

About this Study

The U.S. Department of Energy (DOE) Renew America's Schools is funded by the Bipartisan Infrastructure Law (BIL) to help K-12 schools make energy upgrades that will lower utilities costs, improve indoor air quality, and foster healthier learning environments. Berkeley Lab is funded by DOE to collect survey data from teachers and staff working in schools receiving the Renew America's Schools grant to understand how building retrofits can impact their perception of their school environment.

To learn more: <https://www.energy.gov/scep/renew-americas-schools-grant>

IEQ Survey

Berkeley Lab is using a survey developed by the University of California Berkeley's Center for Built Environment to compare what teachers and school staff think of their school environment before and after building retrofits. **Indoor environmental quality (IEQ) – temperature, air quality, lighting, and noise**, are important to occupant satisfaction and support productive work. Our hypothesis is that retrofits, such as heating, ventilation, and air conditioning (HVAC) system upgrades, lighting and other building improvements will improve IEQ, in addition to reducing energy use and greenhouse gas emissions.

To learn more: <https://cbe.berkeley.edu/resources/occupant-survey/>

Incentive Options

While there is no direct benefit to teachers and school staff for filling out the short survey, your school will receive a **FREE device** for measuring building data by reaching a 50% survey participation rate. The free device can be used for students to learn about how to collect and analyze building data. The free device can also be used by school staff to gather data for improving building operation.

The following is a list of example devices that measure building parameters useful for understanding the energy use and the indoor environmental conditions in your school. It is up to your school to decide which option to pick. There is an upper limit of \$400 per incentive.

Please contact Berkeley Lab study staff, Allie Johnson at alexandrajohnson@lbl.gov for more information.

(a) Plug load data logger



- Listed price: \$299
- Easy-to-use data logger that measures and records the power and energy consumption of 120V plug loads
- Useful to learn about how much energy are consumed by plug loads common in schools, such as office equipment and small appliances

<https://www.onsetcomp.com/products/data-loggers/ux120-018>

(b) Occupancy and light data logger



- Listed price: \$279
- Monitors room occupancy and indoor lighting level; stores data to internal memory
- Useful for identifying occupancy patterns and indoor lighting level in a room, which are important to determine potential energy savings

<https://www.onsetcomp.com/products/data-loggers/ux90-006>

(c) Temperature and relative humidity data logger (may request two units)



- Listed price: \$159
- Measures and transmits temperature and relative humidity data wirelessly to mobile devices or to computers via Bluetooth
- Useful for learning about indoor air temperature and relative humidity in a space

<https://www.onsetcomp.com/products/data-loggers/mx1101>

NOTE: The mention of the brand names is solely for the purpose of this study and does not imply endorsement by Berkeley Lab.

(d) Sound level meter



- Listed price: \$258
- Measures sound level and reports sound pressure level in decibels (dB)
- Useful for measuring noise level in a space and associated with building equipment

<https://www.flir.com/products/407732>

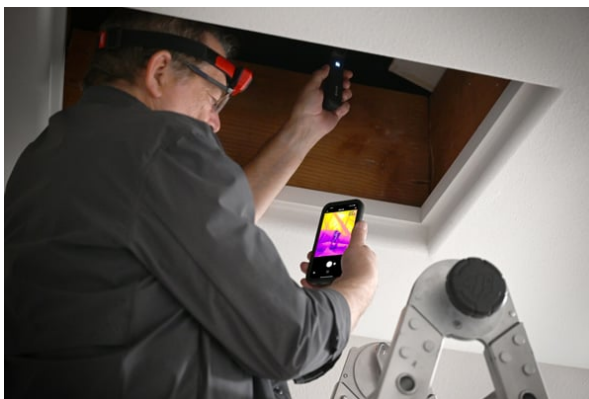
(e) Anemometer



- Listed price: \$373
- Anemometer with a built-in infrared thermometer to simultaneously measure air velocity and temperature
- Useful for testing the air velocity and temperature at supply air register, which is important for maintaining thermal comfort and providing ventilation

<https://www.flir.com/products/an200>

(f) Thermal camera



- Listed price: \$349
- Capture thermal images from hard-to-reach areas and connects wirelessly to mobile devices
- Thermal imaging use colors to show the relative temperature of objects, identify hot/cold spots and energy saving opportunities

<https://www.flir.com/products/flir-one-edge/>

NOTE: The mention of the brand names is solely for the purpose of this study and does not imply endorsement by Berkeley Lab.