



SAN ANTONIO INDEPENDENT SCHOOL DISTRICT

FINAL AFTER ACTION REPORT

2024 HVAC Crisis

Presented May 13, 2024

2024 School HVAC Crisis – Final After Action Report

Table of Contents

- Executive Summary | 2024 School HVAC Crisis – Final After Action Report..... 4**
 - Background.....4
 - Summary of the After Action Review Process..... 4
 - Summary, Conclusions and Key Recommendations..... 5
- Final After Action Report – 2024 HVAC Crisis..... 8**
- Background.....8**
- The After Action Review Process: Overview..... 9**
- Phase One: Executive Team Reflection..... 10**
 - Process..... 10
 - Critical Successes.....11
 - Critical Failings.....11
 - Five Whys Analysis.....12
- Phase Two: Staff-Led Assessment.....13**
 - Process..... 13
 - Staff Interviews.....13
 - Documents..... 13
 - Phase Two Summary..... 14
 - Findings and Recommendations..... 16
- Phase Three: Independent Review..... 24**
 - Process..... 24
 - Letter from the Texas Association of School Business Officials..... 24
- Phase Four: Ad Hoc Committee of the Board of Trustees..... 31**
 - Process..... 31
 - Key Recommendations..... 31
- Appendices..... 33**
 - APPENDIX 1: A Narrative Summary and Detailed Chronology of the 2024 HVAC Crisis..... 34
 - APPENDIX 2: A School-by-School Inventory of HVAC Hardware and Systems in San Antonio ISD.....38

Executive Summary | 2024 School HVAC Crisis – Final After Action Report

Background

On Tuesday, Jan. 16, as students and staff returned to school from the Martin Luther King Jr. holiday, temperatures were forecast to fall below 20 degrees Fahrenheit, the coldest temperatures experienced in the San Antonio area in recent years when school was in session (and without school-closing weather conditions such as freezing rain or snow). Beginning that morning, many San Antonio ISD (District) schools were unable to maintain minimum standard temperatures in classrooms, wings and entire school buildings, impairing the services offered to students and families, and forcing staff to work in substandard conditions. By 10 a.m. on the morning of Jan. 17, the District had closed or conducted an early release procedure at a total of 31 schools. At approximately 1 p.m. on Jan. 17, the District announced that it would close all schools on Jan. 18 and 19 to stabilize conditions at schools and permit students and staff to return to more acceptable and manageable conditions. As a result, the District entered into a crisis that lasted through Jan. 23 when it reopened all of its campuses.

Summary of the After Action Review Process

At its Jan. 16 meeting, even while the crisis was still developing, the San Antonio ISD Board of Trustees announced that it would convene an Ad Hoc Committee to review the circumstances of the crisis with the purpose of reducing the likelihood of a future occurrence and restoring public confidence in the District, including its bond program. At its Feb. 12 meeting the Board named Leticia Ozuna as the chair of that committee and Trustees Ed Garza and Stephanie Torres, as well as Bill Avila to serve as members.

On Jan. 17, at the press conference held to make the announcement that the District was closing for the remainder of the week, the Superintendent committed to a thorough and transparent review of the circumstances that led to the crisis with the intention of reducing the likelihood of a future occurrence. The final After Action plan was broken down into four phases, each with a separate, interlocking purpose:

- **Phase One: Executive Team Reflection** | Complete Jan. 30
Purpose: Gather initial insight following the crisis; quickly stabilize the Operations Division and begin organizing a sustainable post-crisis recovery plan.
- **Phase Two: Staff-Led Assessment** | Complete Feb. 28
Purpose: Prepare a basic knowledge base for investigators and begin organizing a post-crisis District Operations Recovery Plan.
- **Phase Three: Independent Review** | Conducted by the Texas Association of School Business Officials (TASBO) | Complete March 27
Purpose: Review and validate the Phase Two Knowledge Base and offer recommendations to the District based on industry best practice standards.
- **Phase Four: Ad Hoc Committee of the Board of Trustees** | Complete May 13
Purpose: Ensure inclusion of feedback from the Board of Trustees on the crisis and the District's response to reduce the likelihood of a future occurrence and restore public confidence in the District, including its bond program.

Summary, Conclusions and Key Recommendations

The Board and the District acknowledge that the 2024 HVAC crisis did not arise overnight, but rather evolved over many decades. Therefore, this report is not intended to assign blame to any particular group or individual for the District's shortcomings. Its purpose is to facilitate the system in fulfilling its obligations to its students. Every aspect of the system must share responsibility for the crisis; it is a collective burden.

San Antonio ISD, established 125 years ago, is proud of its diverse and historically significant portfolio of schools. We operate 98 schools on 87 campuses. Our buildings, some of which are more than a century old, have been serving our community for generations.

One consequence of this legacy, however, is that it is harder and costs more to maintain and keep the buildings and their infrastructure well-maintained and updated. Notably, the District built 77 schools before air conditioning became standard. These structures were initially outfitted with heating only, lacking AC. In contrast, surrounding districts, established in the 1950s, benefitted from the era when air conditioning was becoming standard in schools and public buildings.

Although newer schools were equipped with air conditioning, the 77 buildings erected earlier received air conditioning in 1985 through a successful bond proposition known as the "Cool Schools Bond." This retrofit of the existing "heating only" 2-pipe system integrated chillers and other mechanical systems, using much of the existing infrastructure; at that time, this was understood to be a viable and economical solution to update a large number of schools.

The Board and the District also recognize that, in past bond decisions, we did not always use reliable, industry best practice standard data to guide and align decisions about the implementation of building improvement plans. Additionally, we recognize that the District has not made consistent use of reliable performance data or key performance indicators to determine that maintenance and repair activities have been requested or completed or to decide whether buildings were ready to operate.

Furthermore, the Board and the District know that San Antonio ISD maintains a higher number of buildings per student compared to similar school districts across the region and the nation. Despite declining enrollment, we have hesitated to reduce the number of schools due to the profound impact such closures have on the community. For example, in 2009, after considering closing as many as thirty schools including Burbank and Sam Houston High Schools, the Board encountered vigorous opposition from the community and ultimately decided to close only nine. As a result, our expenditure to maintain our buildings (measured per square foot) falls below the national average, while the amount that we spend per student is above the national and state average. For example, San Antonio ISD spends \$1,423 per student on facility maintenance, compared with a state average of \$1,177 per student.

Upon considering the facts and circumstances produced during this After Action process, the Board and the District have reached the following conclusions. Based on them, we offer nine key recommendations. A more comprehensive list of recommendations made by district staff is included in this report as part of the Phase Two Report.

The 2024 HVAC Crisis has two underlying causes...

- The state of Texas underfunds public schools. This directly impairs the ability of school districts

like San Antonio ISD to operate and perform routine, preventative maintenance to employ a standardized, uniform and coherent system of heating and air-conditioning equipment.

- Even though the voters have generously approved bonds to invest in capital improvement and enhancement of our school buildings, chronic underfunding in Texas leaves districts like San Antonio ISD playing catch up to make sure our schools are fully up to date.
- We operate a large number of aging buildings, many of which have outdated infrastructure. The Board's rightsizing decision in November 2023 will partially mitigate this problem in the future, but could not have done so in time to prevent this crisis.

But the crisis was also the result of multiple layers of human error that accumulated over the last 20 years and culminated in the District's decision to close its schools Thursday January 18 and Friday January 19, and that San Antonio ISD is committed to correct...

- The District did not adequately prepare for the weather event or develop an agile crisis management response once schools began reporting heating outages.
- The District did not budget or organize for ongoing equipment maintenance or professional development of full-time Operations staff.
- The District did not adequately maintain the complex system of heating and cooling hardware in its schools.
- The District did not make systematic or consistent use of the District's work-ordering and inventory systems, or routinely check the quality of work reported complete.

Problems this deeply rooted will take time and resources to rectify. We are committed to addressing them as quickly and transparently as possible while prudently and deliberately working within our limited resources.

Given these conclusions, we offer the following key recommendations:

- The Board of Trustees shall instruct the Superintendent to conduct a comprehensive study of excess facility capacity in San Antonio ISD's school buildings by November 2025. This study will evaluate staffing levels, programming, and maintenance conditions at each school to ensure alignment with *Always Learning* the District's strategic management plan, and a thriving educational program. Recommendations for rightsizing schools, academic programs and central office capacity will be included, aiming to rectify resource disparities between schools and enhance opportunities for all of our students to attend high quality schools.
- The Board of Trustees shall adopt a policy stating that all future bonds and referendums will include an investment in school facility infrastructure that is based on reliable external data obtained from a facilities conditions assessment conducted by an independent third party with expertise in school facility management, and that cannot be overridden by Trustees or administration during the design or construction phases of the work should the proposition be approved by the voters.
- The Board of Trustees shall require that five percent of any future bond will be dedicated to investing in deferred maintenance in the District's school facilities until such time as there is no longer any deferred maintenance.

