

**Beating the Heat: Public Financing for Greener, more Resilient, and Healthier
School Communities in Texas**

Prepared for the U.S. Green Building Council Center for Green Schools (CFGS)
Anisa Heming & Hannah Carter, CFGS Advisors

By

Maria Alejandra Jaramillo

Jesko von Windheim, NSOE Advisor

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Executive Summary

Background: Texas public schools are increasingly vulnerable to extreme heat, with some districts experiencing more than 64 school days per year above 80°F (Coolingcrisis.org, 2024). Many of these school facilities are over 40 years old, and in the U.S. approximately 41% of districts report needing urgent HVAC upgrades (U.S. GAO, 2020). Although federal legislation like the Inflation Reduction Act and the Bipartisan Infrastructure Law allocates funds for climate resilience, school districts primarily rely on local financing—most commonly municipal bonds—for large capital projects (Congressional Research Service, 2024; Texas Bond Review Board, 2024). Bond outcomes, however, vary significantly, particularly in communities facing both high climate burden and social vulnerability.

Objective: The project aimed to research, map, and evaluate the public funding landscape for school climate resiliency infrastructure in Texas. It focused specifically on the barriers and opportunities tied to using municipal bonds to fund upgrades that mitigate extreme heat in highly vulnerable communities.

Methodology: The study analyzed 132 school bond proposals from 2017–2025 in four Texas counties: Travis, Harris, Fort Bend, and Hidalgo. These locations were selected based on CDC Social Vulnerability Index data and Environmental Justice Index climate burden scores for extreme heat (CDC/ATSDR, 2024). The analysis drew from SchoolBondFinder data and interviews with staff from Austin ISD, Houston ISD, Fort Bend ISD, and Pharr-San Juan-Alamo ISD, as well as expert input from the Center for Green Schools, public financing experts, and municipal bond finance professionals.

Key Findings:

- In the past seven years, **31 of 132 school bonds (23%)** across Travis, Harris, Fort Bend, and Hidalgo counties funded extreme heat mitigation projects, but only **13 of the 132 bonds (~10%)** passed in **high-need, vulnerable communities** – this less than half of the total heat-focused bonds. In addition, **8 of 132 heat-related school bonds (~6%) failed**, majority (7 out of the 8) in communities with high social vulnerability – highlighting an **equity gap** in funding climate-resilient school infrastructure in Texas (SchoolBondFinder, 2025).
- Barriers to passing school bonds often include mistrust in leadership, low voter awareness, and tax resistance – especially in underserved or conservative areas (Texas school staff interviews, 2025).
- Bond success increased when districts used proactive planning, transparent engagement, and equity frameworks such as Austin ISD’s 2025 Building Equity Standard pilot at Norman-Sims Elementary, which integrated climate resilience and health into capital planning (AISD, 2025).
- Many school bond proposals use vague terms like “renovations,” but districts strive to highlight language tied to long-term health, cost-savings, durability, and equitable benefits in underserved communities (Texas school staff interviews, 2025; SchoolBondFinder, 2025).

Conclusion: Municipal bonds offer a critical yet underused path to climate-resilient school

infrastructure in Texas. While 23% of heat-related bonds passed in the four Texas counties analyzed in this project, only ~10% were passed in high-need areas, revealing an equity gap. As James McIntyre, Chief Strategy Officer, from Inclusive Prosperity Capital noted, “outdated, overheated schools harm student health and drive-up district costs”. Framing bonds as investments in health, learning, and long-term savings—rather than just construction—can help districts earn voter trust and address systemic disparities.

Contact Information: For further information or clarification, please contact the investigator Maria Alejandra Jaramillo at ale.jaramillo@duke.edu

Introduction

K–12 public school facilities across the U.S. are aging, underfunded, and increasingly vulnerable to climate risks such as extreme heat, flooding, and wildfires. These risks disproportionately impact schools in historically underserved and low-income communities, where inadequate infrastructure and limited resources undermine students' health, safety, and learning outcomes (Filardo, 2016; Heming & Sauter, 2022). Texas, one of the fastest growing and hottest states in the country (Nielsen-Gammon et al., 2024), exemplifies this crisis. With seven out of twelve months now averaging temperatures above 80°F, students in poorly cooled schools face growing barriers to academic success, behavioral well-being, and overall health (Center for Green Schools, 2024). If children can't breathe clean air or concentrate due to oppressive indoor heat, learning simply cannot happen—something the COVID-19 pandemic made all too clear.

Despite a \$46 billion annual shortfall in national school facilities funding, federal resources like Elementary and Secondary School Emergency Relief Fund (ESSER) III and the Inflation Reduction Act have created a window for districts to pursue overdue building improvements (Filardo, 2016; Heming & Sauter, 2022). Yet these funds remain unevenly accessed, with wealthier districts better positioned to secure and deploy them. School bonds, a more stable local tool for capital projects, show similar inequities: while 23% of bonds in Texas aimed at heat mitigation passed statewide over the last seven years, only ~10% succeeded in high-vulnerability communities.

This research, situated at the intersection of public finance, education equity, and climate resilience, explores how municipal bonds can be better leveraged to fund sustainable, health-promoting school infrastructure in Texas. The central research question is: **What are the barriers and opportunities to using municipal bonds for school building upgrades that address extreme heat effects?**

To answer this, the project focuses on four key sub-questions:

- How are school districts currently funding heat mitigation projects?
- What factors influence the decision to seek bond funding for building improvements?
- How are schools centering equity in planned investments?
- What language is being used in school bond proposals to address heat resilience?

By evaluating bond outcomes across four Texas counties (Travis, Harris, Fort Bend, Hidalgo), this project aims to identify patterns in funding access, assess disparities in funding addressing climate risks, and offer actionable strategies for more equitable infrastructure investment for K-12 public school districts in Texas. This work aligns with the mission of the Center for Green Schools (CFGS), the project client, which seeks to make green, healthy, and resilient school environments the norm—not the exception. Since 2010, CFGS has worked with over 300 districts nationwide to drive school sustainability through training, research, and policy advocacy (Heming & Sauter, 2022). They aspire to help school districts integrate public finance tools like school bonds into climate resilience planning—especially in the communities most impacted by environmental and social stressors (Center for Green Schools, 2024).

Background

Across the U.S., public school facilities are aging and underfunded, posing serious health, safety, and learning risks—particularly in socioeconomically disadvantaged communities. The *State of Our Schools* report revealed that schools in low-wealth ZIP codes received three times less capital investment than those in affluent areas, locking them into a cycle of short-term fixes over long-term, climate-resilient upgrades (Filardo, 2016). In Texas, where schools face increasing days above 80°F, research links extreme heat to worsened asthma symptoms, higher rates of absenteeism, and lower test scores (Texas Center for Climate Integrity, 2021; National Heat Strategy, 2024). Prolonged exposure to indoor heat—particularly in poorly ventilated or under-resourced school buildings—can also lead to dehydration, fatigue, and long-term respiratory and cardiovascular stress in children (Heming & Sauter, 2022). Children exposed to poor thermal comfort in schools have been shown to experience cognitive fatigue and difficulty concentrating, disproportionately affecting historically marginalized students who already face learning barriers (Heming & Sauter, 2022). As schools continue to adapt in the wake of the pandemic, federal ESSER III funding offered a crucial opportunity to invest in HVAC and filtration upgrades—yet implementation varied widely, with smaller districts prioritizing these upgrades more effectively than larger ones (Heming & Sauter, 2022). These disparities highlight the urgent need for targeted, equitable investment in school infrastructure that directly supports student health, comfort, and academic resilience.

Extreme heat has emerged as a major climate risk in Texas, with over 64 school days annually exceeding 80°F. This places an enormous strain on outdated infrastructure, impacting student behavior, attendance, and long-term cognitive development (Texas Center for Climate Integrity, 2024). In Texas, the average public-school building is over 40 years old, and many campuses still rely on original HVAC systems, underscoring decades of underinvestment in climate-ready infrastructure (coolingcrisis.org, 2024). The COVID-19 pandemic further exposed disparities in school resilience, where under-resourced districts struggled to implement indoor air quality improvements despite receiving federal funds through the ESSER III program (NCES, 2021; Center for Green Schools, 2022). *Figure 1* below visualizes this burden across Texas, illustrating the average number of school days over 80°F by county and pinpointing the location of the four target public school districts for this project.

