



Center for **Green Schools** at the U.S. Green Building Council

School Facilities Funding in the Pandemic

An Analysis of Planned Facilities Spending under ARP-ESSER Funding

Neil Sauter | Center for Green Schools, MA Candidate at American University School of International Service and the University for Peace Department of Environment and Development

Anisa Heming | Center for Green Schools at the U.S. Green Building Council





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Executive Summary

Federal aid for schools has provided a crucial lifeline over the course of the pandemic, particularly in the case of facilities. Our nation's schools have long been plagued by deferred maintenance and repairs, and federal COVID-19 aid offered a chance to address that backlog while simultaneously improving conditions to reduce the spread of the virus. This report examines how school districts across the country have chosen to spend that federal aid with a focus on how districts invested funds for large-scale facilities-related work.

Using a dataset of 5,004 school districts' spending plans for the American Rescue Plan Elementary and Secondary School Emergency Relief funds (ARP-ESSER or ESSER III) sourced from Burbio data service, we analyzed district planned investment in four different categories:

- 1. Air filtration, HVAC, heating and cooling
- 2. Repairing and/or improving school facilities to reduce the risk of illness
- 3. Windows, doors and roof
- 4. Lighting: UV lights for disease mitigation

Additionally, we interviewed three school districts that were top facilities spenders and highlighted details of their spending plans, the challenges they have faced in spending the funds and the impacts they see at their districts.

What we found:

- Although staff capacity, inflation and supply chain shortages are affecting infrastructure projects, school districts have prioritized significant ESSER III funding to support indoor air quality for their students and staff. Of all the funding categories tracked by Burbio, air filtration/HVAC was the second-highest category for district planned spending at \$5.5 billion, just behind staffing/teachers/ academic interventionists/guidance counselors.
- Of the 2,379 school districts that planned to spend any ESSER III funding on facilities, large districts planned to spend the lowest percentage (on average 22%) and small districts planned to spend the highest percentage of their total allocation (on average 30%).
- Small and medium-size districts (those with 20 or fewer schools) consistently reported more spending per school on facilities categories than their larger counterparts.
- In addition to filtration and HVAC improvements, in most cases, districts that planned to spend in this category also indicated plans to spend in at least one other facilities category, displaying a layered approach to addressing COVID at the building infrastructure level.
- The district interviewees highlighted the importance of having substantial federal dollars to invest in costly HVAC infrastructure projects, which would otherwise be delayed or addressed in phases.
- District interviewees noted that where HVAC upgrades were made in their schools, they were able to keep energy usage and costs to a minimum compared to schools with outdated systems. Similarly, interviewees reported positive results from spending in other facilities categories to reduce the spread of COVID.

Introduction

As the United States and the world have grappled with the COVID-19 pandemic for the last two-plus years, government support has been a crucial lifeline for struggling communities and institutions. In the context of aid for U.S. schools, there have been three separate pieces of legislation that devoted federal funding toward helping the education system cope with the pandemic. The first of these was part of the Coronavirus Aid, Relief and Economic Security (CARES) Act, which set aside \$13.2 billion for the Elementary and Secondary School Emergency Relief Fund (ESSER) on March 27, 2020. The second apportionment of federal funding came with the Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act, which provided an additional \$54.3 billion to the ESSER II Fund on December 27, 2020. The third aid package came on March 11, 2021, in the form of the American Rescue Plan (ARP) Act, which included \$122 billion for the ARP Elementary School and Secondary School Emergency Relief (ARP ESSER or ESSER III) Fund. Taken all together, these three legislative packages contained roughly \$190 billion in federal funding for school districts across the country.

State educational agencies (SEAs) and local educational agencies (LEAs) were given broad-ranging license to spend these funds as they saw fit, with districts electing to use the ESSER funding for anything from staffing to remote-learning technologies for students to major facilities repairs or upgrades. FutureEd, an independent think tank at Georgetown University's McCourt School of Public Policy, found in their analysis of projected school district ESSER III spending plans "that localities could spend nearly \$30 billion in ESSER III funds on staffing, \$27 billion on academic recovery and nearly \$26 billion on school facilities and operations by the September 2024 deadline for committing the money." Their analysis showed that 23% of the currently budgeted \$64 billion is slated to go toward facilities and operations spending, potentially mitigating some of the COVID risks in school environments. Additionally, FutureEd found that planned air filtration/HVAC spending was the second-highest specific spending category, with \$5.7 billion currently budgeted and almost \$9.8 billion in projected spending by the September 2024 deadline. It is also worth noting that FutureEd's city-suburban-rural analysis of planned ESSER spending found that "[a]t least half of the local education agencies in each (locale) category are planning to spend ESSER funds on updating and upgrading heating, ventilation and air conditioning (HVAC) systems."