- The Board of Trustees shall collaborate with the Superintendent to revise Guardrail 3, which expresses our values on School Safety, to include a measurable interim guardrail that focuses on the environment for high quality instruction, to be acted on by this Board no later than its August 2024 meeting.
- Within the next 12 months, the District shall bring to the Board of Trustees a procurement request for the purchase and effective implementation of computerized enterprise systems such as a computerized maintenance management system (CMMS), and building automation systems (BAS), which include HVAC controls. This purchase, if approved, shall provide real-time, standardized, and comprehensive data on HVAC hardware across all school facilities, as well as accurate records of maintenance and repair activities for all HVAC equipment. It will also include features such as asset tracking, maintenance performance data, and integrated preventive planning schedules.
 - In the interim, at the direction of the Superintendent, the District shall establish and maintain an accurate inventory of critical infrastructure assets to begin immediately and to continue until the facility condition assessment is complete.
- At the direction of the Superintendent, the Acting Deputy Superintendent for Operations shall establish by June of 2024 a set of Key Performance Indicators (KPIs) that are predictive of the readiness of school facilities to operate, especially under inclement weather conditions.
- At the direction of the Superintendent, the District shall adopt by August of 2024 administrative procedures for disaster recovery and business continuity based on national, best practice models in the K-12 sector.
- At the direction of the Superintendent, the District shall complete by November of 2024 a market study of the total compensation and benefits packages for HVAC and other operations professionals in Texas and include in its budget a plan that will bring the total compensation package of its HVAC and other operations professionals in alignment with the statewide market, in the context of increasing total compensation for all San Antonio ISD employees.

Final After Action Report – 2024 HVAC Crisis

Background

On Tuesday, Jan. 16, as students and staff returned to school from the Martin Luther King Jr. holiday, temperatures were forecast to fall below 20 degrees Fahrenheit, the coldest temperatures when school was in session (and without school-closing weather conditions such as freezing rain or snow) experienced in the San Antonio area in recent years. Beginning that morning, many San Antonio ISD (District) schools were unable to maintain minimum standard temperatures in classrooms, wings and entire school buildings, impairing the services offered to students and families, and forcing staff to work in substandard conditions. As a result, the District entered into a crisis that lasted through Jan. 23.

Because cold weather was predicted, on Jan. 10, the Superintendent initiated discussion with the Deputy Superintendent for Operations and the Chief Operations Officer about District preparation for the cold weather. Over the next six days – including Jan. 14 and 15, the two days immediately preceding the expected cold temperatures – both the Deputy Superintendent and Chief Operations Officer assured the Superintendent and his staff that the District would be prepared and that schools would be able to operate.

At its Jan. 16 meeting, even while the crisis was still developing, the San Antonio ISD Board of Trustees announced that it would convene an Ad Hoc Committee to review the circumstances of the crisis with the purpose of reducing the likelihood of a future occurrence and restoring public confidence in the District, including its bond program.

Although the District remained open on Jan. 16 and 17, academic services were compromised at most campuses, often significantly. Frequently school leaders reorganized or moved classes so students had minimally acceptable learning environments. Beginning the night of Jan. 16 and continuing into Jan. 17, on the advice of the Chief Operations Officer, the District closed schools on a one-at-a-time basis, reaching a total of 20 schools at approximately 10 p.m. Jan. 16.

Although the District remained open on the morning of Jan. 17, reports from the schools indicated that many classrooms did not meet standards for a suitable learning environment and some schools were so compromised that they were not able to remain open. By 10 a.m. the District had closed or conducted an early release procedure at a total of 31 schools.

At approximately 1 p.m. on Jan. 17, the District announced that it would close all schools on Jan. 18 and 19 to stabilize conditions at schools and permit students and staff to return to more acceptable and manageable conditions. Because the morning of Jan. 22 was forecast to be near freezing, the District wanted to assure families and staff that students would have learning spaces that were acceptably warm when they returned to school that Monday.

By Jan. 19, the Acting Deputy Superintendent for Operations and the Acting Chief Operations Officer had established a stable crisis management structure and had begun devising a temporary heating solution – delivery of over 1,000 portable heating units that could be put in classrooms and other spaces when campus heating systems were not sufficient. Through Jan. 22, the deployment and installation of these portable climate control units became the primary focus of the District’s crisis response. In addition, the District developed and implemented school and family communications actions to create confidence in those audiences that schools would be comfortable when they reopened Jan. 22.

On Jan. 22, the District resumed full academic services at all of its schools. Between Jan. 23 and Jan. 30, District leadership became increasingly confident that the District could gradually wind down the crisis management structure it put in place and again focus on regular responsibilities. A detailed chronology of the crisis is included with this report as [APPENDIX 1](#).

At the end of March, 2024, the District estimated that the total cost of the crisis to be \$2.970 million. The operations division has requested \$12.206 million in budget enhancements to take steps necessary to continue repair and maintenance of the current systems. Based on the data of the facilities conditions assessment, it will take a total of \$353.065 million to bring our facilities up to industry standards across all mechanical, engineering and plumbing disciplines; we estimate that \$250 million of that cost will go to updating our HVAC system.

The After Action Review Process: Overview

On Jan. 16, the Superintendent directed his Senior Adviser to develop a comprehensive after action review for the still ongoing HVAC Crisis. Also on Jan. 16, the Board of Trustees called for an ad hoc committee to review the crisis. On Jan. 23, after the Executive Team reviewed a proposal for the After Action Review, and after conferring with Board members, the Superintendent directed his Senior Adviser to revise it and begin implementation. The plan described four phases, each with a specific purpose and one or more deliverables:

Phase One: Executive Team Reflection | Complete Jan. 30

Purpose: Gather initial insight following the crisis; quickly stabilize the Operations Division and begin organizing a sustainable post-crisis recovery plan.

Deliverable: Memo summarizing Executive Team perspective

Phase Two: Staff-Led Assessment | Complete Feb. 28

Purpose: Prepare a basic knowledge base for investigators and begin organizing a post-crisis District Operations Recovery Plan.

Deliverable: A publicly available knowledge base for use by District leaders, third party reviewers and the Board of Trustees to inform their respective after action review work and serve as a knowledge base for the development of a post-crisis District Operations Recovery Plan. This knowledge base includes:

- Chronology
- Documentation and analysis of the crisis circumstances and events
- Staff interviews

- Staff surveys
- Preliminary findings
- Preliminary recommendations

Phase Three: Independent Review | Conducted by the Texas Association of School Business Officials (TASBO) | Complete March 27

Purpose: Review and validate the Phase Two Knowledge Base and offer recommendations to the District based on industry best practice standards.

Deliverable: Review Letter

Phase Four: Ad Hoc Committee of the Board of Trustees | Complete May 13

Purpose: Ensure inclusion of feedback from the Board of Trustees on the crisis and the District's response to reduce the likelihood of a future occurrence and restore public confidence in the District, including its bond program.

Deliverable: Publicly presented Final After Action Report, including findings and recommendations of the Ad Hoc Committee of the Board of Trustees

This final report compiles the results from each of the four phases in the sections that follow.

Phase One: Executive Team Reflection

Process

Phase One of the After Action Process rapidly gathered learning and insight from the District's Executive Team to establish a starting point for a sustainable post-crisis recovery plan within a week after the crisis was over.

The Executive Team had a central vantage point from which to view the conditions of the crisis. On Wednesday, Jan. 17, the Superintendent established a command center at the District's Operations Center at 1270 West Summit Ave., alongside the Operations Team as they organized their response. At the Superintendent's direction, team members also visited campuses and developed firsthand knowledge of what was happening in many of the District's schools.

On Jan. 30, The Executive Team completed an organized reflection process, that included: (a) completing a chronology of the events in the crisis, (b) a list critical successes, (c) a list of critical failings, (d) a look ahead to what the District needed to do to avoid a similar crisis in the future, and (e) a look ahead to their departmental priorities this spring. As a group, they categorized and prioritized their top two or three critical successes and failings. Finally, they identified a single critical failing and used the "Five Whys Protocol" to get to the bottom of that critical failing.

In this section, we include a digest of the critical successes and failings, as well as a summary of their work using "The Five Whys." [A memo with links to all meeting notes is available at this link.](#)

Critical Successes

The Executive Team developed and sorted through their list of critical successes, or actions that enabled the District to recover from the crisis. Their responses synthesize into three themes: **organizing data**, **improving communications**, and **leading with resilience** when procuring and deploying the portable climate units.

Organizing Data: The crisis was due in large part to a failure to know what was happening in schools the morning of Jan. 16. For two more days, the District was unable to mount an adequate crisis response or establish a stable source of data about conditions in the schools. Only when the acting Operations leadership began establishing a foundation of data on Friday, Jan. 19, did the momentum of the crisis begin to reverse.

Improving Communications: Crisis recovery was possible only when District leadership established organized, routine and reliable lines of communication with the schools by working directly with principals and head custodians. Going into the crisis, Operations staff was not organized to communicate effectively with schools, and in many ways worked to impede it. Successful communications systems were not effectively in place until Jan. 19, and were only effective at a systemic level beginning Monday, Jan. 22.