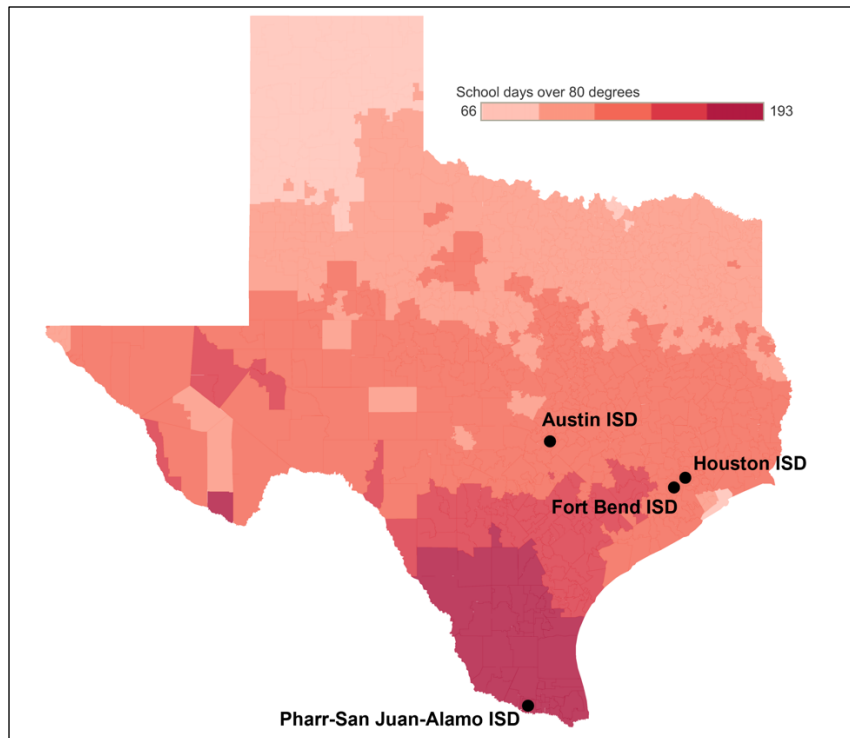


Figure 1. Annual School Days Over 80°F by County and Location of Target School District

While the Inflation Reduction Act and Bipartisan Infrastructure Law have created new streams for resilience funding, much of the responsibility falls on local governments. In Texas, school districts rely heavily on local property taxes to finance capital projects—creating an equity gap. Affluent communities can raise more money with lower tax rates, while lower-income districts face structural disadvantages in accessing bond funding (Filardo, 2016). Therefore, municipal bonds remain the most common tool to finance school infrastructure improvements. Through voter-approved general obligation bonds or revenue bonds, districts gain upfront capital to build or retrofit schools for climate resilience. Yet, these bonds fail disproportionately in communities with high social vulnerability.

Across Travis County, Harris County, Fort Bend County, and Hidalgo County only ~10% of bonds targeting extreme heat in high-need Texas communities passed between 2017 and 2025 (SchoolBondFinder, 2025). As shown in *Figure 2* below, approval rates further underscore this inequity: bonds proposed in low or moderate vulnerability communities passed at a rate of 75% (39 of 52), compared to only 64.2% (43 of 67) in high vulnerability areas (SchoolBondFinder, 2025). This reinforces the structural barriers faced by underserved districts—those with the greatest infrastructure needs often encounter the steepest hurdles in accessing climate-resilient funding. The disparity highlights the urgent need for more targeted state and federal support to bridge this gap.

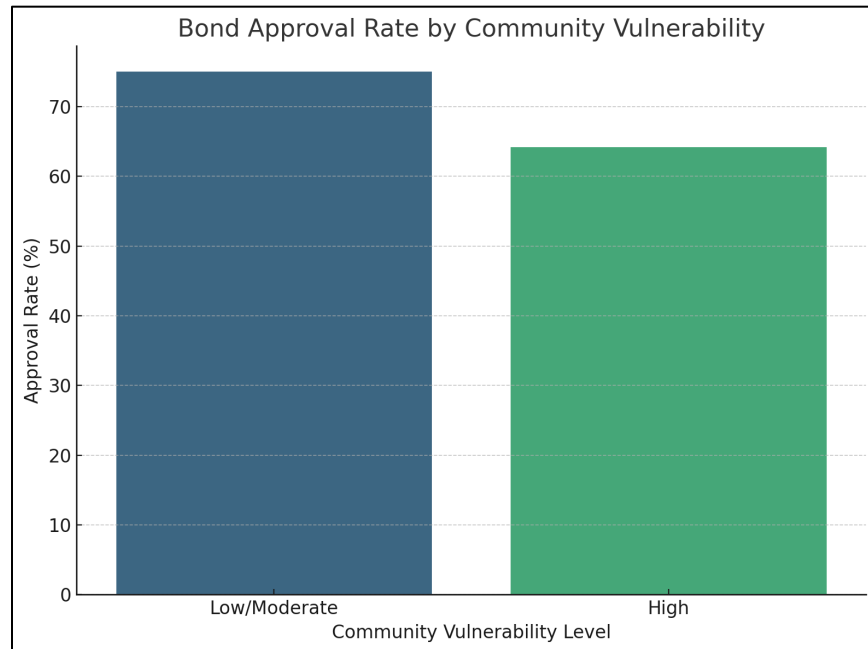


Figure 2. Bond Approval Rate by Community Vulnerability (SchoolBondFinder, 2025)

Texas has mechanisms like the Permanent School Fund Bond Guarantee Program to enhance bond creditworthiness and lower costs, yet barriers persist—including low voter turnout, confusing ballot language, and limited understanding of long-term benefits (Texas Bond Review Board, 2024). To meet the state’s growing enrollment—averaging 80,000 new students annually (Texas Association of School Boards, 2024)—and intensifying climate impacts, school districts face difficult tradeoffs between affordability and long-term resilience.

As Noel Poyo, Executive Vice President of the Housing Partnership Network, explained, public officials must navigate “the best imperfect balance” between cost, durability, and political viability: “Do you build the cheapest school you can, knowing you’ll rely on insurance to rebuild it after a disaster? Or do you ask voters to fund a more expensive school that can last 100 years?” (Poyo, April 2025). These dilemmas are especially challenging in low-trust environments where misinformation and polarized media ecosystems undermine public confidence in government. Rather than relying on perfect financing tools, districts must invest in voter education and storytelling that connect infrastructure upgrades to what matters most—children’s health and academic success. “School bond campaigns are one of the few places where people are still deeply engaged in local democracy,” Poyo emphasized, noting that voter trust must be earned through community-rooted engagement, not abstract promises.

Adam Meier, Director of Green & Healthy Communities at the Housing Partnership Network, similarly underscored the value of transparency and strategic procurement. He explained that districts can build voter trust by translating technical goals—like energy efficiency or resilience—into terms that resonate with families, such as reduced maintenance costs, safer classrooms, and healthier learning environments. Early involvement of building operators and alignment between capital and operational planning further strengthens district readiness.

Together, these insights reinforce that school infrastructure decisions are not merely financial—they are deeply democratic. In communities facing heat and infrastructure stress, trust must be cultivated through inclusive processes that empower families and frontline staff to shape investment priorities (Poyo & Meier, April 2025). This aligns with the Texas Metropolitan Blueprint, a five-year action plan developed by public policy institutions and academic centers, which emphasizes that future economic competitiveness will depend on resilient infrastructure and inclusive growth that matches funding with community need (Clark et al., 2025). The Blueprint identifies K–12 schools as critical community assets and calls for coordinated investments to modernize aging campuses—especially in climate-vulnerable metro areas.

Evaluation of Bonds issued by Target Texas School Districts

Methodology

This project used a mixed-methods approach—combining analysis of school bond funding data with qualitative interviews—to explore how Texas public school districts finance climate-resilient infrastructure that mitigates extreme heat.

Quantitative Analysis

Bond data was collected from [SchoolBondFinder](#) — a comprehensive online database that tracks K–12 bond-funded capital improvement projects — and publicly available district bond election documents to evaluate patterns in green infrastructure funding. The analysis focused on Texas public school bonds from the past seven years (2017–2025) that included construction renovations and capital improvements relevant to climate resilience. A total of 132 bonds were reviewed across four counties — Travis, Harris, Fort Bend, and Hidalgo — including those that had passed, failed, or were proposed but not adopted.

Each bond was coded based on the presence of climate-relevant language specifically related to heat mitigation and categorized by type of infrastructure upgrade. Initially, key terms that indicated heat mitigation included HVAC, electrical systems, roofing, renovations, building envelope, and shade structures. If a bond proposal included any of these terms, it was tagged as “Yes,” signaling that the funds were intended for a heat mitigation project at the district. However, as the coding process continued, the list of key terms expanded to include a broader range of facility improvements such as mechanical systems, canopies, playgrounds, chillers, water stations, and lighting, as shown in *Figure 3*. In the word cloud, the larger the word appears, the more frequently it was found across bond descriptions.

Table 1. Social Vulnerability and Climate Burden Scores for Selected Texas School Districts

Texas County	School District	SVI Score	Climate Burden Extreme Heat Score
Fort Bend County	Fort Bend ISD	Low (0.1542)	Moderate-High (0.71)
Travis County	Austin ISD	Low-Moderate (0.2688)	High (0.83)
Harris County	Houston ISD	High (0.834)	Moderate-High (0.68)
Hidalgo County	Pharr-San-Juan-Alamo ISD	High (0.9763)	Moderate-High (0.68)*

Note: For the Hidalgo County score, I used the overall climate burden score of 0.68 from the ATSRD Environmental Justice Index. Although the extreme heat score falls within the low-moderate range (0.26), the drought frequency score is high (0.86), indicating broader climate stress. A score above 0.75 signifies a high burden from drought frequency relative to other U.S. communities, and we know that high temperatures can exacerbate drought conditions.