LOCAL EDUCATION AGENCIES' PLANNED ESSER III SPENDING			
	Budgeted Amount	Percent of Total	National Projection
Staffing	\$17,367,216,065	27%	\$29,744,251,535
Academic Recovery	\$16,080,634,991	25%	\$27,540,767,053
Facilities and Operations	\$14,984,550,496	23.3%	\$25,663,539,707
Technology	\$5,809,851,390	9%	\$9,950,338,642
Mental and Physical Health	\$4,090,139,117	6.4%	\$7,005,044,807
Miscellaneous Financials	\$3,543,663,153	5.2%	\$6,069,113,655
Other	\$2,351,271,704	3.7%	\$4,026,944,602
Total	\$64,227,326,915	73%	\$110,000,000,000

This FutureEd analysis is based on a June 7, 2022, compilation by the data-services firm Burbio on Covidrelief spending plans released by 5,004 local education agencies in 50 states and the District of Columbia representing 74% of the nations public-schood students. The analysis breaks down SR24 billion in designated spending in federal Elementary and Secondary School Emergency Relief (ESSER III) funds.

SELECTED CATEGORIES IN LOCAL EDUCATION AGENCIES' PLANNED ESSER III SPENDING			
Selected Categories	Budgeted Amount	Percent of Total	National Projection
Teachers, Interventionists	\$5,830,131,058	9.1%	\$9,985,070,953
HVAC	\$5,713,367,398	8.9%	\$9,785,093,729
Summer Learning & Afterschool	\$3,735,994,561	5.8%	\$6,398,513,242
Repairs to Facilities to Prevent Illness	\$2,867,670,398	4.5%	\$4,911,363,417
Staff Retention & Recruitment	\$2,594,501,467	4%	\$4,443,516,103
Tutoring, Math/ELA Coaching	\$1,806,389,334	2.8%	\$3,093,742,746
Professional Development	\$1,348,233,004	2.1%	\$2,309,073,684
Psychologists, Mental Health Professionals	\$1,308,006,297	2%	\$2,240,178,746
Mobile Devices	\$1,183,175,858	1.8%	\$2,026,385,818
Instructional Materials and Supplies	\$1,148,440,230	1.8%	\$1,966,895,267
Continuation of Operations	\$1,047,514,460	1.6%	\$1,794,043,068
Students with Disabilities	\$815,161,395	1.3%	\$1,396,099,726
Public Health Protocols	\$722,126,849	1.1%	\$1,236,762,563
Social-emotional Learning	\$707,204,406	1.1%	\$1,211,205,392
Transportation	\$556,385,937	0.9%	\$952,903,631
PPE	\$461,151,161	0.7%	\$789,798,209

This FutureEd analysis is based on a June 7, 2022, compilation by the data-services firm Burbio on Covidrelief spending plans released by 5,004 local education agencies in 50 states and the District of Columbia representing 74% of the nation's public-school students. The analysis breaks down S624 billion in designated spending in federal Elementary and Secondary School Emergency Relief (ESSER III) funds. FutureEd

The research highlighted in previous Center for Green Schools publications has shown that improving air quality through facilities design and operations improvements can not only reduce the risk of COVID infection, but can yield positive results that last far into the future, beyond the pandemic. The significant and long-term facilities improvements that can provide better air quality often have the knock-on effect of generating energy savings, helping to make school facilities more efficient and sustainable.

The primary focus of this publication is to explore how districts around the country have chosen to use ESSER III funding to improve air quality in schools through significant improvements to facilities. The goals of our research were to:

- 1. Increase understanding about how much ESSER III funding is planned to be used for significant facilities projects across the country, as opposed to lighter-touch facilities or maintenance efforts;
- 2. Understand why school districts chose to use ESSER III funding for significant facilities projects; and
- 3. Highlight examples of responsible spending on school facilities using ESSER III funds.

One limiting factor on any current research is that much of the ESSER III spending on major facilities projects has yet to be carried out. Many districts are still in the process of implementing their spending plans and face constraints caused by the pandemic, associated supply chain issues, and the rising rate of inflation in 2022.¹ Therefore, the research contained in this publication focuses on written plans submitted by school districts to use their ESSER III funds. Still, it may be necessary to conduct further research once districts have had more time to enact ESSER spending plans to their completion.

Methodology

The Center for Green Schools' resource for initial quantitative data related to school district spending was data collected on school district ARP-ESSER (or "ESSER III") spending plans by the Burbio data service in their June 7, 2022 updated dataset. The dataset used encompassed 5,004 school districts in all 50 states and the District of Columbia. It contained information about plans for roughly \$83.1 billion in ESSER III funds (more than half of the total nationwide ESSER III allotment) and represented roughly 74% of public K–12 student enrollment. The districts represented in the dataset ranged in size; for the purposes of this report, our classification for a "small" school district is a district with five or fewer schools, a "medium" school district is a district with 6 to 20 schools, and a "large" school district is a district with more than 20 schools. The 5,004 districts had an average allotment of \$16,607,324 and a median allotment of \$5,316,393 in total ESSER III funding.

Working within the limitations of the Burbio dataset, four facilities-centered spending categories were chosen from the data:

- 1. Air filtration, HVAC, heating and cooling
- 2. Repairing and/or improving school facilities to reduce the risk of illness
- 3. Windows, doors and roof
- 4. Lighting: UV lights for disease mitigation

The data included information of two types: school districts either indicated a planned spending amount or simply indicated that spending was planned (with no amount given). In each of the four facilities-focused spending categories, we looked at how widespread spending was across districts and, where available, how much was spent per school district and where spending appeared highest.