Leading with Resilience: The Executive Team emphasized the importance of team resilience during the crisis, recognizing that the District was set back Tuesday morning and again repeatedly on Wednesday. Only through a mix of problem-solving, adaptability and temporary solutions, and team members going above and beyond was the District able to stabilize the situation beginning Monday, Jan. 22. The Executive Team recognized the decision to obtain portable heating/cooling units, and the subsequent effort to get them from the District's receiving warehouse to the classrooms that needed them, as the turning points in the crisis.

Critical Failings

After considering critical successes, the Executive Team developed and sorted through their list of critical failings — actions that, had they not happened, would have averted the crisis. Their responses synthesize into three themes: **communication breakdown**, **deficient leadership and accountability**, and a **culture of not knowing**.

Communication Breakdown: In its reflection on the crisis, the Executive Team identified communications breakdowns within the Operations team, between the Operations team and District leadership, and between the District and schools. Campus leaders did not consistently use the Operations Call Center because it had a reputation of not being reliable. The Operations Call Center became swamped and there was no apparent system for ordering or prioritizing responses to issues. Campus staff were just as likely to rely on workarounds — calling assistant superintendents or colleagues in the central office — as they were to use the Operations Call Center to report issues. Under these conditions, recordkeeping failed, so neither managers nor executives had reliable campus data, which created a pervasive problem

of uncertainty. The District did not know which schools were cold, or why, let alone at which schools solutions were being put into place.

Deficient Leadership and Accountability: The Operations team entered the crisis without clear lines of leadership or accountability. Although executive and senior leaders in Operations presented themselves as authority to the Operations staff, basic routines – staff meetings, reporting requirements, quality assurance procedures, etc. – were inconsistent. Skilled tradesmen and managers enjoyed high degrees of autonomy interrupted by periodic gestures of command authority, not a culture of reasonable responsibility. As the crisis mounted on Tuesday, Jan. 16, Operations leadership failed to control the situation by introducing a crisis management structure. Although leadership attempted to improvise on the morning of Jan. 17, the effort failed.

A Culture of Not Knowing: The Executive Team’s reflection drew special focus on how San Antonio ISD’s HVAC Crisis thrived on a culture of not knowing. The cultural roots grew deep in a “Trust but don’t verify” ethic that runs from rank-and-file technicians through middle and senior management to the Executive Team. The culture is partly due to the complex and aging HVAC system, plagued by deferred maintenance problems and short-sighted decisions not to replace outdated equipment. For these reasons, the District lacks single solutions and relies on workarounds that vary from one site to the next. In this environment, managers and other superior leaders responsible for more than just HVAC are deprived of knowledgeable responses to campus issues, and technicians do what they can to keep things running. In addition, the District does not have a campus-by-campus inventory of its hardware and operating systems. Finally, the Operations team lost control of its issue-reporting system. It was unclear how work was being prioritized and dispatched, and issues reported as resolved by technicians were reported as persistent by head custodians and principals. As a result of all of these factors, at the peak of the crisis, there was a systemwide failure of reliable knowledge – the Operations team and senior District leadership were operating in the blind, cut off from any shared understanding of what was happening in our schools.

Five Whys Analysis

“The Five Whys” is a commonly used reflection protocol employed to help teams get to the underlying issues of problems. Users of the protocol advise that it is most helpful in cases when the problem is well-defined, and not pervasive or systemwide, and also when there are layers of issues that contribute to the problem. It is similar to, but not exactly the same as the “Root Cause Analysis” protocol.

The Executive Team collaborated to identify a focused problem statement, and then to repeatedly and systematically answer the question, “Why is this a problem?” The table below summarizes the group’s work. Its insights inform the summaries of both critical successes and critical failings found above in this memo.

<p>Problem Statement: The District experienced an inability to know potential HVAC failures related to the extreme weather anticipated on Tuesday, Jan. 16, 2024</p>
<p>Why? We were told by Operations leadership that things were OK when they were not.</p>
<p>Why? Leaders were disconnected from people on the ground who knew better.</p> <ul style="list-style-type: none"> ● They had limited expertise in the systems in place ● There were too many different systems and hardwares
<p>Why? Leaders trusted their team blindly and without data, and they ignored input from their teams.</p>
<p>Why? There were no evidence-based procedures in place in the Operations division to verify conditions in the buildings.</p> <ul style="list-style-type: none"> ● There were no quality control standards on the work done by technicians ● There were too many managers ● This was a cultural problem in Operations
<p>Why? Leaders don't know what they need to know in order to verify.</p> <ul style="list-style-type: none"> ● There was a lack of continuity in roles, responsibilities, and people assigned to jobs ● There were no mechanisms for knowing or accountability ● There was no deferred maintenance plan

Phase Two: Staff-Led Assessment

Process

Phase Two of the After Action Process reviewed records and staff accounts of the crisis with two purposes in mind: first, to prepare a basic knowledge base for the District and third party reviewers; second, to begin organizing a post-crisis District Operations Recovery Plan by identifying findings and recommendations after reviewing the evidence.

District staff collaborated with two independent researchers on the design and execution of the Phase Two process. Their work included gathering documents, designing and implementing a survey of principals, conducting interviews with Operations staff, and compiling and analyzing the information so that District leadership could study it and develop a preliminary summary, findings and recommendations.

Staff Interviews

In order to make sure all Operations Staff understood the After Action Process, the Superintendent, the Acting Deputy Superintendent for Operations and the Acting Chief Operations Officer addressed the team at a mandatory all-hands meeting on Feb. 12. All interviews were conducted by Feb. 13.

Documents

The independent researchers and staff compiled a body of relevant documents, including:

- Organization charts and staff rosters

- 2023-2024 budget documents
- An inventory of HVAC hardware
- A school-by-school inventory of chillers, boilers and operating systems
- The most recent facility condition assessment
- Bond construction audit findings
- Relevant bond program documents
- Policies and administrative procedures relevant to bond administration, facility safety, disaster preparedness and business continuity, and employee integrity and quality assurance

Staff assembled and organized these documents into a single file and presented it to the Ad Hoc Committee on March 4 as part of Phase Four of this After Action Process. Staff updated the file April 27 after the results of a second scan for disaster preparedness and business continuity resources. [The folder is available at this link.](#)

Phase Two Summary

After completing Phase Two of the After Action Process, the Board and the District began developing a summary statement describing the causes of the crisis and our commitments for correcting them. In drafting it, we worked forward from similar statements made at the Jan. 17 and Jan. 22 press conferences, and revised it based on the results of Phase Three and, in collaboration with representatives from the Board of Trustees, Phase Four of the After Action Process.

“The Board and the District acknowledge that the 2024 HVAC crisis did not arise overnight, but rather evolved over many decades. Therefore, this report is not intended to assign blame to any particular group or individual for the District’s shortcomings. Its purpose is to facilitate the system in fulfilling its obligations to its students. Every aspect of the system must share responsibility for the crisis; it is a collective burden.

San Antonio ISD, established 125 years ago, is proud of its diverse and historically significant portfolio of schools. We operate 98 schools on 87 campuses. Our buildings, some of which are more than a century old, have been serving our community for generations.

One consequence of this legacy, however, is that it is harder and costs more to maintain and keep them updated. Notably, the District built 77 schools before air conditioning became standard. These structures were initially outfitted with heating only, lacking AC. In contrast, surrounding districts, established in the 1950s, benefitted from the era when air conditioning was becoming standard in schools and public buildings.

Although newer schools were equipped with air conditioning, the 77 buildings erected earlier received air conditioning in 1985 through a successful bond proposition known as the “Cool Schools Bond.” This retrofit of the existing "heating only" 2-pipe system integrated chillers and other mechanical systems, using much of the existing infrastructure; at that time, this was understood to be a viable and economical solution to update a large number of schools.

The Board and the District also recognize that, in past bond decisions, we did not always use reliable, industry best practice standard data to guide and align decisions about the

implementation of building improvement plans. Additionally, we recognize that the District has not made consistent use of reliable performance data or key performance indicators to determine that maintenance and repair activities have been requested or completed or to decide whether buildings were ready to operate.

Furthermore, the Board and the District know that San Antonio ISD maintains a higher number of buildings per student compared to similar school districts across the region and the nation. Despite declining enrollment, we have hesitated to reduce the number of schools due to the profound impact such closures have on the community. For example, in 2009, after considering closing as many as thirty schools including Burbank and Sam Houston High School, the Board encountered vigorous opposition from the community and ultimately decided to close only nine. As a result, our expenditure to maintain our buildings (measured per square foot) falls below the national average, while the amount that we spend per student is above the national and state average. For example, San Antonio ISD spends \$1,423 per student on facility maintenance, compared with a state average of \$1,177 per student.

Upon considering the facts and circumstances produced during this After Action process, the Board and the District have reached the following conclusions. Based on them, we offer nine key recommendations. A more comprehensive list of recommendations made by district staff is included in this report as part of the Phase Two Report.”