In addition to SVI and EJI scores, this analysis also considered socioeconomic vulnerability using National Center for Education Statistics (NCES) data on families with income below the poverty line and families receiving SNAP benefits. As seen in *Appendix A, Figure 5.*, HISD and PSJA ISD show significantly higher poverty and food insecurity indicators compared to state and national averages, underscoring the need for climate-resilient infrastructure investments in these high-need districts.

Qualitative Analysis

To contextualize quantitative findings, interviews were conducted with:

- Four district-level stakeholders from AISD, HISD, FBISD, and PSJA ISD (facilities, finance, and sustainability staff).
- One former local policymaker and one former community development banker with experience in municipal bonds and the Federal Reserve Bank’s community and economic development initiatives.
- Four public finance experts, including practitioners with expertise in municipal bonds, CDFIs, state fiscal oversight, and climate finance.

These conversations highlighted how school leaders weigh extreme heat risks when developing bond proposals, and how institutional barriers—such as limited facilities planning staff, political volatility (as seen in HISD), rising construction costs (impacting FBISD), and the absence of clear state-level guidelines for climate resilience integration (reported across all four districts)—affect access to funding for climate resilience. Stakeholders also discussed how funding decisions intersect with community demographics, trust in government, and the political importance of infrastructure investments. The interviews were transcribed, coded, and

thematically analyzed. Key themes included: (1) disparities in bond passage and scope based on district wealth and vulnerability; (2) lack of standardized language or state-level guidance for incorporating climate resilience for extreme heat into bond proposals; and (3) the need for stronger community engagement and clearer communication around health and academic benefits of heat-resilient infrastructure (e.g. improved attendance, learning outcomes, and teacher retention).

Results & Analysis

Target District Case Study Overview: Heat Resilience & Infrastructure Gap

This project analyzed four diverse Texas school districts—Houston ISD, Austin ISD, Fort Bend ISD, and Pharr-San Juan-Alamo ISD—to explore how funding mechanisms, infrastructure needs, and climate resilience strategies vary across regions. While HISD and FBISD are large urban and suburban districts with extensive bond histories, AISD stands out for its equity frameworks and climate-aligned planning, and PSJA ISD offers a critical lens into under-resourced districts navigating infrastructure needs with limited bonding capacity. Each district presents unique governance structures and community dynamics that shape their ability to fund extreme heat mitigation projects. HISD faces aging infrastructure and recent bond defeats due to political mistrust. AISD demonstrates a model of proactive planning and successful voter engagement. FBISD leverages green bonds and strong credit ratings, but rising construction costs have strained capital plans. PSJA ISD, despite high climate vulnerability, has limited bonding experience but strong community engagement assets. Notably, successful projects often paired bond proposals with transparency tools like oversight committees, equity indices, and community engagement centers. For more detailed profiles of each district’s climate resilience efforts and capital planning strategies, see *Appendix B–E*.

SchoolBondFinder Analysis

The SchoolBondFinder analysis revealed sharp disparities in green infrastructure funding across Texas counties. Wealthier areas with higher voter turnout and stronger administrative capacity were far more likely to pass bonds, even for moderate upgrades. Meanwhile, high-need districts—often facing greater climate burden—struggled to secure voter approval despite urgent infrastructure needs. These disparities reveal that access to capital is not just about policy availability, but about political will, public trust, and tailored engagement.

These disparities are even more striking when viewed against the backdrop of the May 2024 Texas bond elections, where 72% of public-school bond propositions were approved—amounting to over \$7.6 billion in funding (BOK Financial Securities, 2024). While this suggests broad support for education infrastructure across the state, approval rates were significantly lower for districts facing high climate burden and social vulnerability. The findings below further illustrate how extreme heat mitigation investments continue to face systemic barriers.

Over the last seven years, 132 school bonds were proposed across Travis, Harris, Fort Bend, and Hidalgo counties—regions that are home to some of Texas’ fastest-growing and most climate-

vulnerable school districts. Of those, only 31 bonds (23%) were approved and explicitly allocated funds for extreme heat mitigation projects, such as HVAC upgrades, shade structures, and building envelope improvements. Another 8 bonds (~6%) failed despite being designed to address the physical and health risks associated with rising temperatures.

A closer look reveals that just 13 of the 132 bonds (~10%) that passed were in high-need, socially vulnerable school communities—representing less than half of all successful bonds targeting extreme heat. In contrast, 7 of the 8 bonds that failed were also proposed in these same vulnerable areas, indicating that districts with the most urgent infrastructure needs are the least likely to secure public funding. These communities also faced moderate to high climate burden based on federal indices, compounding the risk (CDC/ATSDR, 2024).

Additionally, 28 bonds (21%) were approved but did not reference extreme heat mitigation in their descriptions. These were tagged as “No” because the project language made no clear connection to climate resilience. Another 23 bonds (17%) were labeled as “Maybe”—using vague terms like “major systems” or “modernizations,” which could include heat mitigation but also apply to unrelated risks like flooding or cold weather events. When accounting for vulnerable communities across both high- and moderate-need areas, 10 additional bonds (~8%) were found to include clear extreme heat mitigation projects. Combined with the 13 bonds from high-need districts, this brings the total to 23 out of 132 (~17%) bonds that addressed extreme heat in the most at-risk communities—still a small fraction of total bond activity.

These trends highlight that while some progress has been made, extreme heat mitigation investments remain uneven and deeply tied to community wealth, voter trust, and district-level capacity—challenges that were echoed and expanded upon in interviews with Texas school district leaders and public finance experts.

Interview Results

The following subsections synthesize insights from interviews and document analysis, exploring how school districts are currently funding heat mitigation projects, the key factors influencing their funding decisions, how equity is being centered in facility investments, and the types of language districts are using in bond proposals to secure voter support.

How are school districts currently funding heat mitigation projects?

Districts across Texas are pursuing a variety of strategies to fund upgrades that address extreme heat, often layering local bond funds with utility incentives and external grants. Districts address extreme heat by integrating specific features into school designs, including energy-efficient HVAC systems and heat-reducing building materials. Houston ISD has leveraged demand response programs like CPower and energy rebate initiatives like CenterPoint’s SCORE to offset HVAC upgrade costs, securing over \$1 million in incentives that reduce the strain on general funds (Walker, February 2025). Fort Bend ISD distinguished itself as Texas’s first district to issue *green bonds* in 2014, channeling capital toward energy-efficient new school construction (Flanigan, 2017). More recently, FBISD’s 2023 bond included heat resilience upgrades such as LED retrofits and high-efficiency HVAC systems, although budget shortfalls required difficult

project prioritizations (Viltz, February 2025). Austin ISD has combined traditional bonds with innovative grant partnerships, such as the Urban Forest Grant to enhance outdoor learning spaces highlighting an innovative approach to managing environmental stressors, and a \$15 million U.S. Department of Energy Renew America's Schools award to install solar-ready rooftops and building automation systems (Austin ISD, 2024). Finally, Pharr-San Juan-Alamo ISD (PSJA ISD), despite limited bond history, is beginning to align its HVAC workforce training programs and STEM academies with future funding strategies to pilot climate-resilient retrofits (Barboza, March 2025). While local bonds remain the primary financing vehicle, uneven access to funding success—especially in high-need, climate-vulnerable communities—reveals systemic barriers that require stronger voter engagement, clearer health-driven messaging, and more resilient long-term capital planning (SchoolBondFinder, 2025).

What factors influence the decisions to seek funds for heat resilient infrastructure and building improvements?

School districts are influenced by a complex mix of motivations and barriers when deciding to seek funds for heat-resilient upgrades. Financial constraints for capital improvements are a primary driver, often addressed through municipal bonds backed by programs like the Texas Permanent School Fund Bond Guarantee Program, which enhances creditworthiness and reduces borrowing costs (Texas Education Agency, 2024). Districts like Houston ISD and Austin ISD rely heavily on voter-approved bonds, sometimes structured as "no-tax increase" bonds to minimize political resistance, while simultaneously layering in external grants such as federal Inflation Reduction Act funds or U.S. DOE Renew America's Schools awards (Austin ISD, 2024).

Operational pressures, including aging infrastructure, rising utility costs, and extreme heat-related facility breakdowns, also push districts to prioritize heat resilience in their capital plans. For example, Fort Bend ISD faced steep project deferrals after construction inflation outpaced their 2023 bond funding estimates, highlighting how tight execution timelines and unexpected cost overruns can weaken public trust and complicate future bond approvals (Viltz, February 2025). In these districts, successful bond execution — meaning delivering promised upgrades on budget and on schedule — is critical for securing voter confidence in subsequent bond elections.

Institutional challenges further shape funding strategies. Districts must navigate complex regulatory frameworks and election laws requiring bond propositions to specify tax rates and allowable uses, but not outcomes like improved environmental health or heat resilience (Texas Association of School Boards, 2024). This lack of mandated outcome reporting complicates efforts to build public narratives around climate adaptation. Additionally, securing equitable access to green funding remains difficult: Austin ISD uses tools like the Equity by Design framework to prioritize high-need campuses for upgrades, but staff noted that limited internal capacity and community engagement barriers can delay or dilute climate resilience efforts (Clary, October 2024, March 2025).

