

Retro-Commissioning Sensor Suitcase

The Technology Transfer Process

- Bolstered by success in early field testing, the team was able to gain funding from DOE's Technology-to-Market program, Emerging Technologies/Commercial Buildings Integration Lab Call, and the Small Business Vouchers Pilot that allowed them to incrementally mature the technology and ready it for commercialization.
- PNNL was eventually able to match prototyping company Zepher to GreenPath who was on the search for a manufacturing partner. An Inter-Institutional Agreement allowed PNNL to lead intellectual property and marketing efforts, and a bailment agreement enabled PNNL to provide a prototype to GreenPath pre-commercialization to use to model a commercial prototype.

The Technology—Big Energy Savings Packed Into a Small Case

The challenge: providing an affordable solution for optimizing energy use in smaller commercial buildings.

According to the most recent data from the U.S. Energy Information Administration, small commercial buildings—those 50,000 square feet or smaller—account for 94 percent of all commercial buildings (by number). They also account for 44 percent of total commercial buildings energy use. These smaller buildings are some of the most neglected with respect to energy-efficient operations because often their owners aren't aware of the conditions of their buildings and energy-using systems such as heating and cooling. They may also have difficulty accessing capital for investing in system upgrades and maintenance. Or they lack in-house staff, like building engineers and energy managers, who have expertise in energy systems.

The solution: an intuitive and portable “expert in a suitcase” designed to measure impacts on energy use, such as indoor temperature and lighting status, and provide recommendations.

The Retro-commissioning Sensor Suitcase is a portable case containing 16 small matchbox-sized, battery-powered sensors. Following easy-to-use, tablet-based graphical instructions, the user mounts the sensors in specific locations throughout the building—for example, on lighting fixtures, near thermostats, and on rooftop heating and air conditioning systems—and four to six weeks from initial deployment, the user places the sensors into the suitcase. Data from the sensors are then transferred to a personal computer and analyzed. After the user enters a small amount of information, a report, designed with simplicity in mind, is quickly generated on the computer screen with building-specific energy-savings recommendations, such as installing occupancy sensors that turn lights off when an area is unoccupied or adjusting heating or cooling temperature settings. Each recommendation is accompanied by an estimated annual energy cost savings.



A user holds an opened prototype Retro-commissioning Sensor Suitcase with a complete set of 16 sensors. GreenPath licensed this technology in April 2017.