For instance, The Washington Post reported in late October 2022 that "school systems throughout the country reported spending less than 15 percent of the federal funding [...] during the 2021-2022 school year." The article cites numerous reasons for the delayed spending, including supply chain issues, difficulty hiring, and districts' focus on spending ESSER I and ESSER II funding before moving on to ESSER III plans.

Using the knowledge gained about the patterns of spending planned by districts, we profiled notable districts through qualitative research. We conducted internet research and in-depth interviews with district facilities officials in locations with plans to use significant amounts of the ESSER III funds on one or more of the chosen four categories to improve air quality in schools. The Center for Green Schools reached out to 30 school districts, all of which were among the top planned spenders in the facilities categories. These districts were intentionally diverse, spanning 20 states and ranging in size from 1,924 students and four schools to 83,031 students and 148 schools. From the 30 school districts we contacted, three participated in qualitative interviews: Albuquerque Public Schools (New Mexico), Colorado Springs District 11 (Colorado) and Wicomico County Public Schools (Maryland). The three chosen districts reflected the Center for Green Schools' desire for diversity; each was from a different region and varied in demographics. Though all three are large districts according to our classification, they ranged in size from 14,354 students and 24 schools to 83,031 students and 148 schools.



Analysis of Spending Patterns

The following section of the paper highlights our analysis of the 5,004 school districts spending plans for the following four categories: Air filtration, HVAC, heating and cooling; Repairing and/or improving school facilities to reduce the risk of illness; Windows, doors and roof; and Lighting: UV lights for disease mitigation. 2,379 school districts planned to spend in at least one of these four categories.

A similar percent of small, medium, and large districts chose to invest some amount of ESSER III funding in facilities, but one trend we found across all four categories was that small and medium districts planned to outspend their larger counterparts, allocating a greater amount of ESSER III funds per school for facilities projects. Additionally, for the districts that reported dollar amounts for planned spending for facilities related work, large districts planned to spend the lowest percentage of their total ESSER III allocation on facilities (22% on average), with medium districts spending more (28%) and small districts allocating the most (30%). There are several possible explanations for this pattern, one of which is that smaller districts may have seized this funding opportunity to tackle projects they otherwise would not be able to fund due to a smaller tax base or inability to pass a bond in their community.

Air filtration, HVAC, heating and cooling

Ventilation and filtration play a crucial role in maintaining a healthy environment in our nation's classrooms, particularly in the case of COVID-19. This disease is proven to spread primarily through airborne pathways. The experts convened by the Center for Green Schools in creating its School Indoor Air Quality Fact Sheets recommended six equivalent air changes per hour (eACH) as the target goal for a classroom, taking into account the effects of ventilation, filtration and UV strategies. At this rate, 95% of contaminants in a classroom setting will have been removed within half an hour.

Spending overview

Using ESSER III funds for air filtration or HVAC upgrades was an immensely popular choice among school districts in the dataset. Of the 5,004 districts, nearly half elected to put some degree of funding towards the air filtration/HVAC category, with 2,450 districts planning to spend ESSER III funds on this area for a total of at least \$5,567,461,246. Of all categories of spending, the second-highest number of school districts planned to spend on this category, following only behind the staffing/teachers/academic interventionists/guidance counselors.



Districts investing the most

Looking at total spending planned in the air filtration/HVAC category, the top 25% of districts in overall air filtration/HVAC spending of ESSER III funds planned an average of \$10,442,365 per district. The top 25% of districts for spending per school planned to commit \$716,375 on average per school for air filtration/HVAC projects. It is clear from this data that a significant number of school districts are committed to making major air filtration/HVAC upgrades with the ESSER III funds.

According to Corey Metzger, the schools team lead for ASHRAE's Epidemic Task Force, replacing an HVAC system in an older school facility could cost between \$30 and \$50 per square foot. At those prices, replacing an HVAC system could easily run into the millions of dollars for a single school building. Major building system overhauls are more expensive than the public may realize, and this kind of work may not have been possible for many districts without the ESSER III funding.

Diving deeper to examine the types of districts using significant funds for air filtration/HVAC upgrades, it appears that small and medium school districts are generally more likely than their larger counterparts to be among the top planned air filtration/HVAC spenders, based on the percentage they are planning to spend of their ESSER III allotment and the total amount they are planning to spend per school on air filtration/HVAC improvements. Figure 1 illustrates that for the top 10% of planned spenders in the dataset, small and medium districts are more likely to plan higher spending per school on air filtration/HVAC improvements. Figure 2 shows the percentage of ESSER III funding that districts with the highest planned spending intend to invest on air filtration/HVAC projects.

As will remain true in the following sections of this paper, small and medium districts were consistently among the districts to report the largest spending per school in the facilities categories. This trend held strong in spending on the repairs category and windows/doors category.





