovation Park (SHIP) campus, located in suburban Philadelphia less than 30 minutes from the city center, features approximately 600,000 ft2 of move-in ready or build-to-suit laboratories, state-of-the-art research and development facilities, Class A office space and coworking space across 14 separate buildings, nestled in a park-like setting with ring road access.

While the revitalization project encompassed all major building systems, the outdoor lighting posed unique challenges. With 11 parking lots, dozens of walking paths, and a central courtyard space, as well as wide-ranging occupant schedules (some tenants adhere to working schedules aligned with headquarters in Asia or Europe), the design team knew a robust control network with maximum flexibility was key. Another critical factor was wireless control, since retrofitting such a large campus with new underground wiring would be cost-prohibitive.

The team, led by L2A, Luminosity Lighting Associates, selected mwConnect's qualified Bluetooth mesh control platform, TruBlu.™ "We were very impressed with the scalability of the platform," said Jim Edmonds, Project Manager, L2A, "and knew that robust wireless control was critical." The project team selected High Efficiency LED shoebox and Cobra-head style fixtures for roadway lighting mounted on 12' poles, to comply with township requirements that outdoor lighting fixtures remain below tree level. Pathway and courtyard lighting included 3-arm, post-top style decorative lighting. All fixtures were sourced from Utopia Lighting. The control network encompassed a combination of TruBlu passive infrared motion sensors, TruBlu photo sensors and gateway controllers. Control devices for the roadway fixtures were installed at the factory while the remaining control devices were installed onsite.

The project was the first major exterior project for the team. Because of the campus size and the need for remote access, the project team chose to include multiple network gateways and to leverage the flexibility of TruBlu controllers to serve as signal repeaters. The project size and location presented several challenges during design, installation and commissioning. These included resolving signal interference from heavy tree canopies, ensuring smooth communication between multiple gateways, and adjusting device locations for optimal performance. As Edmonds notes, "With such a large project and multiple gateways, the project team definitely encountered some technical challenges. But the commitment of the vendors, both mwConnect and their technology partner Silvair, and the continued technical support they provided helped the team resolve issues as they arose. Ultimately, we had a very successful installation."

In all, the network includes 35 control zones. The base control scenario is astronomical control, with lighting turning on to 80% output 45 minutes before sunset. When no occupancy is detected by the PIR sensors, lighting dims to 20% output after a 10-minute time delay. If occupancy is detected, lighting ramps back up to 80% output. Zones controlled by photocells turn on and off at pre-programed footcandle levels. Once these zones of lighting are on at 80%, the sensors follow the motion sensor control scenario described. In the morning, lighting turns off depending on which zone it is located in. Zones controlled by the astronomical control turn off 15 minutes after sunrise, while zones controlled via the photocells turn off based on the pre-programed footcandle level. In addition to astronomic, motion-based control, and daylight-responsive control, the network also delivers power consumption data, and occupancy mapping.

Continuing phases of development are focused on completing existing structures, as well as construction of a new onsite hotel and retail village, pending local jurisdiction approvals. "We're very pleased with the performance of the outdoor lighting control network," states Ronald Dinger, Project Manager, MRA Group representative. "Our vision for Spring House Innovation Park as a vibrant, human-centric village that meets the needs of today's and tomorrow's workforces is fully supported by the intelligence and responsiveness of the system."

## Project Participants

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