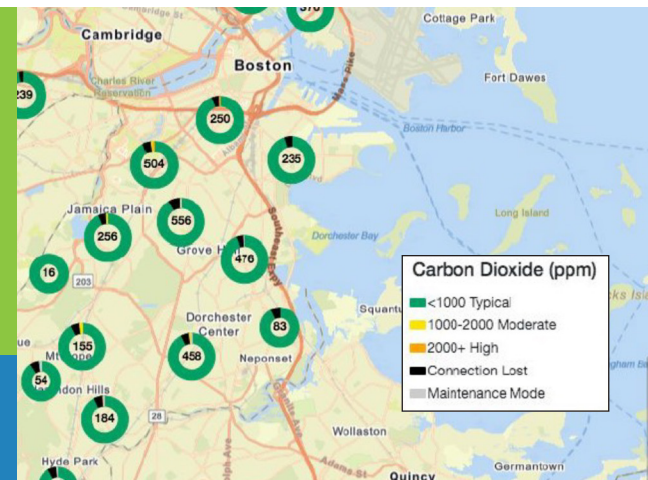


The [Efficient and Healthy Schools Program](#) aims to motivate and empower K-12 schools to reduce energy costs and improve student and teacher health. The Program connects schools with practical solutions and provides technical assistance and resources to significantly improve school facilities. It is led by the U.S. Department of Energy Building Technologies Office with technical support from Berkeley Lab and New Buildings Institute.



## CASE STUDY:

## Data Detective Boston Public Schools

### Project Details

Location: Boston, MA

Number of Students:  
48,000

Number of Schools in  
District: 19

Locale: Large city

Percent Free and Reduced  
Price Meal: 58%

Percent Title 1 Schools:  
98%

Project Cost: \$6.7 million

Funding Mechanism:  
Capital budget, ESSER Fund

Project Dates: Aug 2020 –  
Feb 2022

Design/Performance  
Criteria Used: US EPA and  
US DOE IAQ layered risk  
reduction approach

Key Project Features:

- 5,800+ air quality sensors
- 5,300+ air purifiers
- 10,000+ filters replaced
- 4,300+ filters upgraded to MERV-13
- 12,000+ window repairs
- 6,500+ classroom fans
- 750+ tests of air changes per hour

### Project Scope & Approach

Boston Public Schools (BPS) is committed to providing high-performing school buildings and grounds that have healthy indoor air quality. In November 2020, the BPS Facilities Management Mechanical Engineer and Sustainability, Energy, Environment Program developed an request for proposal (RFP) for vendors to provide indoor air quality (IAQ) monitoring. The RFP included system requirements and the scope of requested services. In January 2022, the BPS Sustainability, Energy, and Environment Program launched the IAQ Monitoring System across all BPS schools. The sensors monitor and report on carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), temperature, and relative humidity. The data collected from these sensors helps BPS Facilities Management identify, review, and respond to IAQ and temperature issues in real time, and advocate for HVAC and other environmental investments to improve indoor environment quality. Real-time IAQ results are [available publicly](#).

### Project Outcomes & Lessons Learned

This is a large-scale project, with over 5,800 sensors being installed, in addition to a variety of other IAQ measures (see *Project Details* at left). These measures are supplemented with an [Indoor Air Quality Monitoring and Response Action Plan](#), a variety of guidance documents, and an instructional video on air purifier setup.

BPS also has entered a research partnership with Boston University School of Public Health (BU), which provides valuable analysis of sensor data and offers increased community engagement. It also offers an opportunity to incorporate concepts from the project into BPS curriculum materials. BPS has been able to prioritize growth of the Environmental Division by hiring three additional staff, using a combination of operating budget and ESSER funds.

### PROJECT HIGHLIGHTS

As a result of the project, the schools have been able to:

- Identify activities that worsen IAQ and take action to increase fresh air as needed
- Enforce policies to eliminate vehicle idling, asthma-triggering aerosols, and bleach-based cleaners
- Make timely temperature adjustments
- Make data-driven decisions to advocate for improved ventilation systems