Repairing and/or improving school facilities to reduce the risk of illness

The average age of the nation's school buildings is over 50 years, and the limited funding available in some communities means that many districts are managing buildings that are outdated and falling into disrepair. In addition to the problem of outdated facilities, a 2020 Government Accountability Office report found that "20 to 35% of all school districts had serious deficiencies in at least half of their roofing, lighting or safety and security systems." These kinds of deferred maintenance or repair projects often build up, worsening school environments over time.

Spending overview

School districts have implemented general facilities repairs during the COVID pandemic for various reasons, including adding space for social distancing, creating better circulation pathways and increasing space for nurses' offices. Presumably, some school districts also grouped their planned facilities work into a catch-all category such as this one when the plans included broad-ranging work that had multiple benefits. Similar to the air filtration/HVAC category, the facilities repairs category was quite popular among school districts. In total, 1,522 districts of the overall 5,004 in the dataset planned to commit ESSER III funds toward making repairs or improvements to reduce the risk of COVID transmission or other illnesses. This level of commitment made the category 6th out of the 149 spending categories in the Burbio dataset.



Districts investing the most

Looking at total spending planned in the facilities repairs category, the top 25% of districts planned to spend an average of \$7,186,255, ranging from \$75 million to \$1,800,500, with a median of \$3,700,000. As seen in Figure 3, which highlights the top 10% of planned spenders, the trend of small and medium school districts allocating a larger portion of their total ESSER III allotment and a higher amount per school continued in the repairs category, likely for many of the same reasons theorized earlier. Facilities repairs can be costly undertakings that smaller school districts often postpone until funding is readily available, such as the ESSER III windfall.



Related facilities spending

Among the top 10% of districts in the dataset that intend to spend ESSER III funds in the facility repairs category, nearly 46% are also planning to put funding toward the air filtration/HVAC category. As is illustrated in Figure 4, small and medium size districts are more likely to invest a larger percentage of their total ESSER III funds on repairs and air filtration/HVAC than their larger counterparts.



Windows, doors and roof

In the Center for Green Schools' national school district air quality survey published in "Managing Air Quality During the Pandemic," researchers found that 68% of school districts surveyed had at least some school facilities that used opening windows to increase ventilation as a mitigation strategy against COVID-19. Opening windows is a valid method to accomplish the desired rate of six equivalent air changes per hour when combined with filtration strategies. If a school facility does not have operable windows or has operable windows that are ineffective because of age, energy efficiency or poor outdoor air quality, the school would have difficulty using this strategy to mitigate COVID transmission. To improve the viability of using open windows as a ventilation enhancement strategy, they may need to be upgraded to make them operable or decrease energy losses.

Spending overview

Fewer districts planned to spend in the windows, doors and roof spending category than the air filtration/ HVAC category or the facilities repairs category, but useful insights could still be found by examining the spending plan data. There were 352 districts that reported they planned to spend on windows, doors and roofs, and 211 recorded actual planned spending amounts.



Districts investing the most

Looking at total spending planned in the windows, doors and roof category, the top 25% of districts planned to spend an average of \$4,323,399, ranging from \$52 million to \$1 million, and the median planned spend was \$2 million. One interesting takeaway from the top 25% of districts in this category was the overlap with planned spending on air filtration/HVAC. Only 7 of the 52 districts in the top 25% did not plan to spend on air filtration/HVAC alongside windows, doors and roofs, meaning that 87% of the top spenders in this category also planned to spend ESSER III funds on air filtration/HVAC.

The trend of small and medium districts intending to put a higher percentage of their ESSER III allotment toward facilities spending continued in this spending category. Figure 5 shows a large cluster of districts, with less than 20 schools, that plan to spend \$200,000 or more per school on the windows, doors and roof spending category. Additionally, there is a cluster of smaller districts that plan to spend 50% or more of their allotment on windows, doors and roof and air filtration/HVAC, as illustrated in Figure 6.



Lighting: UV lights for disease mitigation

Germicidal ultraviolet or ultraviolet germicidal irradiation, referred to in the Burbio data as "UV lights for disease mitigation," is an effective strategy to improve indoor air quality when used correctly. UV-C lights can reduce airborne viral transmission by 80% or more when properly applied, and these devices can be particularly useful in mitigating higher-risk areas such as a nurse's office.

Spending overview

Compared to the other ESSER III facilities spending categories, school districts planned to spend on UV lighting much less frequently as a COVID mitigation measure. Only 38 districts reported some level of planned spending, and 23 districts reported actual planned spending amounts.



Districts investing the most

Four small districts set aside larger sums for UV lighting, which can be seen in Figure 7. In each district, average per school planned spending exceeded \$100,000. A similarity between the UV lighting category and the windows, doors and roof category was that a high percentage of districts also planned to spend ESSER III funds on air filtration/HVAC. Nearly 75% of the districts that planned to put money toward the UV lighting category planned to do the same with the air filtration/HVAC category. Additional analysis shows that all but two districts that invested in UV lighting also invested in one of the other three facilities categories. This finding highlights that the vast majority, or 91%, of districts who chose to use UV lighting to improve air quality paired the investment with other more permanent facilities improvement work.