School districts are influenced by a mix of motivations and barriers when seeking funding for green school projects. Financial constraints for capital improvements are a primary concern, often addressed through bond measures like those seen in Houston ISD and Austin ISD, which use bonds and large-scale funding initiatives to support energy-efficient construction and renovations. Operational challenges and voter approval processes also play significant roles, as seen in Fort Bend ISD where the execution of bond programs can affect future funding opportunities. Moreover, institutional challenges such as navigating deeply rooted systems and ensuring equitable access to green funding are significant, as highlighted by Austin ISD.

How are schools centering equity in planned investments?

Across the four districts studied, equity is emerging as a guiding—but unevenly applied—principle in facilities planning and climate resilience investments. Austin ISD leads with its [“Equity by Design”](#) framework and Heat and [Social Vulnerability Index Maps](#), which help identify high-need campuses like Pickle Elementary for capital upgrades as Carsen Daniel, Sustainability Coordination Manager at Austin ISD shared. These tools, along with community engagement efforts and the Building Equity Standard pilot at Norman-Sims Elementary, ensure that investments are responsive to disparities in student health, academic performance, and environmental burden (Clary, October 2024, March 2025; Pickle Elementary Principal, April 2025). Fort Bend ISD uses third-party facility assessments, prioritization tiers, and its adherence to TEA’s educational specifications to guide bond investments, although the district has not yet integrated environmental justice mapping into project selection (Viltz, February 2025).

Houston ISD has focused on technical data—such as HVAC work orders, building age, and performance audits—to prioritize upgrades, with recent efforts to layer in equity more explicitly through a sustainability playbook deployed to 20 campuses (Walker, February 2025). Meanwhile, Pharr-San Juan-Alamo ISD (PSJA ISD), while limited by its bonding history, anchors equity in its community-rooted programs: its Parent and Community Engagement Centers and Early College/STEM academies offer a foundation for pairing future resilience projects with social equity goals (Barboza, March 2025; Federal Reserve Bank of Dallas, 2014).

Still, few districts consistently use tools like the CDC’s Social Vulnerability Index or the Environmental Justice Index to guide bond planning. Embedding these metrics more formally into facility assessments could help school leaders more equitably allocate resources and justify targeted investments in the most heat-burdened and at-risk communities. There was evidence of equity considerations in how school districts plan and implement their infrastructure improvements, however, to advance true climate resilience, districts must formally embed equity indicators into capital planning frameworks, ensuring that the communities facing the greatest risks receive the investments they need most.

What language is being used in school bond proposals?

The language used in school bond proposals often prioritizes broad terms like "renovations," "infrastructure improvements," and "modernizations," rather than explicitly highlighting climate resilience or extreme heat mitigation. Of the 132 bonds analyzed, only 23% clearly referenced

HVAC upgrades, building envelope improvements, or other measures directly tied to managing heat risk. For example, in Houston ISD’s 2024 bond proposal, common phrases included "HVAC repairs and replacements," "roof system replacements," and "improvements to ventilation and indoor air quality" (Houston ISD Bond Booklet, 2024). Austin ISD’s 2022 bond descriptions similarly emphasized "modernizing school buildings for energy efficiency" and "upgrading mechanical systems" (AISD Bond Book, 2022).

Direct mentions of "climate resilience" or "extreme heat mitigation" were extremely rare in the official ballot language itself—largely because Texas election laws restrict ballot language to tax collection authority and project category without forecasting future outcomes like improved environmental health (Texas Bond Review Board, 2024). However, in supporting materials and bond marketing, districts used more voter-friendly framing. For instance, HISD emphasized that "improvements will promote healthy, safe, and comfortable environments conducive to learning" (Houston ISD Bond Booklet, 2024), while Fort Bend ISD noted that "HVAC upgrades will support energy efficiency and safe indoor environments for students and staff" (FBISD Bond Planning Presentation, 2023). As shown in *Figure 4*, bond proposals that explicitly referenced extreme heat had the highest approval rates, while those with vague or absent language were more likely to fail—underscoring the importance of clear climate-resilience framing in earning voter support (SchoolBondFinder, 2025).

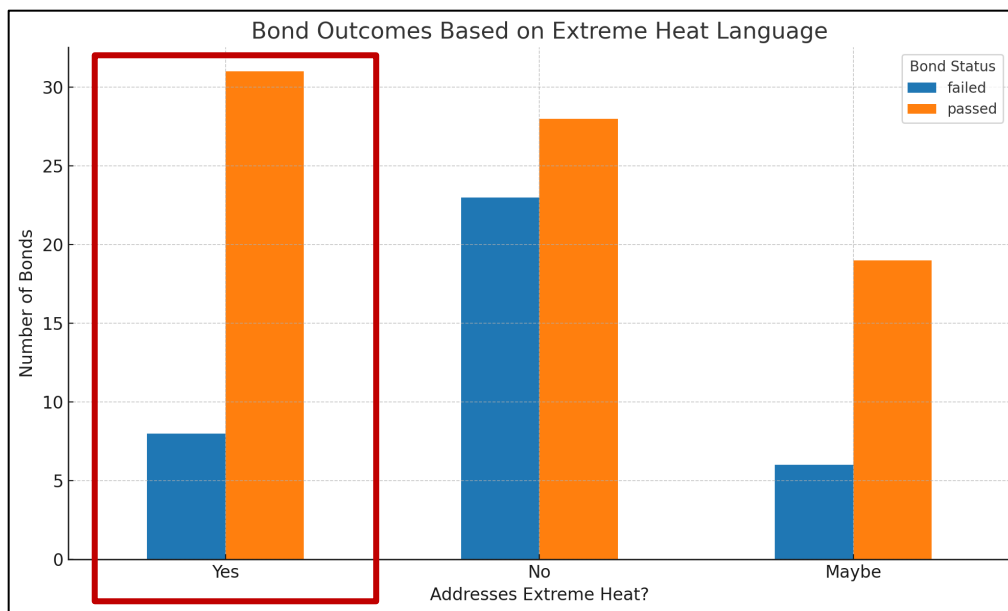


Figure 4. Bond Outcomes Based on Extreme Heat Language (SchoolBondFinder, 2025)

Results suggest that clear, outcome-driven messaging—especially when tied to health, safety, and operational savings—was more effective in passing bonds than technical jargon about "climate resilience" or "green infrastructure" alone. Bond proposals that successfully passed often leaned on practical language emphasizing comfort, health, energy efficiency, and cost control, rather than explicitly invoking climate change terms.

Discussion & Conclusion

Discussion

Municipal bonds, if thoughtfully designed and equitably implemented, can be transformative for Texas public schools. They are not just financial instruments—they are commitments to the future health, equity, and opportunity of Texas children. The burden of environmental protection and educational well-being should not fall on children’s shoulders but rather be shouldered by the state and local governments as a fiduciary responsibility to their constituents. The sooner we treat climate-resilient schools as essential infrastructure, the sooner we unlock a healthier, more equitable future for all students.

This Master's Project directly engaged with three to four Texas public school districts burdened by climate change—Houston ISD, Austin ISD, Fort Bend ISD, and PSJA ISD—to evaluate their use of municipal bonds to enhance school infrastructure and resilience against extreme heat. This evaluation assessed the planning and decision-making processes behind these bonds, mapped their distribution, and identified disparities in green and resilience infrastructure improvements. By analyzing these bonds through a distributive justice lens and comparing them against the Social Vulnerability Index of the counties in which these districts reside, the project surfaces who benefits and who remains disproportionately affected by climate risks. Ultimately, the project proposes strategies that align future funding with the needs of the most climate-impacted school communities.

One of the most important insights emerging from the research, including interviews with school and finance leaders, is that climate adaptation in schools cannot be treated solely as a technical or financial exercise. Instead, it must be understood as an inherently community-driven process. As Pedro Martinez, former Superintendent of San Antonio ISD and current CEO of Chicago Public Schools, emphasized, trust and responsiveness are paramount: “Even if you have the money, keeping the community’s trust is just as important” (Martinez, April 2025). During his tenure, Mr. Martinez led two successful referendums totaling over \$1.7 billion, yet noted that in extreme heat emergencies, quick communication, acknowledgment of infrastructure vulnerabilities, and non-defensive transparency were crucial to maintaining public confidence.

Mr. Martinez’s approach reinforced several key findings from this project: (1) learning conditions must be explicitly prioritized in funding communications; (2) bonds must be framed not just around fiscal responsibility but as public health and resilience investments; and (3) leaders must recognize and adapt to local political contexts to avoid alienating voters (Martinez, April 2025). For instance, Mr. Martinez avoided polarizing “green” language and instead focused on universally appealing terms like “efficiency,” “modern spaces,” and “healthier environments”—a strategy that aligns with trends identified in the SchoolBondFinder bond analysis across Texas districts.