The 2024 HVAC Crisis has two underlying causes...

- The state of Texas underfunds public schools. This directly impairs the ability of school districts like San Antonio ISD to operate and perform routine, preventative maintenance to employ a standardized, uniform and coherent system of heating and air-conditioning equipment.
 - Even though the voters have generously approved bonds to invest in capital improvement and enhancement of our school buildings, chronic underfunding in Texas leaves districts like San Antonio ISD playing catch up to make sure our schools are fully up to date.
- We operate a large number of aging buildings, many of which have outdated infrastructure. The Board’s rightsizing decision in November 2023 will partially mitigate this problem in the future, but could not have done so in time to prevent this crisis.

But the Crisis was also the result of multiple layers of human error that accumulated over the last twenty years and culminated in the District’s decision to close its schools Thursday January 18 and Friday January 19, and that San Antonio ISD is committed to correct...

- The District did not adequately prepare for the weather event or develop an agile crisis management response once schools began reporting heating outages.
- The District did not budget or organize for ongoing equipment maintenance or professional development of full-time Operations staff.
- The District did not adequately maintain the complex system of heating and cooling hardware in its schools.
- The District did not make systematic or consistent use of the District’s work-ordering and inventory systems, or routinely check the quality of work reported complete.

Problems this deeply rooted will take time and resources to rectify. We are committed to addressing them as quickly as possible and in a spirit of openness, while prudently and

deliberately working within our limited resources.

Findings and Recommendations

Based on review of the documents and interviews, staff developed a comprehensive set of findings and recommendations. Outlined in the table below, they will serve as the basis for a multi-year work plan that will guide the District through the job of addressing the problems that caused the 2024 HVAC Crisis and decreasing the chances that such crises will occur again in the future.

2024 HVAC Crisis | After Action Report
Phase Two Findings and Recommendations

Procedure and Process		
	Findings	Recommendations
Ordering work and deploying staff	<ul style="list-style-type: none"> • HVAC staff and school end-users report that the work order system is cumbersome and not user friendly. • HVAC staff and school end users frequently work around the work order system, resulting in unreliable data about the status of work orders. • The Service Center received 300 work orders on January 16 and another 2xx on January 17, swamping the system. • On January 16, the volume of work orders swamped the manpower, contractors hired in anticipation of conditions. • Between January 16 and 29, leadership assigned HVAC technicians reactively and independent of the work order system; leadership did not, at any point in the crisis, data-driven set of repair priorities. <ul style="list-style-type: none"> ○ Operations leadership disbanded maintenance teams leading to assignment confusion, and assignment of technicians to unfamiliar systems and locations. • The Operations Division does not have a reliable process for recording resolved work orders or reporting back to schools that issues are resolved 	<ul style="list-style-type: none"> • Review the current work order system (Facilitron) and refine or adopt a new system that is more user friendly and offers more detailed analytics. • Re-establish a work order driven task assignment process that is reliable and informs a metric driven reporting system. • Improve the end-user experience by expanding the Help Desk and ensuring follow-up communication between schools and Operations staff. • Re-establish network-aligned teams to ensure consistency in service delivery.
Purchasing, payables and inventory	<ul style="list-style-type: none"> • Procurement systems, processes and practices are substandard for purchases and payments for contract services, materials, parts, and other resources. Invoices and payments are not reviewed and reconciled. • The Operations Division employed unstrategic budget practices, “rolling budgets over” from one year to the next without making adjustments based on experience or priority. • Bookkeepers and accountants work separately, “in silos,” diminishing collaboration and the potential for strategic budget planning. 	<ul style="list-style-type: none"> • Ensure all staff with budget responsibilities receive budget and procurement professional development, and are held accountable for adhering to District policies, procedures, and practices. • Use historical budget data to create a needs based budget that includes preventative maintenance. • Develop operational procedures, processes, and timelines to support purchasing, contracting, and management of inventory. • Adopt an inventory management system with smart features,

	<ul style="list-style-type: none"> The Operations Division does not have adequate inventory management systems in place, and they are not adequately supervised for quality. 	<p>such as identification technologies (barcodes), demand/predictive analytics, cloud storage, and data synchronization.</p>
Information and data quality	<ul style="list-style-type: none"> The Operations Division had extremely poor data quality and/or use and no standardized methods for organizing or reporting it. <ul style="list-style-type: none"> Operations leadership did not have school-by-school data on room conditions, HVAC systems or major component life cycles at any point between January 16 and 22. Beginning January 16 District leadership began working around the poor data and created alternate data sets on January 18 by asking principals and head custodians to upload their own hand-gathered data on an improvised Sharepoint system. When the system controls were set up, the Operations Division and HVAC Team did not fully activate system control analytics that would provide early warnings notifications. System control settings are not updated to the current school year calendar, resulting in system shut-down schedules that are not aligned to current weather conditions. 	<ul style="list-style-type: none"> Create a comprehensive inventory assessment of all District mechanical systems. Identify all equipment with critical needs, including campuses with highest needs, and use this inventory to inform an accurate long term budget and HVAC maintenance and replacement plan. Integrate a work order system that provides analytics including HVAC system information end-of-life and repair history details. Turn on analytics for system controls and ensure uploaded data is accurate.
Invest in Infrastructure		
	Findings	Recommendations
Current inventory of hardware and operations systems	<ul style="list-style-type: none"> The District operates an incoherent system (components are not interoperable or integrated) of heating and cooling equipment assembled without a clear strategy over the last three decades: X kinds of boilers, Y kinds of controls, 2-pipe schools, 4-pipe schools and schools with a mix of 2-pipe and 4-pipe systems. (See Appendix Three for a diagram illustrating the number and kinds of HVAC hardware in San Antonio ISD, as well as how different kinds of hardware combine to make a working HVAC system.) These issues are widely recognized by staff, who complain that this incoherence makes their work significantly more difficult. Between January 16 and January 29 the incoherence of the system, combined with the poor state of systems data, significantly diminished the District's ability to initiate an 	<ul style="list-style-type: none"> Create a long term HVAC design, maintenance, and replacement strategy using design specifications that establish consistent specifications for future purchases based on industry best practice standards and interoperability among components. Consider the "Niagara Framework," an open source HVAC system standard. Anticipate obsolescence of current equipment, including equipment life-cycles, as well as equipment that is poorly aligned or that has depreciated faster than projected due to poor maintenance. Update new software version as they become available. Expect collaboration between Information Technology and Operations staff on maintaining systems controls.

	<p>organized response to the cold weather conditions at schools.</p> <ul style="list-style-type: none"> • The Operations Division did not regularly update software versions, creating compatibility issues with other software and hardware, as well as cyber security risks. • The Operations Division has no clear guidelines for granting staff access to HVAC controls. • Within the Operations Division, teams, such as HVAC, Facilities, and Construction, have a history of not collaborating, which creates disconnects between expectations for upgrading HVAC in bond projects and maintaining it after bond projects are complete. 	<ul style="list-style-type: none"> • Expect collaboration between different teams within the Operations Division, such as HVAC, Construction and Planning, to ensure that project scope and standards are aligned.
<p>Bond priorities</p>	<ul style="list-style-type: none"> • In its bond program, the District has not made policy level commitments to infrastructure renewal or upkeep since 1997 • District and school staff have modified bond projects to divert program money from infrastructure maintenance and improvement to other projects. • Operations staff is unclear about roles and responsibilities related to the Bond 	<ul style="list-style-type: none"> • Create long term bond program goals for infrastructure renewal, as well as policy level commitments for set asides within the bond program for deferred maintenance. • Create clear infrastructure standards aligned with district standards for HVAC for bond projects that set limitations on school and district staff to alter resources away from infrastructure and deferred maintenance investments. • Establish clear roles for Operations staff in Bond program development and execution to ensure effective project delivery.
<p>Budget commitments to routine and deferred maintenance</p>	<ul style="list-style-type: none"> • The Operations Division has not established a strategic life-cycle driven approach to managing the District’s HVAC system, leaving campus systems with older hardware and/or deferred maintenance more vulnerable and making it more difficult to stabilize systems when they need repairs. • Budget practices in the Operations Division are not based on neither experience nor data, and lack priorities tied to department goals. • The Operations Division and the HVAC Team have not conducted adequate preventative maintenance on HVAC equipment. • As a result, critical parts, such as coils, have been compromised and systems wear out more rapidly, reducing working capacity. • Many HVAC systems have reached or are approaching the end of their life cycle and need replacement. • Overtime and contracting budget lines for the HVAC Team are routinely overdrawn and filled from other district accounts. 	<ul style="list-style-type: none"> • Conduct a historical analysis of HVAC and Facilities expenditures for use as a basis for informing future budgets. • Develop a complete age/condition report for boilers and other critical HVAC equipment. • Develop a budget for routine and deferred maintenance that is based on experience and a thorough assessment of the age and condition of boilers and other critical HVAC equipment. • Create a Standard Operating Procedures Manual for the Operations Division that includes standards and routines for preventative maintenance for HVAC and other critical systems across all teams. • Create a professional development program for routine and preventative maintenance in the Operations Division for HVAC and other teams aligned to the Standard Operating Procedures Manual. • Incorporate a comprehensive approach to the evaluation, maintenance, and repair of HVAC equipment • Incorporate industry best practice standards for managing the