Conclusion

Spending Category	Planned spend category total (\$)	Average planned spend per district (\$)
Air filtration, HVAC, heating and cooling spending	\$5,567,461,246	\$3,197,853
Repairing and/or improving school facilities to reduce risk of illness	\$2,685,025,707	\$2,199,038
Windows, roofs, doors	\$271,277,022	\$1,285,673
Lighting: UV lights for disease mitigation	\$10,922,064	\$474,872

An analysis of districts' planned ESSER III spending shows that school districts are widely committing substantial funding to upgrading or improving their facilities. This level of commitment is most apparent in spending categorized as improvements to air filtration and HVAC, with more than \$5.5 billion in planned district spending for air filtration/HVAC and the top 25% of districts planning to spend more than \$700,000 per school on average. Districts also show notable commitment toward repairing school facilities, with more than \$2.6 billion in total planned spending on this category and an additional \$271 million for upgrading windows, doors, and roofs.

Many districts planned to spend ESSER III funding in both the air filtration/HVAC category and one of the other categories; for instance, 82% of districts that planned to spend ESSER III funds on windows, doors and roofs also planned to spend funds on air filtration/HVAC. This trend shows that districts committed to improving their school facilities intend to make improvements across multiple pathways.

The most significant finding from the analysis of the available dataset is that small and medium school districts plan to direct more ESSER III spending toward facilities than their larger counterparts. Across the four spending categories that were analyzed, small and medium districts were more likely to plan more spending per school on facilities and to put a higher percentage of their respective ESSER III allotments toward the facilities spending categories.

When looking at the group of districts planning to spend in the top 25%, medium size school districts were the most represented across all four categories of facilities spending. The share of medium districts in the top 25% group was higher than would be expected compared to the distribution of small, medium, and large school districts in both the dataset and school districts nationwide. A possible explanation for this trend is that smaller districts often do not have the tax base to fund costly, long-term facilities upgrades, whereas larger districts can typically draw upon their broader tax base. A related possible explanation is the difficulty smaller districts can have when trying to pass a bond for facilities spending, while a larger district may not face the same hurdles.

Through the case studies that follow, we examine the motivations and decision-making factors behind some of these trends. Why did the school districts elect to use ESSER III funding for facilities instead of other sources? What results have they seen or do they hope to see from their investments in facilities? What obstacles have they faced in using ESSER III funding for facilities improvements? School district facilities leaders weighed in to give a clearer picture of their experience.

School District Case Studies:

Challenges and Opportunities for Using ESSER III Funding on Facilities

Wicomico County Public Schools

District Profile

Wicomico County Public Schools (WCPS) is a large district with a small city locale classification, located in and around the city of Salisbury on Maryland's Eastern Shore.

	Enrollment (2021)	Student race	Poverty level
Student demographics	14,664	Hispanic/Latino: 13.36%	Families at or below poverty level: 16.4%
		Black or African American: 36.68%	Students eligible for free and reduced-price lunch: 62%
		Asian: 2.88%	
		Two or more races: 8.2%	
District information	Number of schools	Total budget (FY23)	Sq. Ft. of Facilities
	24	\$304 M	2.2 M

Demographic data and square footage sourced from the FY 23 EFMP.

F&RL demographics sourced from Maryland Department of Education reported that in the 2021–22 academic year Number of schools, student enrollment and budget sourced from FY 2023 Budget Approval.

Planned ESSER III Spending

Wicomico County Public Schools received \$47,372,036 in their total ESSER III allotment. WCPS plans to spend \$30,000,000 of the district's ESSER III allotment on air filtration, HVAC and heating and/or cooling systems, which averages out to spending \$1,250,000 per school on the district's 24 schools. This level of planned air filtration/HVAC spending put WCPS in the top 10% of districts in the dataset, for both overall planned air filtration/HVAC spending and per-school planned air filtration/HVAC spending. Additionally,



Rooftop HVAC Units following installation in August 2022 at Delmar Elementary. Courtesy of WCPS: Planning + Construction.

the amount of ESSER funding WCPS plans to put toward air filtration/HVAC makes up 63% of the district's total allotment, which again placed the district within the top 10% of districts in the dataset.

During the Center for Green Schools' conversation with a WCPS official, it came to light that the district had also put ESSER I and II funding toward window and door upgrades and general repairs, such as modifying nurses' offices to establish negative pressure and completing additional duct cleaning. Through its decision-making throughout the pandemic, WCPS has demonstrated a similar commitment to improving the district's facilities using ESSER funding. According to Wicomico County Board of Education's 2023 Educational Facilities Master Plan (EFMP), the district's schools range in age from four years to 65 years, with an average of 33 years. More than half of the district's schools are 30 years or older. Within the EFMP, eight schools were identified as having systemic facility needs, all of which were related to either HVAC, windows/doors/roofs or both. WCPS conducts regular facilities assessments and planning, putting it at an advantage among its peers at identifying and remedying problems. However, even with this level of forethought, the district needed ESSER funding to complete important and necessary facilities projects.

Insights from Wicomico County Public Schools

The Center for Green Schools was able to speak with Leisl Ashby, the director of facilities for planning and construction for WCPS, who is directly responsible for the district's capital master plan. The interview was conducted on August 11, 2022 and focused on the district's experience planning for and executing significant facilities projects using ESSER III funds.