Moreover, Mr. Martinez’s operational strategies underscored that proactive maintenance plans, fast deployment of temporary cooling solutions, and early identification of vulnerable campuses are not optional in an era of intensifying climate risk—they are prerequisites for effective resilience governance. His use of targeted inventories (e.g., oldest HVAC systems, largest

student populations) and pursuit of utility rebates and efficiency incentives (e.g., replacing boilers, retrofitting windows) mirrors successful practices also seen in districts like Houston ISD and Austin ISD.

Ultimately, this project highlights that equitable climate adaptation in schools demands more than infrastructure investment—it demands community-based environmental management. Successful districts are not simply financing projects; they are investing in long-term, trust-centered partnerships with families, educators, and communities. The findings point to the need for future policies and practices that:

- Make health and resilience outcomes a standard part of bond proposal narratives.
- Equip districts with dedicated staff or technical assistance to identify and secure external funding incentives.
- Formalize vulnerability assessments into capital planning, prioritizing upgrades for historically marginalized and climate-burdened communities.
- Maintain flexibility and responsiveness in project implementation, especially under increasingly unpredictable climate conditions.

If Texas and other rapidly warming states are serious about safeguarding student well-being and educational equity, then climate-resilient school infrastructure must be treated with the same urgency and strategic foresight as any other critical public good. In this, schools are not just sites of learning—they are frontline institutions in the broader fight for environmental justice, public health, and community resilience.

Conclusion

Municipal bonds remain a vital, yet inconsistently utilized, mechanism for advancing climate-resilient school infrastructure in Texas. This project found that although 23% of school bonds proposed in the past seven years addressed extreme heat challenges, only ~10% passed in high-need, high-vulnerability communities—while 7 out of 8 failed outright in those areas (SchoolBondFinder, 2025). These failures underscore persistent systemic barriers, including uneven voter education, socioeconomic inequities, limited organizational readiness, and outdated communication strategies around school bond campaigns.

As climate risk intensifies and Texas’s student population continues to grow by approximately 80,000 students annually (Texas Education Agency 2024), the need for forward-thinking, equity-centered capital investment becomes more urgent. James McIntyre, Chief Strategy Officer at Inclusive Prosperity Capital, emphasized that municipal bonds represent a “perfect vehicle” to fund large-scale infrastructure transitions that benefit communities—especially schools. He emphasized that bonds already support other essential services like affordable housing and healthcare infrastructure, and should similarly be deployed to transform aging, inequitable school buildings. “Bad infrastructure delivers tertiary negative impacts,” McIntyre explained, noting that deteriorating facilities don’t just harm health—they drive up costs elsewhere. For instance, extreme heat in poorly equipped school buildings may increase student behavioral issues, potentially requiring additional staffing. “If that results in even one extra teacher per school, that’s \$30,000 plus benefits per year—per campus,” McIntyre pointed out, linking the issue

directly to district-level budget impacts (McIntyre, April 2025).

McIntyre also argued that if the federal government is regulating environmental conditions, local governments bear a fiduciary—not just moral—responsibility to protect citizen health. This perspective positions school bond investments as both fiscally prudent and ethically necessary. To improve bond approval rates and equity outcomes, school districts must localize their strategies, clearly communicate the health and climate benefits of proposed projects, strengthen internal planning and readiness, and meaningfully engage communities throughout the bond development process. These steps will not only increase public trust and voter support but also ensure that investments in public education infrastructure address long-standing health and environmental justice issues in Texas’s most affected communities.

Notably, this study focused on large urban and suburban school districts with dedicated sustainability staff and comparatively higher organizational capacity. Rural and smaller districts, which often face even more severe infrastructure challenges, may lack the administrative resources, staffing, or political capital to pursue bond funding or navigate complex financing pathways. Research indicates that rural school districts in Texas often face significant challenges in securing voter approval for funding due to smaller tax bases and limited public awareness, which can impede their ability to invest in climate-resilient infrastructure (Texas Education Agency, 2016; Stanford, 2023; U.S. GOA, 2022). Future research and policy design must explicitly include these communities to ensure equitable access to infrastructure funding across the state.

Moreover, heat is a public health issue with cascading economic consequences. As discussed at the beginning of this paper, prolonged exposure to indoor heat—particularly in poorly ventilated or under-resourced school buildings—can lead to dehydration, fatigue, and long-term respiratory and cardiovascular stress in children (Heming & Sauter, 2022; Center for Green Schools, 2022). Students can’t learn in “sick buildings,” a lesson deeply reinforced during the COVID-19 pandemic. The same urgency must now be applied to extreme heat: investing in healthy buildings today reduces healthcare costs and educational inequities tomorrow.

Municipal bonds can—and should—be used to interrupt this cycle. They are fiscally responsible investments in community health, learning, and climate resilience. To improve bond approval rates and equity outcomes, school districts must localize their strategies, clearly communicate the health and climate benefits of proposed projects, strengthen internal planning and readiness, and meaningfully engage communities throughout the bond development process. These steps will not only increase public trust and voter support but also ensure that investments in public education infrastructure address long-standing health and environmental justice issues in Texas’s most affected communities.

Recommendations for School Districts

1. Design for Equity, Resilience, and Long-Term Value

- **Apply Equity-Centered Planning Tools:** Use models like Austin ISD’s *Building Equity Standard* to align bond priorities with environmental and socioeconomic vulnerabilities.

- **Frame Investments for the Long Haul:** Shift messaging from short-term fixes to 15–30-year gains, emphasizing how today’s upgrades reduce future healthcare costs, maintenance burdens, and instructional disruptions.
- **Link Climate to Cost:** Make the case that better school buildings keep students healthier and reduce district expenses over time, from utilities to staff attrition to behavioral interventions.

2. Build Trust Through Clear, Community-Centered Communication

- **Localize Bond Language:** Replace generic terms like “renovation” with specifics such as “HVAC modernization,” “heat mitigation,” or “healthy school retrofits” to clarify intent and benefits.
- **Elevate Co-Benefits:** Explicitly connect bond-funded projects to improved health, learning outcomes, and local job creation—especially in historically disinvested communities.
- **Engage Early and Often:** Involve caregivers, teachers, and students in project planning to boost transparency and demonstrate responsiveness to community needs.

3. Strengthen Internal Capacity and Data Transparency

- **Build Organizational Readiness:** Invest in staff, training, and cross-department coordination to manage complex capital projects effectively and equitably.
- **Adapt to Local Demographics:** Understand population growth, property tax dynamics, and the aging of residents. Recognize that fixed-income communities may require different outreach or phased investments.

This project revealed that success in passing school bonds is not just about dollars and cents—it’s about trust, timing, transparency, and equity. The growing impacts of climate change and student enrollment make it imperative to act now. Public schools are essential infrastructure, and municipal bonds are one of the few powerful tool’s districts have, under the current political climate, to shape their future.

Client Deliverable

TOWS Matrix for Texas Public Funding Driving Climate-Resilient School Infrastructure

A TOWS matrix was created for each of the four Texas public school districts assessed in my project showcasing how internal strengths and weaknesses of school districts intersect with external opportunities and threats due to climate change. This tool can help these school districts develop strategic responses that are informed by both the capabilities of the districts and the strengths of the school communities, as well as the environmental challenges they face. To distill key insights from these strategic assessments, the following summary highlights the major themes, challenges, and opportunities that emerged across the four district-level TOWS matrices. For full district-level TOWS matrices, see *Appendices F-I*.

Strategic Takeaways from TOWS Analyses Across Texas School Districts

To support climate-resilient infrastructure, each of the four target school districts—Houston ISD, Austin ISD, Fort Bend ISD, and PSJA ISD—offers unique strengths, constraints, and approaches shaped by local conditions, capacity, and community context. The TOWS matrices reveal that while all districts are leveraging local bonds, utility partnerships, and external grants to advance heat mitigation, their ability to do so equitably and at scale varies considerably.

Houston ISD stands out for its use of utility rebate programs (e.g., SCORE and CPower) and its digital data systems to guide targeted investments, but internal resource gaps and leadership turnover have slowed systemic progress. Austin ISD, meanwhile, is capitalizing on layered funding—such as DOE grants and city partnerships—paired with strong planning tools like the Equity by Design framework. Yet, aging infrastructure still poses obstacles. Fort Bend ISD benefits from a history of green bond issuance and strong financial governance but faces tradeoffs between ambition and affordability due to inflation-driven construction costs. Finally, PSJA ISD demonstrates high community alignment and workforce integration potential, but low bond capacity and reliance on general funds limit its infrastructure reach. Collectively, the analyses highlight opportunities for districts to scale heat-resilient upgrades through clearer messaging, improved voter trust, and integration of equity-focused planning tools.

Strategic Questions for CFOs to Maximize Heat Resilience Investments in Schools

Q: Can strategies to address extreme heat be layered onto existing capital projects to reduce costs and disruption?