	<ul style="list-style-type: none"> • The Operations Division does not place a strategic budget priority on regular maintenance or repair. • The Operations Division has not activated its work order system to track preventative maintenance schedules or priorities, even though it has that functionality. 	<p>life cycles of HVAC equipment.</p> <ul style="list-style-type: none"> • Issue an RFP for boiler maintenance. • Issue an RFP for a monthly filter replacement program. • Review the current work order system (Facilitron) and refine or adopt a new system that is more user friendly and offers more detailed analytics about routine and other maintenance and repairs.
Regulatory and compliance responsibilities	<ul style="list-style-type: none"> • The Operations Division has no clear owners of regulatory or compliance requirements, including... <ul style="list-style-type: none"> ○ ...no oversight for conducting required inspections on HVAC hardware, as well as other critical facility equipment such as elevators, fire sprinkler systems, etc. ○ ...poor recordkeeping on boiler inspections and other regulatory and compliance evaluations. ○ ...unclear roles, responsibilities and accountability for staff working with systems that require routine inspection. ○ ...poor systems for obtaining licenses in a timely manner. 	<ul style="list-style-type: none"> • Establish a Regulatory and Compliance Department within the Division of Operations that reports directly to the Chief of Operations. <ul style="list-style-type: none"> ○ Establish a Regulatory and Compliance department within the Division of Operations that provides oversight and support for compliance with local, state, and federal regulations and who reports directly to the Chief of Operations ○ Incorporate Regulatory and Compliance reporting into Standard Operating Procedures, personnel evaluations, transparent maintenance schedules, and professional development. ○ Implement an inspection audit protocol conducted by managers and staff. ○ Collaborate with Risk Management to conduct campus inspections according to a calendar that meets industry best practice standards.
Invest in Staff		
	Findings	Recommendations
Current staffing allocations including vacant positions and contractor capacity	<ul style="list-style-type: none"> • Although outside subject matter experts acknowledge that the HVAC Team of 26 skilled technicians is adequate by industry best practice standards, there are six vacancies on that team, including ones in critical skill areas. <ul style="list-style-type: none"> ○ HVAC staff report that understaffing is an issue, and that it creates work quality issues and an overreliance on contractors. ○ The HVAC Team currently lacks a licensed master technician 	<ul style="list-style-type: none"> • Collaborate with a third party to conduct a comprehensive staffing study of the Division of Operations, the HVAC Team and other facilities teams that includes recommendations for staffing structure that meets industry best practice standards. <ul style="list-style-type: none"> ○ Evaluate market compensation rates as part of this planned re-organization. • Collaborate with a third party to assess the district’s use of contract expertise within the HVAC Team to determine how to adjust the team structure.

	<ul style="list-style-type: none"> ● The Operations Division relies heavily on overtime, a situation that has been exacerbated by vacancies, and is substantially above its budget on a yearly basis. ● The Operations Division relies heavily on contract staff, and substantially above its annual budget on a yearly basis. <ul style="list-style-type: none"> ○ One vendor, with a majority stake in our HVAC controls offers limited customer service. 	<ul style="list-style-type: none"> ● Prioritize which currently vacant assignments on the HVAC Team and the Operations Division need to be filled as soon as possible. Post those positions and work aggressively to fill them in the next 30 to 60 days.
<p style="text-align: center;">Hiring and contracting practices</p>	<ul style="list-style-type: none"> ● The Operations Divisions struggles to fill vacancies on the Division Team. <ul style="list-style-type: none"> ○ The Operations Division does not hire to known needs, but rather fills vacant positions, leaving knowledge and skill gaps across the HVAC Team. ○ 3 staff members with the title A/C Control Technicians work as regular HVAC technicians out in the field. They are not spending time in the system and using it to its full potential (including dashboard and reporting). ● Because the Operations Division does not use maintenance and support contracts for HVAC systems and controls, it misses out on benefits such as priority services or extended warranties. 	<ul style="list-style-type: none"> ● Collaborate with a third party to conduct a comprehensive staffing study of the Division of Operations, the HVAC Team and other facilities teams that includes recommendations for staffing structure that meets industry best practice expectations. ● Issue an RFP to secure contractors for maintenance and emergency response. ● Establish a routine post-action evaluation process for all contract engagements that is reported to the Chief of Operations.
<p style="text-align: center;">Professional development and opportunities for advancement</p>	<ul style="list-style-type: none"> ● HVAC staff reports that there are no professional development opportunities and that they are not properly trained to maintain or repair current district equipment. ● The Operations Department does not maintain adequate staff professional development plans or records. ● The Operations Division often hires and/or advances staff without the requisite skills to service District HVAC equipment. ● The Operations Division works in isolation from other District Divisions, often missing out on critical cross development opportunities. For example the Information Technology Division and the Operations Division do not collaborate on system control issues. 	<ul style="list-style-type: none"> ● Create a comprehensive professional development program for the Operations Division, including the HVAC Team. <ul style="list-style-type: none"> ○ Align the comprehensive plan to the Operations Divisions Standard Operating Procedures, and industry best practice standards. ○ Collaborate with industry leaders such as the Texas Association of School Business Officials (TASBO) and the Council of the Great City Schools to make sure that professional development opportunities are up to date and relevant. ○ To the maximum extent possible, convert all professional development to an in-person format. ○ Establish required annual professional development on employee ethics. ○ Establish required training, held at least annually, for all functional teams and division leaders on technical updates and subject matter expertise. ● Create individual professional development, retention and career advancement plans for all members of the Operations

		<p>Division, including the HVAC Team.</p> <ul style="list-style-type: none"> ● Create cross-divisional professional development opportunities with divisions such as Information Technology. ● Encourage HVAC Team members and Operations Division leaders to participate in professional organizations, such as TASBO. ● Develop a strong succession plan for each department within the Division of Operations.
Leadership and Culture		
	Findings	Recommendations
Organize	<ul style="list-style-type: none"> ● The Operations Division, especially the Facilities Sections that include the HVAC Team, is poorly organized. ● The Operations Division did not have an adequate cold weather plan in place January 16. <ul style="list-style-type: none"> ○ The Operations Division distributed a cold weather preparation memo to Principals, HEAd Custodians and division management, but did not distribute it to HVAC Team members. ● The Operations Division did not establish a crisis management environment on January 16 and struggled to do so before failing on January 17. ● HVAC Team members complain about how disorganized their team is. ● HVAC Team members acknowledge that the climate and culture in the division are at a low point and in need of improvement. 	<ul style="list-style-type: none"> ● Begin a national search to hire a Deputy Superintendent of Operations, a Chief Operations Officer and an Executive Director of Operations. <ul style="list-style-type: none"> ○ Begin to rebuild a positive organizational culture in the Operations Division that includes a commitment to core values, expectations for reasonable responsibilities to meet industry best practice standards, etc. ● Collaborate with a third party to conduct a comprehensive staffing study of the Division of Operations, including the division’s Leadership Team and Business Office, that makes recommendations for staffing structure that meets industry best practice standards. ● Establish a crisis management plan that includes roles and responsibilities for the crisis management team, activation and response protocols, communication plans, training, and after action reviews. ● Establish an Operations Advisory Council chaired by the Chief Operations Officer with representation from functional areas, schools, and central office whose purpose is to review processes and procedures and close the gap between Operations assessments and end-user experiences.
Supervise	<ul style="list-style-type: none"> ● Staff in the Operations Division report that leaders discouraged reporting critical problems. ● Leaders re-directed work to short term priorities without filing in time behind to make up ● The Operations Division, especially the Facilities Sections that 	<ul style="list-style-type: none"> ● Create a formal process to regularly track, review, and investigate key performance indicators (KPIs) toward world-class service, which might include industry standard metrics such as: <ul style="list-style-type: none"> ○ Maintenance schedule compliance greater than 90%.

	<p>include the HVAC Team, are poorly supervised with little or no accountability for task time, completion, or quality.</p> <ul style="list-style-type: none"> ● HVAC Team members complain about the lack of accountability for leaders, colleagues and contractors. 	<ul style="list-style-type: none"> ○ Preventative, predictive, and proactive maintenance 80% or more and reactive maintenance 20% or less. ○ Preventative maintenance schedule compliance 100%. ● Establish cross-functional meetings to share data, identify problems of practice, and track progress toward Division KPIs. ● Align data from work ordering systems, facility conditions assessment, and other key metrics with KPIs
<p style="text-align: center;">Communicate</p>	<ul style="list-style-type: none"> ● The HVAC Team did not have routine meetings to create common direction, organize work, coordinate with contractors or conduct professional development. ● The HVAC Team does not routinely meet with other teams in the Operations Division, creating critical knowledge gaps that impede effective work. ● The HVAC Team relies exclusively on telephones to communicate with leaders and schools; there is computer inaccessibility and a general computer illiteracy among HVAC staff. 	<ul style="list-style-type: none"> ● Establish a regular cadence of meetings for the HVAC Team and other functional teams in the Operations Division with defined meeting structures, including norms, topics discussed, next steps, and meeting notes. ● Create a structure to allow for the periodic meetings of functional groups with the Executive Director, Chief of Operations, and Deputy to discuss successes/celebrations, challenges, opportunities, and threats to the core mission of the Division. ● Require all supervisors to attend Crucial Conversations to foster teamwork and better decision making and to build a culture of openness and transparency. ● Require all supervisors to attend Coaching Skills for Leaders and Managers to serve as a lever to improve workplace culture by enhancing communication, fostering growth, and building trust.