District actions using ESSER III funding

WCPS carried out significant facilities improvements and overhauls within the district's schools, which would not have been possible without the ESSER III funding, Ashby told us. The funding allowed WCPS to move several deferred projects off their capital improvement plan. Ashby said, "In my world, the ESSER funds are of great assistance in helping us improve our facility condition index across the portfolio."

Although the funding has assisted with much of the district's deferred plans and maintenance, it is important to note that Ashby still felt it had not gotten the district completely to where it would like to be on the facilities front. The funding was particularly useful for WCPS in carrying out major improvements to Glen Avenue Elementary. Ashby said, "We had to split the building up into several phases, and we were funding it out of a much smaller funding source we refer to as capital outlay. The ESSER funds allowed us to add the windows and doors as well as execute the remaining phase." Additionally, WCPS was able to conduct a "holistic HVAC replacement" at Chipman Elementary that had been deferred for several years.

Results and observations

The ventilation upgrades WCPS made are still in the early process of monitoring and assessment but have shown promising signs in preventing COVID infections and making their schools safer. The district's maintenance department hired a third-party entity to monitor the indoor air quality in their buildings, and it found that several of their existing facilities were meeting the recommended number of air changes. The district also found that absenteeism had improved in the early stages of the pandemic.

The changes WCPS made to their schools' HVAC systems improved not only COVID mitigation, but also energy use. Using ESSER III funds, the district deployed variable refrigerant flow (known as VRF or VRV) in several buildings. Ashby said that their systems using the VRF technology were "much more energy efficient than some of the centralized systems as well as meet the end user comfort levels." She went on to add that "typically when we go in and retrofit the older centralized HVAC systems or decentralized HVAC systems with the variable refrigerant, that building sees an improvement in energy consumption."

Obstacles and recommendations

A notable barrier to WCPS' facilities improvement plans under ESSER was the eligible categories established by the State of Maryland for the funding. Ashby explained that the district planned to use ESSER funding to improve the district's windows and doors but not the roofing because, within Maryland, roofing projects were not eligible. She said, "ESSER funds were distributed to school districts through the Maryland State Department of Education, and our interpretation was that roofs were not an eligible cost, [while] HVAC and windows and doors were." She said that the district would have used ESSER funding to improve their roofs if it had been an eligible cost.

A limiting factor that WCPS had in common with other districts was the struggle to meet deadlines laid out in the original ESSER allocations. Ashby noted that the deadlines were not conducive to major construction projects. Because WCPS was very proactive in their planning and bidding process, they anticipate functionally completing all their projects by the 2024 deadline, but this may not be the case for other districts.

In response to a question focused on improving the school facility funding process, Ashby remarked that it would be beneficial in the future for state or federal legislators to speak more with experts in the field in order to understand how construction projects get carried out and the difficulties that may come with completing something on a strict deadline. She felt because funding rolled out quickly, school districts have rushed to use ESSER III funds, creating a shortage of contractors and, in some cases, parts or materials needed for facilities improvement projects. Ashby noted the abruptness of the deadlines: "In most of our world [construction], your capital plan is over five to seven years. This came out and needed to be executed within two to three." Another area for improvement identified within the facilities funding process was clearer support for staffing because the district was not staffed to support a sudden large cash influx, which then forced the district into possible inefficiencies by hiring outside contractors.



Colorado Springs School District 11

District Profile

Colorado Springs School District 11 (District 11) is a large urban district located in El Paso County in central Colorado, about 90 minutes from Denver.

Student demographics	Enrollment (2021)	Student race	Poverty level
	23,885	Hispanic/Latino: 27.9% White: 53.6% Black or African American: 7.2% Asian: 2% Two or more races: 7.7%	Families at or below poverty level: 15% Students eligible for free and reduced-price lunch: 57.9%
District information	Number of schools	Total budget (FY23)	Sq. Ft. of Facilities
	49	\$700 M	4.2 M

Number of schools sourced from district staff.

Demographic data sourced from the National Center for Education Statistics (NCES), 2015-19 profile.

F&RL sourced from the Colorado Department of Education.

Annual budget, enrollment and square footage sourced from the District 11 website.



New boilers at Martinez Elementary School, courtesy of District 11 FOTC team

Planned ESSER III Spending

Colorado Springs School District 11 received \$59,879,943 in ESSER III funds. The district plans to spend \$27,073,740 of this allocation on air filtration, HVAC and heating and/or cooling systems, which averages to \$552,525 per school in the 49 schools that the district reports operating. This level of HVAC spending per school placed District 11 in the upper quartile of districts in the dataset. Additionally, District 11's planned HVAC spending accounted for 45% of the district's total ESSER III allotment, which places the district within the top 10% of the dataset. District 11 officials reported that there was also work being done on some of their schools' roofing with ESSER funds, but they did not see this spending accounted for in the dataset.

District 11 is the oldest school district in Colorado Springs, with a building date portfolio that ranges from 1920 to 2008 and an average building age of 56 years. District facilities officials reported that at the time of their last bond there was a backlog of roughly \$670 million in capital needs for school facilities, and the district's 2021 Facilities Master Plan needs assessment

identified an additional \$647 million in capital needs for school facilities. District 11 hoped to see a \$350 million bond pass in November 2021, but the ballot measure was narrowly defeated.

