

Data Library

U.S. EPA Environmental and Climate Justice Community Change Grants

PREPARING TO APPLY:
This document is part of a series of tools for school districts created by a collaborative of non-profit partners and funded with generous support from Flu Lab.

HOW TO USE THIS LIBRARY



This document is part of a three-part toolkit for school/district applicants to the Community Change Grants. Within the toolkit's *Annotated Application Outline*, a small circular badge has been inserted where national data or references may be helpful. We have compiled the associated research in this Data Library. This document is organized by section of the application, and full citations are included at the end in the Works Cited section.

FRAMING: NATIONAL STATISTICS ABOUT SCHOOLS

- School facilities received a D+ on the 2021 Report Card for America's Infrastructure.¹
- School facilities represent the second largest sector of public infrastructure spending after transportation.²
- 1/6 of people in the U.S. are in K12 school every day.³
- The average age of school buildings in the U.S. is over 50 years.⁴
- 14 million school days a year are missed due to asthma.⁵
- An estimated 36,000 of the 100,000 public schools need HVAC replacements or upgrades.⁶
- U.S. school districts are estimated to contribute 42 MMT carbon dioxide equivalent emissions annually into the atmosphere.⁷
- Schools without a major maintenance backlog have higher average daily attendance (ADA) by an average 4 - 5 students / 1,000 and a lower dropout rate by 10 - 13 students / 1,000.⁸
- An estimated 40% of schools have an IAQ program based on the best practices included in the EPA's Tools for Schools program, indicating lack of widespread adoption.⁹

¹ American Society of Civil Engineers, 2021.

² Filardo, 2021.

³ Ibid.

⁴ Ibid.

⁵ CDC AsthmaStats, 2024.

⁶ U.S. Government Accountability Office, 2020.

⁷ Undaunted K12, 2021.

⁸ Branham, 2004.

⁹ CDC, 2016.

PART 1. COMMUNITY VISION DESCRIPTION:

1.1 COMMUNITY CHALLENGES & COMMUNITY VISION

Annotated Application Outline, Pages 3-4

Describe the challenges your school/district is facing related to climate change adaptation and mitigation. Adaptation describes how your community deals with challenges related to climate change, such as air quality, heat, flooding, etc. Mitigation describes how your school is lowering its carbon footprint and minimizing climate change.

Air quality and pollution:

- Air quality data for your specific area is [available from the EPA's website](#).
- School health research has been curated by the Center for Green Schools in the [School Health Research Library](#), which is searchable by topic.
- The U.S. EPA has compiled research and case-making information into a page called [Indoor Air Quality: Frequently Asked Questions about Improved Academic Performance](#).
- Higher indoor air quality (IAQ) improves student performance by increasing alertness and concentration and reduces absenteeism by reducing the spread of illness.¹⁰
- Several studies have shown that increasing ventilation rates to optimal levels increases students' cognitive speed and accuracy on a variety of tasks, with speed and accuracy increasing up to 15%.¹¹
- In one study, increasing carbon dioxide levels by 34% decreased test scores by 5%, indicating that effective ventilation is key to student learning.¹²
- A study found that increasing ventilation rates in primary classrooms from 1 L/s to 8 L/s increased students' attention and vigilance on computerized tests.¹³
- "The underlying conditions in schools that cause poor indoor air and environmental quality harm not only the health of students and school employees, they also limit academic achievement and teacher and staff productivity. Whether inadequate ventilation, deferred maintenance or toxic chemicals are making the air unhealthy in any particular school, these conditions result in a variety of common problems that the educational system must grapple with every day."¹⁴
- "Poor indoor air and environmental quality:¹⁵
 - Poor IAQ leads to increased illness which leads to increased absenteeism which impairs student learning.

¹⁰ Johnson et al., 2019; Coronado et al., 2021.

¹¹ Bako-Biro, 2012; Duran et al., 2021.

¹² Duran et al., 2021.

¹³ Coronado et al., 2021.

¹⁴ NEA, 2023.

¹⁵ Ibid.

- Increases the severity and frequency of asthma, allergies and other respiratory illnesses;
- Aids transmission of viruses and bacteria resulting in more colds, flu and serious infectious diseases, such as pertussis or tuberculosis;
- Can raise the risk of long-term, even life-threatening illnesses, such as cancer and cardiovascular disease, particularly among school employees;
- Leads to more school and workdays missed;
- Results in higher medical bills and more doctor visits for all
- Lowers student scores on standardized math and reading tests;
- Leads to higher dropout rates, limiting students' long-term potential and earning power; and increases school employee dissatisfaction and staff turnover."

Thermal Comfort:

The world is getting hotter because of climate change. How is your school adapting to the heat and maintaining an optimal temperature in your classrooms? Do you need investment in an efficient and smart HVAC system?

- Lowering the temperature increases student performances on tests of all types. One study found that each 1 degree Celsius drop in temperature led to increased performance;¹⁶ and another study found a 1 degree Fahrenheit increase in temperature reduced average test scores by 0.2%.¹⁷ Increasing temperatures above 72 degrees caused up to a 30% decrease in performance.¹⁸
- One study of 4.5 million New York City public high school exit exams found that students taking an exam on a 90-degree day were nearly 11 percent less likely to pass than students taking the exam on a 72-degree day. This decreased performance also led to long-term effects by reducing students' likelihood of graduating on time by nearly 3 percent.¹⁹
- Younger children are more temperature sensitive and are more affected by hot days and hot classrooms.²⁰
- Additional research citations may be found in the Center for American Progress's article, [Protecting Children from Extreme Heat is Critical for Their Health, Learning, and Development.](#)

Construction Jobs and Green Jobs:

- Closing the nation's capital construction gap for school buildings will support an additional 941,952 direct, indirect and induced jobs.²¹

¹⁶ Wargocki and Wyon, 2017; Coronado et al., 2021.