Phase Three: Independent Review

Process

Staff selected the Texas Association of School Business Officials (TASBO), a professional organization with extensive knowledge of the operations field, to conduct an independent review of the 2024 HVAC Crisis. Staff worked closely with the TASBO team and made all of its research available to them.

TASBO reviewed and validated the Phase Two Knowledge Base, as well as the staff's findings and recommendations, and then offered their recommendations to the District based on industry best practice standards.

Letter from the Texas Association of School Business Officials

What follows is the entire text of TASBO's review letter:

March 19, 2024

Dr. Patti Salzmann
Deputy Superintendent
San Antonio ISD
514 West Quincy Street
San Antonio, TX 78212

Dear Dr. Salzmann,

At the request of San Antonio ISD (the "District"), the Texas Association of School Business Officials (TASBO) organized a review team to review the district's investigation of the critical heating system failures which occurred beginning January 15, 2024. The team was also tasked with making recommendations for improvement.

The team reviewed the documents provided by the district which include but are not limited to employee interviews, meeting presentations, chronological timelines, and employee work schedules. The review team did not visit the district to observe the procedures and processes of the department as that was not within the scope of this proposal.

The documents reviewed indicate the failure experienced during the Martin L. King Day freeze were a result of failures in several areas including but not limited to -

- Inadequate leadership
- Ineffective crisis planning
- Poor departmental culture
- Lack of documented procedures and processes
- Lack of measurable Key Performance Indicators (KPI's)
- Insufficient life cycle replacement of equipment
- Continued reliance on outdated HVAC systems

- Lack of standardization in energy management programs
- Lack of maintenance and preventive maintenance of equipment
- Lack of budget funds or mismanagement of budget to support needed ongoing maintenance of equipment.

This letter identifies items for consideration by the district based upon our understanding of district practices and processes after a review of the documents. The following points should not be considered an exhaustive list. They should merely serve as a starting point for the district to consider as they move forward with improvement in the department.

KPI Reporting

School districts routinely utilize benchmarks to evaluate student growth and teacher effectiveness. In a similar manner, successful maintenance and operations teams have well developed KPIs which are utilized daily. Examples of KPI's which a district might utilize to monitor employee productivity and equipment life cycle include –

- Total Number of Work Orders
- Estimated Preventative Maintenance Projects Scheduled for Next Year
- Percentage of Work Orders Submitted by Role
- Average Work Orders Assigned per Technician
- Hours Spent on Planned Maintenance Work Orders
- Percentage of Completed Work and Work Outstanding
- Total Number of Work Orders per Square Foot
- Preventative Maintenance Work Orders Completed per Square Foot
- Average Hours per Week for Year by Trade spent on corrective maintenance, escalated emergency repair, preventative maintenance, etc.
- Percentage of Corrective Maintenance Completed in Seven (7) Days or Less
- Ratio of Completed Preventative Maintenance to Corrective Maintenance
- Percentage of Planned Maintenance Completed in 30 Days or Less
- Mean Time Between Failures
- Days to Complete Work Orders
- Percentage of Work Completed On-Time
- Average Days Aged for In-Progress Work (New/Work in Progress)

The review team could not find evidence of the utilization of a well-functioning computerized maintenance management system (CMMS). It is critical that the district invest the resources necessary to identify and implement a CMMS which has a proven track record in the management of school district maintenance and operations work order management. Without a well-functioning CMMS and associated reporting, the district will likely continue to respond to issues reactively rather than proactively.

Once the CMMS has been selected, the district should require that the maintenance

department staff, in conjunction with a knowledgeable third-party consultant, develop KPIs for the delivery of services using data from a (CMMS). The department should establish measurable goals for the completion of work orders and the expected daily number of hours on task using the performance indicators available in the work order system.

Another excellent source of KPI data for staffing decisions is the APPA or Institute for Facilities Management. The Council of Great City Schools also collects performance data for member school districts which can be utilized to develop a starting point for the district.

To effectively use the work order system and gain the maximum value from the data, maintenance staff should be required to diligently track and enter information on work orders related to labor, materials used, and materials purchased prior to closing the work order. This tracking should all occur on district laptops or tablets issued to each technician. All data is entered in real time without the use of paper forms or work orders.

Once the KPIs are established, the department should then monitor the outcomes and report on these metrics on a regular basis. KPI expectations and actual outcomes should be displayed in prominent locations throughout the maintenance workspace so that employees review them each time they are in the building. Ideally, the departmental staff would meet weekly to review the KPI's as a team and employees who are not performing optimally would be identified and counseled to improve their performance. In addition to meetings with departmental employees, department management should also report on the 30, 60, and 90-day work orders in a regular meeting with the leadership team.

A properly executed CMMS will provide valuable self-generated reports and data for customization in setting, monitoring, and meeting KPIs. Employee time is monitored by CMMS providing leaders the ability to hold technicians accountable for their time. This regular work order analysis should be available if district stakeholders note problems.

Parts Inventory

In addition to increased productivity and reporting, a CMMS should allow parts availability to be tracked through all district "pools" so that replacement parts can be found within district inventory. Parts should flow from the warehouse to the pool, and then from the pool to the work order.

Each technician vehicle should serve as a mobile parts warehouse stocked with the most needed parts to complete most daily tasks encountered. These parts pools should have a common component across disciplines, as well as be unique to each vehicle based on the campuses served. Because these vehicles serve as rolling warehouses, they should be audited as such. The department should implement quarterly auditing of each vehicle's inventory to prevent inventory "shrinkage."

Preventative Maintenance

The consultants could not find evidence of an effective preventative maintenance program. The adopted work order system should include a preventive maintenance (PM) module to ensure compliance with federal and state rules and regulations. The system also ensures that equipment is serviced and maintained on recommended schedules.

The primary objective of a preventive maintenance program is to prevent premature failure of facilities' building envelopes, interiors, components, systems, and equipment and at the same time to lower the maintenance cost of doing business.

Preventive maintenance includes periodic facilities and equipment inspections to identify conditions that may lead to breakdown and failure. Certain preventive maintenance activities also include repairs or replacement of minor facility or equipment components to ensure the upkeep of the facility by correcting defects while they are still at a minor stage.

The district should consider implementing electronic inspection software which correlates to specific inspections for documentation purposes in conjunction with the CMMS. The software should allow the technician to add comments, pictures, and video. When inspections for equipment not in compliance are submitted the option to alert the risk manager and or chief of operations should be available via text and or email. This will ensure that the district responds quickly to potential life safety issues.

Preventative maintenance work orders should be accessible by all associated with the compliance management. All certifications and inspections should be attached to the work order and stored electronically in a shared data folder for each campus. District leadership should require a semi-annual update from the department on required inspections. The installation of a preventive maintenance program is an investment that will require commitment from executives, managers, and facilities maintenance staff, as well as the budgetary resources to implement the program. The major returns on the investment of instituting a preventive maintenance program include -

- Reduction in after-hours calls and overtime for personnel responding to emergency maintenance situations;
- Fewer large-scale or repetitive repairs;
- Lower repair cost for simple repairs discovered before major breakdowns occur;
- Fewer safety hazards;
- Increased life expectancy of buildings and equipment;
- Reduction of power requirements and utility costs;
- Reduction in the number of employees with highly technical qualifications;
- Reduction in unplanned emergency outages;
- Reduction in overall expenses;
- Consistent presence in buildings, leading to improved communication and customer

- service; and,
- Increased staff familiarity with equipment and diversity of expertise.

Integrated Systems

The CMMS should tie maintenance management, inventory management, equipment database, and preventive maintenance together in one system where all the modules unite to support the needs of the district.

The district should first establish a replacement cycle for each major system component specific to the life expectancy of each category of equipment. The district should utilize the recently completed facility assessment to gather this data. All mechanical equipment should be uploaded into the CMMS so that a replacement schedule for major system components can be created. If utilized correctly, the CMMS can not only link the data for replacement of equipment it also can provide historical data for repairs and cost of maintaining each piece of major equipment.

Standardization of Materials

The district should consider creating a set of district guidelines from the collaboration between the operations, planning and construction departments. These guidelines should be formulated with the objective of standardizing specific elements within the district building program. The inclusion of manufacturers or material types in this document is based on their known ease of maintenance or extended life cycle.