Why it matters: Going beyond like-for-like replacements during facilities upgrades stretches bond dollars and avoids redundant construction timelines. As Jaime Barboza (PSJA ISD) noted, most upgrades come from general fund allocations or ongoing construction efforts—linking these to resilience can optimize both budgets and outcomes. Higher efficiency HVAC equipment, reflective roofing, envelope sealing, ceiling fan installations, and strategic tree planting can be layered into planned construction projects to maximize energy savings and improve heat resilience.

Q: Are we prioritizing upgrades for the campuses with the greatest heat exposure *and* highest student vulnerability?

Why it matters: Using vulnerability indices (e.g., CDC SVI, district-specific equity frameworks) alongside HVAC work orders and facility age to equitably allocate funds assists district leaders set priorities for upgrades.

Q: Have we explored cash-incentive partnerships (e.g., demand response programs, grants, and partnerships) to offset upfront costs?

Why it matters: Houston ISD secured over \$1 million in cash incentives through CenterPoint's SCORE program by aligning energy efficiency upgrades with HVAC and ventilation improvements—demonstrating how operational savings can be reinvested in resilience (Walker, February 2025). Beyond utilities, external grants provide untapped sources of capital that don't require bond elections. Programs like the American Academy of Dermatology's Shade Structure

Grant and the Arbor Day Foundation’s Community Canopy initiatives offer funding for shade structures and trees, directly supporting heat mitigation goals (American Academy of Dermatology, 2024; Arbor Day Foundation, 2024). Additionally, Texas A&M Forest Service and Green Schoolyards America offer forest grants focused on outdoor learning and canopy equity in school communities (Green Schoolyards America, 2024). Strategic partnerships also play a vital role—Austin Parks Foundation, for instance, donated \$2 million for shade structures citywide, illustrating how cities and school districts can collaborate to improve thermal safety and environmental quality.

Q: Are we clearly communicating the co-benefits—like improved learning, lower utility bills, and health equity—to voters and leadership in bond proposals?

Why it matters: Multiple leaders stressed that framing matters. As James McIntyre noted, districts must position bonds as fiscally prudent and health-driven—not just “green.” This language builds trust and improves bond passage in fiscally conservative communities.

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Appendices

Appendix A

Figure 5. Socioeconomic Vulnerability Across Texas School Districts: Families Receiving SNAP Benefits and Living Below the Poverty Line (NCES)



Appendix B - Texas Public School District Targeted in this Research Project

Houston Independent School District (HISD) – District Overview

HISD is the largest public school district in Texas, serving approximately 183,600 students across 274 campuses (Houston ISD, 2024a). Situated in the Greater Houston area—home to 7.5 million residents—HISD reflects the nation’s most racially and linguistically diverse urban population, with over 100 languages spoken district-wide (Houston ISD, 2024b). The district’s demographics are 62% Hispanic, 22.2% African American, 9.5% Caucasian, 4.5% Asian, and 1.8% other (Houston ISD, 2024b).

Financial Overview (FY 2023–2024)

HISD’s total revenue in 2023–2024 was approximately \$1.63 billion, with 88% derived from local taxes. Federal and state sources provided 4% and 8%, respectively (Houston ISD, 2024c). Average revenue per student was \$21,825, while expenses per student averaged \$26,732. Total district expenditures reached \$2.0 billion, with the majority (55.4%) allocated to 'Other' services, 24.8% to instruction, and 19.8% to student support services (Houston ISD, 2024c).

Climate and Infrastructure Needs

HISD’s infrastructure is aging, with many campuses exceeding 40 years in age and lacking adequate HVAC, insulation, and ventilation systems. The district experiences more than 60 school days annually above 80°F, placing additional stress on school operations and student well-being (CoolingCrisis.org, 2024). Currently, HISD faces over \$10 billion in unmet facilities upgrades (Houston Chronicle, 2024a).

Bond History and Community Engagement

The district has not passed a new bond since 2012, despite recent efforts to fund climate resilience and infrastructure improvements. The November 2023 bond proposed HVAC repairs and campus upgrades to promote healthier learning environments. A more expansive May 2024 proposal, which included flood mitigation, drainage, and lead abatement, was rejected due to community concerns about district leadership, not the proposed initiatives themselves (Houston Chronicle, 2024b; 2024c). In response, HISD convened a Community Advisory Committee from May 28 to June 10, 2024, to gather input for future capital planning (Houston ISD, 2024d).

Heat Resilience and Funding Strategies

To improve heat resilience, HISD participates in utility-backed programs like SCORE and CPower. These programs provide rebates for energy-efficient upgrades—over \$1 million to date—which are reinvested in HVAC retrofits and digital control systems (Walker, 2025). These partnerships reduce the financial burden on general funds and offer models for layering incentives with future municipal bonds aimed at climate-resilient infrastructure

Appendix C - Texas Public School District Targeted in this Research Project

Austin Independent School District (AISD) – District Overview

Austin Independent School District (AISD) is the eighth-largest district in Texas, serving approximately 74,000 students across 116 schools within a 230-square-mile area of Travis County (Austin ISD, 2024a). The district is known for its educational diversity, including Early College High Schools, STEM pathways, dual language, and fine arts academies (Austin ISD, 2024a). AISD's student population is diverse: 51.2% Hispanic, 36.4% White, 6.8% African American, 4.1% Asian, and 4.5% identifying as two or more races. About 38.4% of students are economically disadvantaged, 17.4% are English Language Learners, and 11.1% receive special education services (Austin ISD, 2024b).

Financial Overview (FY2023–2024)

For the 2023–2024 fiscal year, AISD reported a total revenue of \$1.63 billion and expenditures totaling \$2.00 billion. The average revenue per student is \$21,825, while average expenses per student reach \$26,732. Capital outlay stands at \$298.8 million. Funding is heavily reliant on local sources (88%), with state (5%) and federal (7%) funds comprising a smaller share. Expenses are largely categorized as 'Other' (55.4%), followed by Instructional (24.8%) and Support Services (19.8%) (NCES, 2021). *According to SchoolBondFinder data, these figures reflect the district's substantial reliance on local bond financing mechanisms to maintain capital improvement momentum.*

Climate and Infrastructure Needs

AISD's aging infrastructure and rising extreme heat events make climate resilience a growing necessity. Tools like the Climate Vulnerability Index and Equity by Design help the district identify high-need campuses. Schools such as Pickle Elementary have reported inadequate shade and recurring HVAC breakdowns, highlighting the need for targeted investments in passive and active cooling strategies (Austin ISD, 2024b).

Bond History and Community Engagement

AISD has a strong record of voter-approved bonds: \$519.5M in 2004, \$892M in 2013, \$1.05B in 2017, and a record-breaking \$2.44B in 2022 (Austin ISD, 2022a). The 2022 bond impacted nearly every campus, prioritizing energy efficiency, student safety, modernization, outdoor learning spaces, and green infrastructure aligned with city-wide climate goals. Oversight is led by the Community Bond Oversight Committee (CBOC), which tracks progress and reports to the Board of Trustees, fostering transparency and public trust (Austin ISD, 2024b).

Heat Resilience and Funding Strategies

AISD integrates climate adaptation and equity into its long-term planning. AISD's modernization projects aim for LEED and Austin Energy Green Building certification. Recent strategies integrate solar-ready rooftops, LED lighting, drought-tolerant landscaping, and outdoor learning environments. Tools like the Climate Vulnerability Index and Equity by Design framework guide prioritization for capital projects (Austin ISD, 2022a). Despite limited staff capacity in some cases, AISD leverages city partnerships and tools like the Austin Heat Resilience Playbook to align projects with local climate goals. Federal grants such as the U.S. DOE's Renew America's Schools program are also key to AISD's resilience financing strategy (Austin ISD, 2024b).

Community Trust and Oversight

AISD maintains community confidence through transparent oversight. The Community Bond Oversight Committee (CBOC) monitors implementation and reports regularly to the Board of Trustees (Austin ISD, 2024b). Long-standing partnerships with the City of Austin also support land use coordination and permitting—adding resilience to leadership transitions and funding cycles (Austin ISD, 2024b).

Appendix D - Texas Public School District Targeted in this Research Project

Fort Bend Independent School District (FBISD) – District Overview

Fort Bend Independent School District (FBISD), located southwest of Houston, serves one of the fastest growing and most diverse suburban communities in Texas. As the largest district in Fort Bend County, FBISD balances rapid enrollment growth, aging infrastructure, and increasing climate-related risks such as extreme heat. The district has emerged as a leader in sustainable school design, becoming the first in Texas to issue green bonds.

Financial Overview (FY2023–2024)

Fort Bend ISD serves over 77,000 students across 85 schools (NCES, 2024). In FY2023–2024, the district reported \$2.62 billion in revenue and \$2.62 billion in expenditures, with an average per-student spending of \$13,304. Revenue is primarily driven by local property taxes (76%), supplemented by state (11%) and federal (13%) sources. The capital outlay for infrastructure improvements totaled \$180.3 million, highlighting the district's ongoing commitment to facility upgrades (NCES, 2024).