Pacific Northwest National Laboratory Team



Jennifer Lee



Sara Hunt



Michael Brambley



Danny Taasevigen



Eric Gonzalez



Michael Hughes



James Skorpik

Lawrence Berkeley National Laboratory Team



Jessica Granderson



Catherine Koh



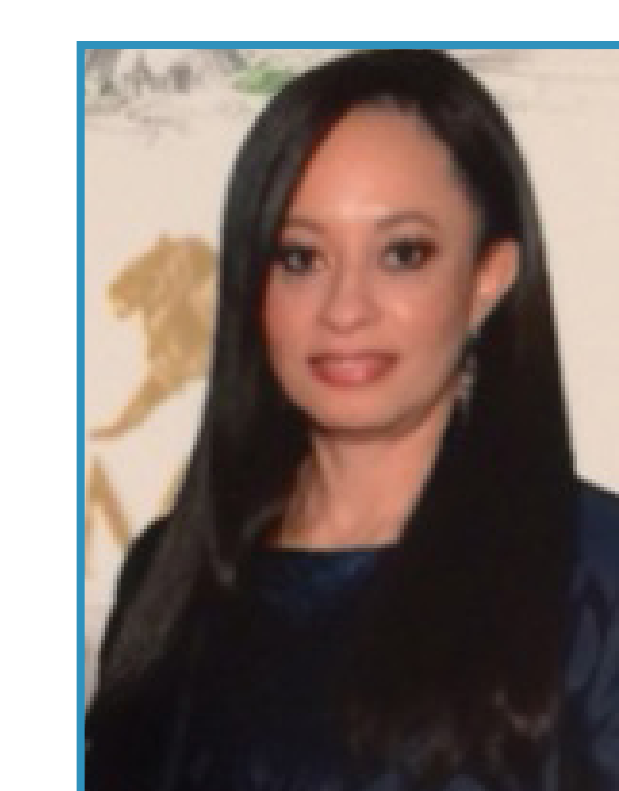
Samuel Graham



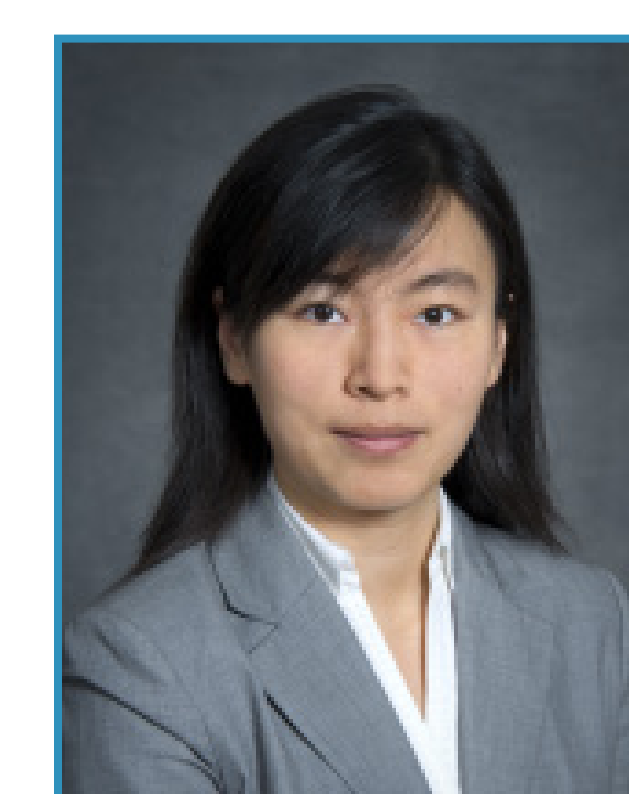
Shanshan Li



Samuel Fernandes



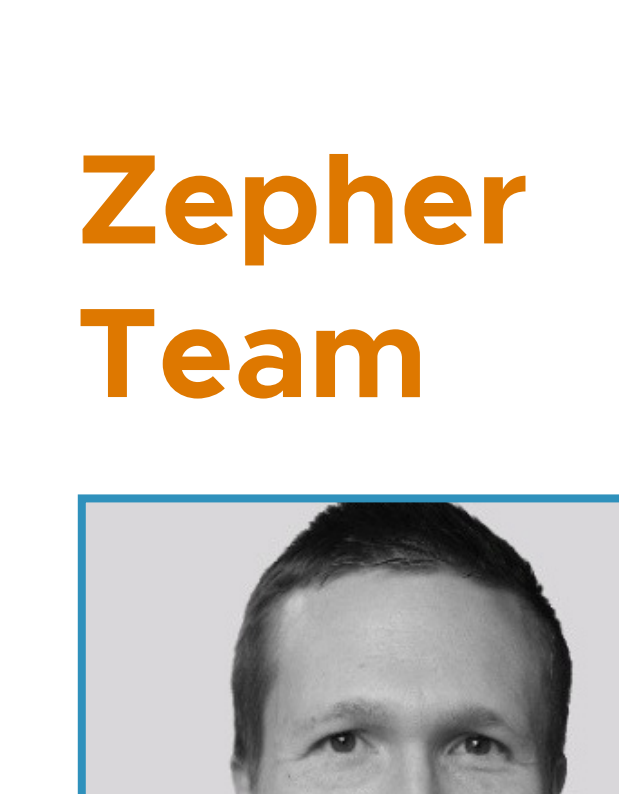
Sharon Pierre



Guanjing Li



Robin Mitchell



Adam Stolz

Zepher Team



Adam Stolz

Contact Information

Sara Hunt
Commercialization Manager
sara.hunt@pnnl.gov
www.pnnl.gov