The confluence of these factors underscores the importance of ESSER funding—and the comparatively small contribution it is making next to the level of need in a district with aging facilities like District 11.

Insights from Colorado Springs School District 11

The Center for Green Schools spoke with James Warren, mechanical project manager; Travis Whitley, project manager and energy manager; and John Berdon, resource conservation program coordinator. The interview was conducted on July 28, 2022 and focused on their experience planning for and executing significant facilities projects using ESSER III funds.

District actions using ESSER III funding

District 11 approached the challenge of improving indoor air quality in their schools by conducting a thorough assessment of every building in the district, with the stated goal of increasing outside airflow. Once the necessary maintenance and repairs had been carried out on air dampers and filters, they instituted a building automation program with a "pandemic mode" that had the ability to bring 100% outside air into buildings and a "non-pandemic mode" for ordinary times. To maximize this automation program, the district developed a sliding scale, so that "in neutral air conditions, if it's 68 degrees outside we're bringing 100% outside air in. That way we're not raising our utility bills, but we can ensure maximum ventilation. Where, when it's 95 degrees outside, we're only bringing in an additional 10% of outside air during 'pandemic mode.'"

Additionally, District 11 used ESSER funding to alter its filter rotation schedules. Interviewees said that, from a cost-effectiveness and equipment capability standpoint, it made more sense for District 11 to increase changes of MERV 8 filters from twice a year to three times a year rather than upgrade to MERV 13 filters or higher, particularly because of the district's efforts to bring in additional outside air.

ESSER funding was especially useful for large projects like HVAC overhauls or replacements, "because it's hard to come up with \$20 million, \$25 million [for a] project with the funding we receive," and that allowed District 11 to spend existing money on "lower, less cost-intensive projects." District 11 was in a "huge deferred maintenance hole" prior to the pandemic, and although the ESSER funding has had a "palpable effect," the funding is still not enough to cover all the maintenance and upgrades that District 11's facilities need. One interviewee described the situation: "Obviously \$20 million doesn't do a huge hit on pushing a \$700 million backlog. Was it helpful, was it beneficial? Absolutely. Yes, it has helped us with some of our big-hitting buildings, we've been able to use that." A colleague went on to sum up the predicament faced by many school districts by saying, "Our wish list is long."

Results and observations

The investments to increase outside air and improve filtration described above, in addition to a strategy of increasing by roughly two hours the pre-occupancy and post-occupancy purges of their buildings' air, had the effect of keeping District 11's COVID-19 infection rates generally lower than El Paso County's infection rates, according to interviewees. But with this increase in outside air delivery and HVAC equipment run time came an increase in energy consumption. Although utility bills rose in older facilities due to the increased HVAC usage, the district did see decreased energy use in facilities where HVAC systems were able to be replaced. One interviewee explained, "We do have schools that ESSER money or federal funding was used where we've done full replacements of HVAC systems in our buildings, from the equipment to the controls; we've had energy decreases in those buildings." He elaborated upon trends in energy consumption by observing that in the early days of the pandemic, schools (and the wider population) behaved in a reactive way; now, they are acting in a proactive manner. He concluded, "I think the energy consumption mirrors that reactivity versus proactivity as well." He believes that they could see continued decreases in energy usage the district acts more proactively, and he hopes similar energy usage

Obstacles and recommendations

In the future, all three of the District 11 officials we spoke with would like to see federal funding for school facilities that does not have such short spending timelines. One interviewee said that, "one of the other difficulties is the spending timeline on the ESSER money. That is a huge handcuff [...]. Those spending deadlines create a huge restriction on how much of it we can use and execute [the projects]." One limiting factor in spending the funding within a tight window is labor costs. An interviewee explained that paying contractors to work 70-hour weeks is inefficient because they must receive overtime. If the construction window was larger, it would not necessitate such time-driven inefficiencies. Another constraint has been the long lead times for equipment. An example given was a manufacturer that gave an initial 16-week lead time for equipment, and later increased the lead time to 42 weeks. The interviewee went on to explain that part of the reason why the ESSER III funding had not been expended yet was due to the rush to meet the spending deadlines of ESSER I in September 2022 and ESSER II in September 2023.



Albuquerque Public Schools District Profile

Albuquerque Public Schools (APS) is a large district located in central New Mexico, within the largest city in the state. APS is experiencing shrinking enrollment, with one report showing a decline in enrollment of 17% over the last decade.

Student demographics	Enrollment (2021)	Student race	Poverty level
	76,000	Hispanic/Latino: 66.2% White: 21.8%	Families at or below poverty level: 21%
		Black or African American: 2.2%	Students eligible for free and reduced-price lunch:
		American Indian: 4.5%	69%
		Asian: 2.2%	
		Two or more races: 7.7%	
District information	Number of schools	Total budget (FY23)	Sq. Ft. of Facilities
	148	\$1.92 B	17.3 M

District enrollment sourced from the U.S. Department of Education.