Climate and Infrastructure Needs

More than 40% of FBISD campuses are over 30 years old, with deferred maintenance and aging HVAC systems posing challenges to thermal comfort and energy efficiency (FBISD, 2023a). The district's Facility Condition Assessment (FCA) process informs modernization priorities and ensures alignment with enrollment trends, equity goals, and design standards. Persistent summer temperatures, projected to increase with climate change, further underscore the urgency of upgrading older facilities to withstand heat-related stressors (FBISD, 2024a).

Bond History and Community Engagement

FBISD has passed multiple voter-approved bond measures, including a \$484 million package in 2014 and a \$1.26 billion bond in 2023. The 2014 bond made FBISD the first school district in Texas to issue green bonds, designating \$52 million for eco-friendly school construction (Flanigan, 2017). The 2023 bond prioritized HVAC upgrades, roof replacements, LED lighting, and new campuses, but rising construction costs led to project deferrals and a canceled elementary school to save \$47.6 million (FBISD, 2024b). The district maintains a Bond Oversight Committee (BOC) to promote transparency and engage stakeholders in long-term planning.

Heat Resilience and Funding Strategies

FBISD's sustainability investments have historically been embedded within broader capital projects, but the district has yet to consistently pursue external funding streams such as federal grants for climate adaptation. According to Dr. Damien Viltz, Chief Operations Officer at FBISD, bond planning is often a "math project" that requires aligning needs with available funds, sometimes at the expense of broader resilience goals (Viltz, 2025). Nevertheless, FBISD's use of green bonds and its strong credit rating position the district to expand its climate financing strategy. Future efforts may benefit from pairing FCA data with environmental justice maps to prioritize heat mitigation in the most vulnerable schools.

Appendix E - Texas Public School District Targeted in this Research Project

Pharr-San Juan-Alamo Independent School District (PSJA ISD) – District Overview

PSJA ISD serves a high-need, high-potential population along the Texas-Mexico border, offering robust dual-language and early college programs to a predominantly Hispanic community. It is the 7th largest district in Hidalgo County, operating 42 of the 256 public schools across the region (TEA School Finder, 2024). While it has pioneered equity-focused models for dropout recovery and early college, its climate resilience investments remain nascent, with limited bond history despite significant vulnerability to extreme heat.

Financial Overview (FY2024–2025)

In FY2024–2025, PSJA ISD had a general fund budget of approximately \$425 million, with most revenues coming from state funding (\$315M) and a smaller portion from local and federal sources (24-25 PSJA Official Budget). The district operates 44 campuses serving around 30,000

students and employs nearly 4,870 staff members, maintaining a student–teacher ratio of 14.5:1 (PSJA Strategic Plan 2023-2028). From a debt perspective, PSJA ISD maintains a conservative bonding history, with just \$56.6 million in outstanding tax-supported debt as of FY2023—far below the state average for similarly sized districts (Texas Bond Review Board, 2024). Its debt service tax rate is also comparatively low at \$0.0525 per \$100 of valuation, reflecting a cautious fiscal approach that helps maintain affordability for taxpayers while limiting infrastructure investment capacity. This low debt load suggests there is fiscal space for the district to responsibly pursue future bonds—especially those focused on resilience, modernization, and health infrastructure in response to climate stress such as extreme heat.

Climate and Infrastructure Needs

Located in Hidalgo County, PSJA ISD experiences over 50 days annually above 90°F, and nearly 93% of students are economically disadvantaged, compounding the impacts of heat exposure (PSJA Strategic Plan 2023-2028). 41% of students are classified as English Learners, and 73% are considered at risk of dropping out, highlighting the urgency of infrastructure that supports physical and academic resilience (Federal Reserve Bank of Dallas, 2014).

Bond History and Community Engagement

PSJA ISD has only passed one bond in its history, placing it in a uniquely constrained position compared to other Texas districts with more frequent bond cycles. Despite limited bonding, the district maintains a strong commitment to family and community partnerships, including five Parent and Community Engagement Centers that offer adult education, ESL, GED prep, and technology training in colonia neighborhoods (Federal Reserve Bank of Dallas, 2014).

Heat Resilience and Funding Strategies

Though PSJA ISD does not currently have a formal green bond strategy or a resilience-focused capital plan, it has laid groundwork through its Early College/STEM academies and HVAC vocational training programs, which could be integrated into future sustainability efforts. The district’s Strategic Plan (2023–2028) emphasizes inclusive leadership and facilities modernization but does not explicitly address extreme heat adaptation yet (PSJA Strategic Plan 2023-2028).

Recent interviews with school administrators indicate that bond planning remains a challenge, with staff noting that resource limitations and enrollment declines have hampered long-term infrastructure investments (Barboza, 2025). Future funding efforts may benefit from tapping into federal programs or green bond mechanisms that can complement their equity-driven mission.

Appendix F

TOWS Matrix for Houston Independent School District (HISD)

	Organizational Strengths (S)	Organizational Weaknesses (W)
Funding Opportunities for Climate	S–O Strategy <i>Leverage strengths to unlock funding opportunities</i>	W–O Strategy <i>Address internal gaps by leveraging external climate finance tools</i>

	Organizational Strengths (S)	Organizational Weaknesses (W)
Resilience (O)	<p>Use HISD’s success with SCORE and CPower incentive programs – over \$1M in energy incentives since 2010 – to demonstrate readiness for managing heat-resilient retrofits through bond-funded infrastructure projects. Systems upgrades have been guided by SEER rating and performance-based cash rebates (Walker, 2025).</p> <p>Integrate HVAC work order and IAQ data into bond proposals to demonstrate technical need and align with HB3-mandated safety and environment health improvements (e.g. HVAC, lead removal), boosting voter confidence (Walker, 2025, Houston ISD Bond Booklet, 2024).</p>	<p>Partner with grant consultants and non-profit partners to frame sustainability and heat mitigation bonds in accessible, voter-friendly language focused on health, cost-savings, and resilience (Walker, 2025).</p> <p>Use external partnerships (CenterPoint, utility rebates) to reduce upfront district costs and overcome internal resource constraint (Walker, 2025).</p> <p>Consider CDFI or philanthropic pre-development funding to assess campus needs in high-vulnerability areas (Walker, 2025).</p>
Environmental Risks and Systemic Barriers (T)	<p>S–T Strategy <i>Deploy strengths to reduce vulnerability to heat and political volatility</i></p> <p>Use HISD’s digital direct control (DDC) systems, energy audits, and work order data to target aging schools with the highest vulnerability to extreme heat and integrate those into future bond cycles (Houston ISD, 2019).</p> <p>Cite HISD’s AAA bond rating and past sustainability wins to counteract skepticism and lower interest rates for long-term investments, in addition to using rebate wins as proof of operational success (Walker, 2025; Houston ISD Bond Booklet, 2024).</p> <p>Use tools like HISD’s internal sustainability playbook developed</p>	<p>W–T Strategy <i>Minimize internal weaknesses while preparing for growing climate and funding threats</i></p> <p>Develop a “Healthy Schools” campaign that links heat-resilient bonds to learning, safety, and child health—framing resilience as non-partisan. The campaign can use real-life stories (e.g. HVAC failures during Storm Uri) to build empathy and urgency (Walker, 2025; KHOU, 2023; HISD Project Manal, 2023).</p> <p>Create districtwide guidelines on equity-centered, heat-resilient design for bond-funded retrofits and align language to reflect HB3 safety standards (Walker, 2025; Menchaca, 2024).</p>

	Organizational Strengths (S)	Organizational Weaknesses (W)
	post-2022 and deployed to 20 campuses to maintain program continuity through leadership changes (Walker, 2025).	

Appendix G

TOWS Matrix for Austin Independent School District (AISD)

	Organizational Strengths (S)	Organizational Weaknesses (W)
Funding Opportunities for Climate Resilience (O)	<p>S–O Strategy <i>Leverage strengths to unlock funding opportunities</i></p> <p>AISD’s successful passage of \$2.4B bond in 2022 included a focus on modernized, energy-efficient, and resilient school design (Austin ISD, 2022).</p> <p>The district’s Equity by Design and Climate Vulnerability Index frameworks have been used to prioritize investments and were cited as guiding tools for sustainability staff (Clary, 2024).</p> <p>AISD’s active partnerships with the City of Austin’s Urban Forest Grant Program and Resilience Office support integrated outdoor learning and reforestation on campuses (Clary, 2025).</p> <p>Austin Heat Resilience Playbook aligns district work with city-wide strategies that align well with school district sustainability goals and for coordinated funding and messaging (City of Austin, 2023).</p> <p>Federal and state funding, including</p>	<p>W–O Strategy <i>Address internal gaps by leveraging external climate finance tools</i></p> <p>AISD’s ability to pursue external climate funding is constrained at times due to internal capacity. Effective heat resilience planning requires early community input, detailed specifications, and strong accountability to succeed (Clary, 2025; Pickle Elementary Principal, 2025).</p> <p>Overreliance on internal funding may limit the ability to consistently leverage plug-and-play tools like the City’s Heat Resilience Playbook (City of Austin, 2023).</p>