¹⁷ Eitland et al., 2017.

¹⁸ Coronado et al., 2021.

¹⁹ Park, 2017.

²⁰ Coronado et al., 2021.

²¹ Bivens, 2016.

- A compilation of job creation models estimated that somewhere between 10 and 15 jobs are created for every \$1 million in construction spend.²²
- Research paid for by the Associated Builders and Contractors estimated in 2018 that \$1 million in additional construction spending created more than 6 additional construction jobs.²³

PART 1. COMMUNITY-DRIVEN INVESTMENTS FOR CHANGE:

1.2 SELECTED STRATEGIES

Annotated Application Outline, Pages 4-5

What is the evidence that the actions you will take with the funding will have a positive impact on students, teachers, and the community?

- Write in references to third-party guidance about building science and building improvements, such as:
 - Harvard's [5-step guide for checking ventilation rates in classrooms](#)
 - The Center for Green Schools' [Indoor Air Quality Management Plan Toolkit](#)
 - The guidance written into the [indoor environmental quality credits](#) and the [energy and atmosphere credits](#) within the LEED green building rating system.
 - The guidance written into the [criteria](#) for the Collaborative for High Performance Schools certification.
- Incorporate references to the EPA's [Energy Savings Plus Health: Indoor Air Quality Guidelines](#) for School Building Upgrades document, particularly Table 1, which begins on page 5. The table, "Examples of School Energy Efficiency and Upgrade Projects," gives example building projects and details both their energy implications and air quality implications.

PART 2. PROGRAM MANAGEMENT, CAPABILITY, AND CAPACITY:

2.2 PROJECT LINKAGES TO THE EPA STRATEGIC PLAN

Annotated Application Outline, Page 6

The EPA Strategic Plan language that teams should connect to their application is included below. In your statement, incorporate local health data, pollution data, unemployment data, and any information about environmental degradation in your area, particularly if it has been caused by historic activities by local industry.

²² EB5AN, 2024.

²³ Associated Builders and Contractors, 2018.

Consider a format similar to this example:

Our program will support the EPA’s Strategic Plan Goal 2, “Take Decisive Action to Advance Environmental Justice and Civil Rights,” Objective 2.1, “Promote Environmental Justice and Civil Rights at the Federal, Tribal, State, and Local Levels.” School air quality in the U.S. is a major concern, as the U.S. Government Accountability Office reported in 2020 that [41% of U.S. school districts report](#) that most of their buildings need improvements to systems that could negatively impact air quality. **The school(s) we will target for investment are an average of X years old and have not been renovated since X.** Additionally, public school districts in priority communities like ours reach students who may not access (or have access to) other social services or community support structures; they are a key leverage point for increasing the health of communities, as students spend at least 8 hours of every day learning healthy habits and breathing the air in and around school buildings. **In our community, where [X, Y, Z concerns], schools are an important community partner to improve environmental, health, and economic outcomes.**

Goal language from EPA:

Goal 2: Take Decisive Action to Advance Environmental Justice and Civil Rights

Objective 2.1: Promote Environmental Justice and Civil Rights at the Federal, Tribal, State, and Local Levels, which includes the strategy of Building Community Capacity and Climate Resilience and Maximizing Benefits to Overburdened and Underserved Communities: EPA will increase support for community-led action by providing unprecedented investments and benefits directly to communities with environmental justice concerns and by integrating equity throughout Agency programs.

ATTACHMENT F: COMMUNITY STRENGTH PLAN

MAXIMIZING ECONOMIC BENEFITS OF PROJECTS

School building improvements can improve community engagement and economic activity, as evidenced by the following research. Be careful that if you mention the prospect of improved property values, you recognize the need to take action against potential displacement of existing residents.

- In a survey of building occupants in green schools, 71 percent of respondents “saw evidence of an improvement in student behavior, notably less violence, vandalism, and bullying.”²⁴
- A study looking at children’s positive behaviors in renovated green schoolyards in low-income urban neighborhoods over time corroborated positive impacts, finding fewer injuries, enhanced perceptions of safety and decreases in bullying and gang activity, with positive changes in physical activity and social interaction maintained up to 32 months after renovation.²⁵

²⁴ Institute of the Built Environment, 2014.

²⁵ Bates, 2018.

- In another survey of green school leaders, 99 percent of responding principals reported improvements in student engagement, and 77 percent of respondents reported improvement in community engagement.²⁶
- According to the National Association of Realtors, the quality of the school district was a deciding factor for 26 percent of all homebuyers—and 35 percent of homebuyers ages 37–51.²⁷

Teacher Job Retention:

- A 2010 report by the National Commission on Teaching and America's Future estimated that the nation's school districts spent at least \$7.2 billion a year on teacher turnover. Increasing teacher retention helps to lower a school district's personnel replacement, recruitment and training costs.²⁸
- In a 2017 study from the American Federation of Teachers, poor building conditions were cited as one reason teachers chose to leave.²⁹

Construction Jobs and Green Jobs: (also cited above)

- Closing the nation's capital construction gap for school buildings will support an additional 941,952 direct, indirect and induced jobs.³⁰
- A compilation of job creation models estimated that somewhere between 10 and 15 jobs are created for every \$1 million in construction spend.³¹
- Research paid for by the Associated Builders and Contractors estimated in 2018 that \$1 million in additional construction spending created more than 6 additional construction jobs.³²

²⁶ Moore, et al., 2014.

²⁷ National Association of Realtors, 2017.

²⁸ Barnes, et al., 2007.

²⁹ AFT, 2017.

³⁰ Bivens, 2016.

³¹ EB5AN, 2024.

³² Associated Builders and Contractors, 2018.

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