Demographic data sourced from the National Center for Education Statistics (NCES), 2015-19 profile.

Enrollment, budget and F&RL eligibility sourced from APS website and APS dashboard.

Number of schools and square footage sourced from APS facilities staff.



A re-roofing project was completed summer 2022 at Eisenhower Middle School. Courtesy of APS Facilities Design and Construction.

Planned ESSER III Spending

Albuquerque Public Schools received \$230,326,078 in their total ESSER III allotment. APS's total planned facilities spending related to IAQ under ESSER III is \$28,331,200, which is roughly 12% of the district's total ESSER III allocation. APS plans to spend \$16,584,000 of those funds on air filtration, HVAC and heating and/or cooling systems, which translates to an average of \$112,054 spent per school in the 148 schools the district reported operating. This level of HVAC spending per school placed APS in the 45 percentile of the dataset. APS also plans to spend \$4,950,000 of ESSER III funding on repairs to school facilities to reduce the risk of illness. They plan to spend \$6,797,200 on windows, doors and roofs. And finally, though this spending occurred under ESSER I and II and therefore was not tracked in the data we used, APS used previous federal aid to install UV lighting for disease mitigation in classrooms across the district.

APS used various federal aid packages to address all four of the facilities' spending categories that pertain to indoor air quality

(IAQ), indicating the district's commitment to addressing IAQ across multiple pathways. There were only 90 districts in the Burbio dataset that planned to spend some level of ESSER III funding in each of the air filtration/HVAC, repairs and windows/doors/roof categories, meaning that only 2% of districts reported plans to spend as comprehensively on facilities IAQ as APS. Among those 90 districts, APS had the second-highest total planned IAQ spending.

Albuquerque Public Schools is the largest school district in the state of New Mexico, spanning roughly 1,200 square miles and three counties. APS's Capital Master Plan reports that the district spends up to \$300 million per year on new construction, renovations, repairs and technology. The maintenance and operations department (M&O) relies on a separate source of funding, however, and has at times struggled to find adequate funding. The department's website states, "APS has grown a massive 60% since 2007, and work orders have increased by 36.6%, yet M&O staff has fallen 18.1%. In 2015–16, M&O endured a 4.3% drop in the total budget over the previous year, in part due to the drop in student population" and goes on to note that New Mexico funds public school districts using a per student formula. The decrease in allocated budget and dedicated staff for the maintenance and operations team emphasizes the importance of ESSER funding for a large district like APS.

Insights from Albuquerque Public Schools

The Center for Green Schools spoke with John Dufay, the executive director of maintenance and operations for Albuquerque Public Schools. The interview was conducted on August 4, 2022 and focused on his experience planning for and executing significant facilities projects using ESSER III funds.

District actions using ESSER III funding

APS found that the most effective use of ESSER III funds for the district's facilities was changing out aging HVAC systems for newer equipment, which allowed for "better ventilation, better filtration, [and so] we're going to see a much healthier classroom." Specifically, the funding was useful for APS in "changing out the old systems that have been rotted through[...] the water leaks through those systems and we end up creating mold issues and we end up having problems with people with [respiratory illness]." Dufay made it clear that some of these long-term changes would not have happened without ESSER III funding.

Results and observations

In Dufay's estimation, the ventilation upgrades have shown promising signs toward helping to prevent COVID infections and making APS safer. He reported that the district has conducted some preliminary indoor air quality monitoring and found that carbon dioxide and other contaminants have decreased sharply in the classroom environments observed. Although energy use has increased in APS's older facilities due to higher HVAC usage, such as air flushing during night hours, the buildings that have had ventilation updates have seen decreases in energy use. The decrease is particularly notable in facilities that have had automation or control upgrades, Dufay said, because the controls allow the district's facilities staff to better monitor and regulate usage and the cycles of their buildings' systems.

Obstacles and recommendations

When asked if his district would be able to complete their planned facilities improvement projects by the ESSER III deadline, Dufay did not think it would be a problem. In fact, as deadlines approach for expending ESSER III funds, the District will consider moving any unexpended or unencumbered funds allocated for "Learning Loss" to "Facilities Operations" for replacement of aging HVAC equipment and other maintenance and operation needs that are in the queue.

He did, however, note that supply chain issues and inflation have constrained the projects' progress. He has noticed that the demand for facilities improvement components, such as HVAC parts, is much higher

due to similar planned ESSER spending nationwide, making the process more difficult for all school districts. APS shared an example of inflation's impact on the replacement of a broken coil unit for an HVAC system. The original quote for the part and labor was \$5,100, and at the time of the interview it had more than tripled to \$18,500.

Dufay's primary recommendation for federal or state funding that includes school facilities is directing districts to spend a certain percentage of any allotment on facilities. He said, "They need to[...]make an allocation line[...]saying that you must spend so much for facilities. Because that is one of the biggest needs across the entire country." Despite the gravity of learning loss and some of the other challenges schools face, he felt that deferred maintenance across the country represented the weightiest problem. He expressed gratitude for his district's school board and their understanding of the importance of facilities, acknowledging that not all districts have the support he has for using ESSER funding for investments toward facilities improvements.



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