	Organizational Strengths (S)	Organizational Weaknesses (W)
	<p>the Inflation Reduction Act and the U.S. Department of Energy’s Renew America’s School Grant, offer scalable funding for energy-efficient retrofits. AISD was awarded \$15 million through this grant for solar and building automation retrofits across 14 campuses. (Austin ISD, 2024).</p>	
Environmental Risks and Systemic Barriers (T)	<p><i>S–T Strategy</i> <i>Deploy strengths to reduce vulnerability to heat and political volatility</i></p> <p>Planning frameworks (e.g. Equity by Design) can be used to proactively justify reinvestment in high-risk campuses such as Pickle Elementary School (Clary, 2025).</p> <p>Transparency and project delivery on past bonds (e.g., 2022 bond) helps maintain voter trust amid skepticism (Austin ISD, 2022).</p> <p>Leveraging partnerships and past wins helps insulate from political volatility or funding instability. AISD’s sustainability track record and collaborative governance structures, like the Community Bond Oversight Committee (CBOC) and city partnerships, enhance transparency and trust – helping the district navigate leadership shifts and secure future bond approvals (Austin ISD, 2024).</p>	<p><i>W–T Strategy</i> <i>Minimize internal weaknesses while preparing for growing climate and funding threats</i></p> <p>Several AISD campuses still rely on aging infrastructure. For example, Lee Elementary’s 81-year-old building received a low Facility Condition Assessment score – 41.95%, putting students at risk during extreme heat (AISD, 2023). Austin faces over 50 school days per year above 90°F, and schools are under pressure to maintain thermal safety and energy performance (CoolingCrisis.org, 2024).</p> <p>Community skepticism and voter fatigue, though less severe in AISD than in other Texas districts, make it difficult to pass future bonds without visible, health-linked outcomes and amid inflation and recapture constraints (Austin ISD, 2022; Texas Comptroller, 2024).</p> <p>Texas education funding laws limit discretionary capital investments for large-scale infrastructure outside of voter-approved bonds. Therefore, capacity and policy hurdles require simplified messaging and pilot demonstrations to build trust (TEA, 1998; Austin ISD, 2024).</p>

Appendix H

TOWS Matrix for Fort Bend Independent School District (FBISD)

	Organizational Strengths (S)	Organizational Weaknesses (W)
Funding Opportunities for Climate Resilience (O)	<p>S–O Strategy <i>Leverage strengths to unlock funding opportunities</i></p> <p>Utilize FBISD’s national leadership in green bond issuance and its 2023 bond focus on energy-efficient HVAC, roofing, and LED lighting at over 60 campuses to build investor confidence, access preferential interest rates, and demonstrate implementation capacity (Flanigan, 2017; FBISD 2023 Bond Newsletter).</p> <p>Highlight successful past integration of energy-efficient HVAC, roofing, and recycled-content materials in bond-funded projects (Viltz, 2025).</p> <p>Promote major projects like Clements HS rebuild and the new elementary campuses, which are being designed with natural light, outdoor learning, and sustainable mechanical systems (FBISD 2023 Bond Newsletter).</p> <p>Reinforce credibility using third-party facility assessments (PBK, Jacobs) to justify future bond packages and potential federal/state grant applications (FBISD Bond Oversight Committee Minutes, 2025).</p>	<p>W–O Strategy <i>Address internal gaps by leveraging external climate finance tools</i></p> <p>Partner with Cooperative Strategies or similar consultants to reframe heat-mitigation projects in language that emphasizes safety, health, and long-term cost savings (FBISD Bond Planning Update, 2023).</p> <p>Bond execution referred to as a “math project” — where funding shortfalls require tough prioritization — highlight the need for proactive internal capacity in planning and leveraging external funding opportunities (Viltz, 2025).</p>
Environmental Risks and Systemic Barriers (T)	<p>S–T Strategy <i>Deploy strengths to reduce vulnerability to heat and political volatility</i></p>	<p>W–T Strategy <i>Minimize internal weaknesses while preparing for growing climate and funding threats</i></p>

	Organizational Strengths (S)	Organizational Weaknesses (W)
	<p>Use Facility Condition Index (FCI) data and bond-approved priorities (P1-P2) to identify campuses most at risk from climate stressors like extreme heat (FBISD Bond Planning Update, 2023).</p> <p>Reference FBISD’s leadership in adopting TEA-aligned Educational Specifications and design guidelines to assure consistency and eligibility for future bond guarantee programs (FBISD Bond Oversight Committee Minutes, 2025).</p> <p>Emphasize the district’s AA+ bond rating and transparent project reporting (via BOC) to lower borrowing costs amid inflation (FBISD Bond Oversight Committee Minutes, 2025).</p> <p>Cite aging infrastructure—nearly half of FBISD schools are over 30 years old—as justification for future climate resilience investments. Use 2023 bond upgrades (HVAC, fire safety, LED retrofits) as proof of response capacity and need (FBISD 2023 Bond Newsletter).</p>	<p>Establish a "Smart + Resilient Schools" campaign to reframe HVAC, roofing, and shade infrastructure as essential to student health—not extras.</p> <p>Improve planning-execution alignment by creating protocols to monitor scope-budget consistency and avoid repeating 2023’s shortfall, which caused project deferrals (Viltz, 2025; FBISD Bond Planning Update, 2023).</p> <p>Address environmental injustice by mapping future bond scopes against EJI+Climate ranks to prioritize high-burden tracts in the district (CDC, 2024).</p>

Appendix I

TOWS Matrix for Pharr-San Juan-Alamo Independent School District (PSJA ISD)

	Organizational Strengths (S)	Organizational Weaknesses (W)
Funding Opportunities for Climate Resilience (O)	<p>S–O Strategy <i>Leverage strengths to unlock funding opportunities</i></p> <p>Align PSJA’s HVAC and green building workforce training programs</p>	<p>W–O Strategy <i>Address internal gaps by leveraging external climate finance tools</i></p> <p>Continue leveraging the district’s</p>

	Organizational Strengths (S)	Organizational Weaknesses (W)
	<p>with capital upgrades to create win-win resilience projects and Career and Technical Education (CTE) pipelines. (Barboza, 2025).</p> <p>Position the district’s early college and STEM academies to partner with consultants and nonprofits for grant-funded pilot projects that demonstrate innovative, climate-resilient upgrades such as outdoor learning spaces – before wider bond adoption (PSJA ISD Strategic Plan, 2023).</p> <p>Explore bond options for climate-resilient projects that build on PSJA’s equity-focused mission and community-serving assets – such as its Parent & Community Engagement Centers, which appeal to impact investors focused on social and environmental returns (Federal Reserve Bank of Dallas, 2014).</p>	<p>existing relationship with Estrada Hinojosa & Company to assess bond-readiness and explore resilience-focused financing strategies, building on PSJA’s budget transparency and strategic planning framework (Estrada Hinojosa & Company).</p> <p>Pair future facility proposals with PSJA’s existing Las Colonias parent centers to elevate community support for heat-safe learning environments (Federal Reserve Bank of Dallas, 2014).</p>
Environmental Risks and Systemic Barriers (T)	<p><i>S–T Strategy</i> <i>Deploy strengths to reduce vulnerability to heat and political volatility</i></p> <p>Leverage PSJA’s in-house HVAC and building automation expertise to explore low-cost pilot retrofits that improve thermal comfort — measured by factors like temperature, humidity, and airflow —particularly in older campuses with aging infrastructure (Barboza, 2025).</p> <p>Use PSJA’s systemwide equity context as a platform for resilience messaging—linking extreme heat adaptation to equal opportunity in learning conditions (Barboza, 2025).</p> <p>Leverage Parent & Community</p>	<p><i>W–T Strategy</i> <i>Minimize internal weaknesses while preparing for growing climate and funding threats</i></p> <p>Build public trust by starting with small-scale retrofits and maintenance wins that demonstrate fiscal responsibility and health benefits.</p> <p>Create a clear messaging campaign that links extreme heat to academic outcomes, absenteeism, and behavior—making the case for resilience as an equity issue (Barboza, 2025).</p> <p>Conduct a districtwide facilities assessment using environmental justice and heat burden data to</p>

	Organizational Strengths (S)	Organizational Weaknesses (W)
	<p>Engagement Centers as platforms for educating families about heat stress, its impact on health, and school infrastructure needs (Federal Reserve Bank of Dallas, 2014).</p> <p>Frame HVAC upgrades and shaded outdoor areas as part of a holistic student success strategy, especially in campuses with high EL and at-risk student populations (PSJA ISD Strategic Plan, 2023).</p>	<p>prioritize capital plans before next bond cycle.</p>

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Author Biography: Maria Alejandra Jaramillo (Ale) is a dual-degree Master of Environmental Management (Business and Environment concentration) and MBA candidate at Duke University's Nicholas School of the Environment and UNC Kenan-Flagler Business School. She earned her BA in Communications with a Minor in Business from Texas A&M University. Before graduate school, Ale taught in Houston as a Teach For America corps member, where her passion for environmental justice and education equity took root. After graduation, she will join ScottMadden as an Associate in their Atlanta office, advancing strategic initiatives in climate resilience and energy efficiency.