The guidelines should not be intended to serve as an exhaustive specification for all work conducted within the district. However, any deviation from specified manufacturers, styles, series, and/or models must be documented in writing, and receive approval from the planning, construction, and maintenance departments that the proposed deviation can be easily managed by the district departments.

A best practice is to not accept discontinued equipment or materials. All materials and equipment utilized in facilities must be currently manufactured for use and should anticipate a 10-year availability of parts for repair or replacement. This requirement extends to all areas, materials, and equipment referenced in these guidelines. It should be noted that many of the district's operating systems extend beyond this period and are difficult, if not impossible, to Repair.

The consultants noted that the district had multiple energy management control systems across the district. Tasking a department to monitor multiple reporting systems is difficult at best. While it was unclear if the multiple energy management systems directly contributed to the failure of the boiler systems, it could be considered a contributing factor due to the complexity of monitoring multiple systems.

Air Filter Replacement

In most cases a cycle of 60-90 days for replacement of heating and air conditioning (HVAC) filters is sufficient. There are cases where a more frequent replacement of HVAC filters may be necessary dependent on environmental conditions and condition of the equipment.

The HVAC filters should be dated each time they are changed so that leadership can inspect and ensure that they have been changed as required. The filter replacement should also be noted in the CMMS system.

Staffing

Since the consultants did not visit the district and observe the work schedules of the employees, we cannot provide a comprehensive analysis of the district's staffing. However, the team did note that the district should consider utilizing or adding positions such as energy manager and system analyst that are specifically responsible for reviewing and reporting system and equipment issues daily.

The energy manager/system analyst should create a work order, which includes specific details of their findings, when they identify systems and or equipment which needs attention. A technician should be dispatched a technician to resolve the issue found. The energy manager and analyst should be a resource to the HVAC and BAS technicians to expedite repairs more effectively.

The focus of the energy management department should always be providing a safe and functional instructional environment first and energy conservation second.

Professional Development

A robust system of employee training and development is not evident.

Department supervisors and managers should be given the opportunity to attend professional development opportunities offered by organizations such as the Texas Association of School Business Officials and others. Examples of training recommended by the team include –

- Monthly Operations Mentoring, online available at not cost to members
- Monthly Alamo Area Affiliate Meeting, various locations in San Antonio
- Operations Conference, November 13-14, Frisco (scholarships available)
- Annual Conference, February 24-28, Austin
- Certification Courses which may be taken virtually, in-person, or clustered at the district
- Craft and position specific professional staff development.
- Additional trade certifications – TASBO offers two scholarships per year to assist individuals in trades positions to achieve a higher level of certification.

The learning opportunities indicated above offer attendees the opportunity to network with

contacts throughout the state. This network becomes invaluable and provides an extended group to identify solutions and solve potential problems.

Leadership and Culture

Leadership's response to crisis management of this issue was ineffective at best.

Based on a review of the documents, management at the department level and leadership of the district each have a genuine distrust of each other. The lack of effective leadership in the department over an extended period has led to mistrust within the department and contributed to a lack of pride in workmanship.

In recent years budgets have become increasingly difficult to balance. However, the district's facilities have suffered due to a lack of monetary resources to repair aging equipment. In the same manner, it appears that campus principals have been allowed to override the recommendations for repair and replacement of aging equipment in favor of other projects.

However, the "unseen" interior continues to degrade and ultimately will become unable to provide the optimum learning environment.

Well-functioning maintenance departments schedule meetings with craft supervisors and their teams daily to have an open discussion regarding outstanding work orders and make plans to address them. In the same manner, craft supervisors should meet weekly to discuss coordinating their efforts to best serve the district's needs.

New leadership in the department must focus on creating a culture of trust and collaboration between the maintenance and facilities department. Members of the department should always be allowed and required to communicate problems throughout their chain of command. Seamless transitions from installation to maintenance and repair, to replacement must occur between the departments.

Conclusion

We appreciate the opportunity to assist you in this important review of materials. Solving problems like those faced by the district are not insurmountable, but they do take time, patience, and a long-term commitment to the process.

We would recommend that the district immediately issue an RFP for a CMMS system and begin the development of KPIs for each trade. We also would highly encourage the district to conduct a full review of the maintenance, custodial and grounds functions so that the district can identify and prioritize areas of improvement over the next several budget cycles.

Please let me know if we can be of any further service to you. I appreciate this opportunity.
Sincerely,

Tracy Ginsburg, Ed.D., CAE
Executive Director

Phase Four: Ad Hoc Committee of the Board of Trustees

Process

At its Jan. 16 meeting, while the 2024 HVAC Crisis was still developing, the Board of Trustees called for an ad hoc committee to consider the causes of the crisis, including systems failings and business processes.

The Board's stated purpose was to examine the crisis from three perspectives related to their governing role: policy, finance (including the integrity of the Bond Program) and system accountability. They wanted to reduce the likelihood of a future occurrence and restore public confidence in the District, including its bond program.

At its Feb. 12 meeting, the Board named Trustee Leticia Ozuna to chair the ad hoc committee, and Trustees Ed Garza and Stephanie Torres, as well as Bill Avila to serve as members.

The Ad Hoc Committee met five times, covering the topics listed with each date.

- Feb. 21: What is our charge? What is our process? What is our timeline?
- March 6: What factors – including facility conditions, policy commitments and bond investments – contributed to the crisis?
- March 20: Extended discussion of administrative recommendations with an eye on Board findings and recommendations.
- April 3: Feedback from third party investigations of the HVAC crisis.
- April 18: What are our findings and recommendations?

At the April 18 meeting, they drafted findings and recommendations. They also decided to present the report at the next public meeting of the Board of Trustees, May 13.

In the days following April 18, the members of the Ad Hoc Committee collaborated with District staff and other trustees to refine their findings and recommendations into a set of Key Recommendations. These serve as a capstone on the more expansive set of recommendations developed by District staff as part of Phase Two, and the industry best practice recommendations submitted by TASBO as part of Phase Three.

Key Recommendations

- The Board of Trustees shall instruct the Superintendent to conduct a comprehensive study of excess facility capacity in San Antonio ISD's school buildings by November 2025. This study will evaluate staffing levels, programming, and maintenance conditions at each school to ensure alignment with *Always Learning*, the District's strategic management plan and a thriving educational program. Recommendations for rightsizing schools, academic programs and central office capacity will be included, aiming to rectify resource disparities between schools and enhance opportunities for all of our students to attend high quality schools.

- The Board of Trustees shall adopt a policy stating that all future bonds and referendums will include an investment in school facility infrastructure that is based on reliable external data obtained from a facilities conditions assessment conducted by an independent third party with expertise in school facility management. Further, the policy shall state this infrastructure investment requirement cannot be overridden by Trustees or administration during the design or construction phases of the work should the proposition be approved by the voters.
- The Board of Trustees shall require that five percent of any future bond be dedicated to investing in deferred maintenance on its school facilities until such time as there is no longer any deferred maintenance on its school facilities.
- The Board of Trustees shall collaborate with the Superintendent to revise Guardrail 3, which expresses our values on School Safety, to include a measurable interim guardrail that focuses on the environment for high quality instruction to be acted on by this Board no later than its August 2024 meeting.
- Within the next 12 months, the District shall bring to the Board of Trustees a procurement request for the purchase and effective implementation of enterprise systems such as a computerized maintenance management system (CMMS) and building automation systems (BAS), which include HVAC controls. This system will provide real-time, standardized, and comprehensive data on HVAC hardware across all school facilities, as well as accurate records of maintenance and repair activities for all HVAC equipment. It will also include features such as asset tracking, maintenance performance data, and integrated preventive planning schedules.
 - In the interim, at the direction of the Superintendent, the District shall establish and maintain an accurate inventory of critical infrastructure assets to begin immediately and to continue until the facility condition assessment is complete.
- At the direction of the Superintendent, the Deputy Superintendent for Operations shall establish by June of 2024 a set of Key Performance Indicators (KPIs) that are predictive of the readiness of school facilities to operate, especially under inclement weather conditions.
- At the direction of the Superintendent, the District shall adopt by August of 2024 administrative procedures for disaster recovery and business continuity based on national, best practice models in the K-12 sector.
- At the direction of the Superintendent, the District shall complete by November of 2024 a market study of the total compensation and benefits packages for HVAC and other operations professionals in Texas and include in its budget a plan that will bring the total compensation package of its HVAC and other operations professionals in alignment with the statewide market, in the context of increasing total compensation for all San Antonio ISD employees.

Appendices

APPENDIX 1: A Narrative Summary and Detailed Chronology of the 2024 HVAC Crisis

Narrative Summary

On Tuesday, Jan. 16, as students and staff returned to school from the Martin Luther King Jr. holiday, temperatures were forecast to fall below 20 degrees Fahrenheit, the coldest temperatures experienced in the San Antonio area in recent years when school was in session (and without school-closing weather conditions such as freezing rain or snow). Beginning that morning, many San Antonio ISD (District) schools were unable to maintain minimum standard temperatures in classrooms, wings and entire school buildings, impairing the services offered to students and families, and forcing staff to work in substandard conditions. As a result, the District entered into a crisis that lasted through January 23.

On Jan. 10, The Superintendent initiated discussion with the Deputy Superintendent for Operations and the Chief Operations Officer about District preparation for the cold weather. Over the next six days – including Jan. 14 and 15, the two days immediately preceding the expected cold temperatures – both the Deputy Superintendent and Chief Operations Officer assured the Superintendent and his staff that the District would be prepared and that schools would be able to operate.

At its Jan. 16 meeting, even while the crisis was still developing, the San Antonio ISD Board of Trustees announced that it would convene an Ad Hoc Committee to review the circumstances of the crisis with the purpose of reducing the likelihood of a future occurrence and restoring public confidence in the District, including its bond program.

Although the District remained open on Jan. 16 and 17, academic services were compromised at most campuses, often significantly. Frequently school leaders reorganized or moved classes so students had minimally acceptable learning environments. Beginning the night of Jan. 16 and continuing into Jan. 17, on the advice of the Chief Operations Officer, the District closed schools on a one-at-a-time basis, reaching a total of 20 schools at approximately 10 p.m. Jan. 16; by 10 a.m. on Jan. 17 the District had closed or conducted early dismissal procedures at 31 schools.

At approximately 1 p.m. on Jan. 17, the District announced that it would close all schools on Jan. 18 and 19 to stabilize conditions at schools and permit students and staff to return to more acceptable and manageable conditions. Because the morning of Jan. 22 was forecast to be near freezing, the District wanted to assure families and staff that students would have learning spaces that were acceptably warm when they returned to school that Monday. At the press conference held to make that announcement, the Superintendent committed to a thorough and transparent review of the circumstances that led to the crisis with the intention of reducing the likelihood of a future occurrence. The final After Action plan was broken down into four phases.

By Jan. 19, Acting Deputy Superintendent for Operations and the Acting Chief Operations Officer had established a stable crisis management structure and begun devising a temporary heating solution – delivery of over 1,000 portable heating units that could be put in classrooms and other spaces when

campus heating systems were not sufficient. Through Jan. 22, the deployment and installation of these portable climate control units became the primary focus of the District’s crisis response. In addition, the District developed and implemented school and family communications actions to create confidence in those audiences that schools would be comfortable when they reopened Jan. 22.

On Jan. 22, the District resumed full academic services at all of its schools. Between Jan. 23 and Jan. 30, District leadership became increasingly confident that the District could gradually wind down the crisis management structure it put in place and again focus on their regular responsibilities.

This document summarizes the events of that crisis, including those that preceded it and those that followed.

Detailed Chronology

Jan. 10

- The Superintendent initiates communication with the Deputy Superintendent for Operations about preparation for cold weather the week of Jan. 15. The Deputy Superintendent for Operations assures the Superintendent that the Operations Division had begun preparations in the early fall.

Jan. 11

- [Chief Operations Officer distributes a winterizing memo to principals.](#)

Jan. 14 – Sunday

- 3 p.m. the Superintendent participated in Region 20 Superintendents’ Weather Call.
- 4 p.m. the Superintendent sends text message to the Deputy Superintendent for Operations, Chief of Staff, Deputy Superintendent for Academics, and Deputy Superintendent for School Leadership and Partners summarizing the Region 20 meeting. The Deputy Superintendent for Operations replies that staff has been scheduled to “go in and check out facilities.”

Jan. 15 – Monday, Martin Luther King Jr. holiday

- 10:50 a.m. The Deputy Superintendent for Operations reports to the Superintendent by text that there are no school closing issues to report.
- 1 p.m. The Superintendent meets with Region 20 Superintendents to discuss the possibility of weather related closure.
- 1:45 p.m. The Superintendent sends text message to Deputy Superintendent for Operations, Chief Operations Officer and Senior Executive Director of Transportation and Vehicle Maintenance summarizing the Region 20 Superintendents' meeting, including the regional leadership consensus that, although the weather would be cold, other conditions would not warrant closing. Deputy Superintendent for Operations replies that staff was prepared to keep buildings warm through the night.

- 10 p.m. (approx) The District announces that Burbank High School would be closed on January 16, the first school closing of the developing crisis.

Jan. 16 – Tuesday, schools open

- 8 a.m. (approx) District begins receiving media inquiries about cold conditions in schools. The Superintendent directs the Deputy Superintendent for Operations to draft a statement.
- 8:30 a.m. the Superintendent receives reports that one Trustee is showing up to campuses in a state of agitation about the decision to keep schools open under the weather conditions.
- 8:30 a.m. Deputy Superintendent for Operations and Chief Operations Officer submit their media statement to the Superintendent.
- 9:30 a.m. Superintendent and Senior Adviser to the Superintendent visit schools, including Ogden Elementary School, Carvajal Elementary School, Collins Garden Elementary School, Japhet Academy, and Poe Middle School
- 1 p.m. The Executive Team meets to discuss the situation; the Superintendent identifies it as “a crisis.”
- 1:20 p.m. The Deputy Superintendent for Operations sends an email “Heating - Talking Points,” which summarizes his assessment of the circumstances.
- 3:15 p.m. After receiving assurances from the Chief Operations Officer that schools would be operating, and that issues would be assessed and addressed on a school-by-school basis, and that there would be work through the night to make sure schools were ready to open, the Executive Team reaches consensus to keep schools open and the Superintendent informs the Board of Trustees.
- 3:30 p.m. The Superintendent informs Board Members of his decision to keep schools open.
- 5 p.m. Chief Operations Officer assures the Superintendent that schools would be operational on Jan. 17.
- 8 p.m. Three schools closed (Chief of Data Operations and Services phone to Senior Adviser to the Superintendent).
- 8:30 p.m. Seven schools closed (Police Chief text to Senior Adviser to the Superintendent)
- 8:45 p.m. 20 schools closed (Deputy Superintendent of School Leadership text to Senior Adviser to the Superintendent)
- 9:30 p.m. Superintendent meets with the Deputy Superintendent for Operations, discusses 20 closures and asks for an action plan to assure that remaining campuses remain open; they discuss custodians arriving at 3 a.m. instead of 4 a.m.

Jan. 17 – Wednesday, schools open

- 12:10 a.m. Chief Operations Officer emails Leadership Team establishing an Emergency Operations Center at 1270 Summit to open at 7 a.m.
- 3:40 a.m. Superintendent communicates with the Deputy Superintendent for Operations, who identifies one issue and states that the situation is improving
- 4:30 a.m. Superintendent is notified by leadership at YWLA of heating issues
- 5 a.m. Superintendent is notified by leadership at Travis of heating issues
- 6 a.m. Superintendent begins day at 1270 Summit

- 6:30 a.m. Senior Adviser to the Superintendent begins day at 1270 Summit
- 9 a.m. Chief of Staff begins facilitation of the Emergency Operations Center
- 10 a.m. Executive Team briefing from Chief Operations Officer and Operations Leadership
- 10 a.m. The District has closed or conducted early dismissal procedures at 31 schools
- 10:30 a.m. Executive Team reaches consensus that schools must be closed in order to re-establish control over campus-based HVAC systems
- 10:40 a.m. Superintendent informs Board Members of his decision to close schools
- 11 a.m. Superintendent sends Deputy Superintendent for Academics to 1270 Summit to assist Chief of Staff in establishing a crisis management and mitigation plan
- 12 p.m. Deputy Superintendent for Operations and Chief Operations Officer submit resignations. Superintendent appoints Senior Executive Director of the Child Nutrition Program to be Acting Chief Operations Officer
- 1 p.m. Press conference announcing school closures

[Jan. 18 – Thursday, schools closed, Executive Team directed to meet at 1270 Summit](#)

- Executive Team works from 1270 Summit to organize reopening of schools

[Jan. 19 – Friday, schools closed](#)

- Executive Team works from 1270 Summit to organize reopening of schools

Jan. 20 – Saturday, Executive Team directed to meet at 1270 Summit

- 10 a.m. Executive Team and Operations leadership briefing
- 4 p.m. Executive Team and Operations leadership briefing

Jan. 21 – Sunday, Executive Team directed to meet at 1270 Summit

- 10 a.m. Executive Team and Operations leadership briefing
- 4 p.m. Executive Team and Operations leadership briefing
- 11 p.m. Crisis team Zoom conference

[Jan. 22 – Monday, schools open](#)

- 5 a.m. Crisis team Zoom conference
- 10 a.m. Executive Team and Operations leadership briefing
- 4 p.m. Executive Team and Operations leadership briefing

Jan. 23 – Tuesday

- 10 a.m. Executive Team and Operations leadership briefing
- 4 p.m. Executive Team and Operations team briefing

APPENDIX 2: [A School-by-School Inventory of HVAC Hardware and Systems in San Antonio ISD](#)