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OAKLAND UNIFIED SCHOOL DISTRICT
Community Schools, Thriving Students

Board Cover Memorandum

To Measures BJY Independent Citizens' School Facilities Bond Oversight Committee

From Denise Gail Saddler, Ed.D., Interim Superintendent
Preston Thomas, Chief Systems & Services Officer
Pranita Ranbhise, Executive Director, Facilities Planning & Management

Meeting Date May 11, 2026

Subject Update on Air Quality and Thermal Comfort Plan, 2025-26

Ask of the Committee This item provides an update on the District's approach to improving air quality and thermal comfort across school facilities, with a focus on heat mitigation for the 2025–26 school year. Staff seeks Committee feedback on the proposed tiered, data-informed approach, including prioritization of near-term actions and long-term capital investments. No action is required at this time.

Background Addressing extreme heat across District facilities is a growing priority. Rising temperatures, aging infrastructure, and limited cooling capacity continue to impact classroom conditions. The District is developing a phased approach that includes immediate operational strategies and low-cost measures, near-term pilots in highest-need classrooms, and long-term investments. This work is guided by data from temperature sensors and site assessments and prioritizes equity by focusing on the highest-need students and school communities.

Fiscal Impact This update is informational and does not commit the District to expenditures. Future strategies are expected to be funded through a combination of bond funding, external grants and incentives, and energy savings from efficiency projects. All projects will return to the Board for approval prior to implementation.

Attachment(s) Presentation: Air Quality & Thermal Comfort Plan, 2025-26

Air Quality and Thermal Comfort Plan 2025-26

Facilities Committee Meeting, April 16, 2026
Measure BJY Committee Meeting, May 11, 2026
OUSD Facilities Planning & Management, Sustainability Team

OAKLAND UNIFIED SCHOOL DISTRICT
Community Schools, Thriving Students

Ask Of The Committee

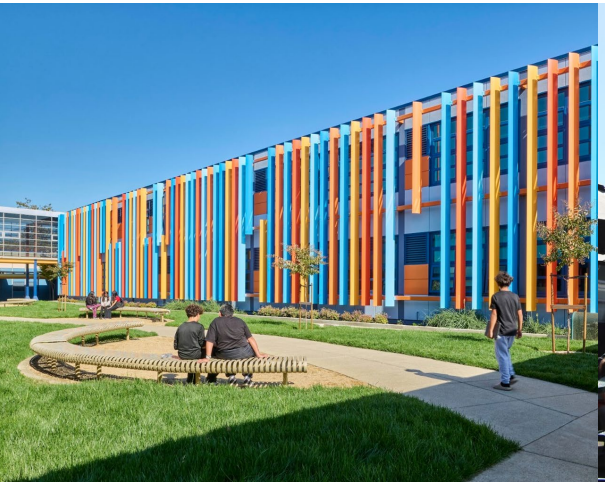
Purpose: Present District's Heat Mitigation Plan and strategies that will be employed as we launch the Air Quality and Heat Mitigation funding $8M allocated in the 3rd Draw of the Measure Y bond

What we need: Feedback, guidance, and questions.

Agenda

1. Background and Research
1. Actions Taken to Date
1. Planning Process to Implement Mitigation Strategies
1. Proposed Future Scope of Work
1. Next Steps

Heat Mitigation Background & Context



Equity Approach

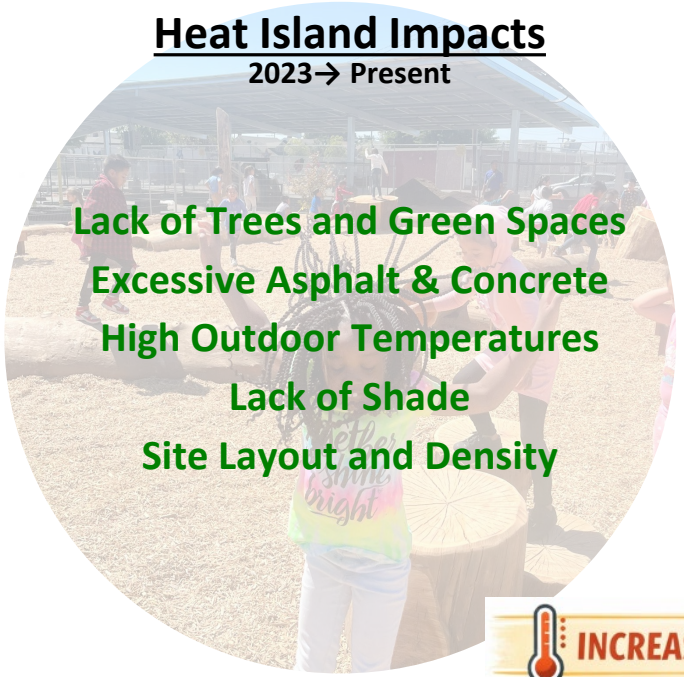
OUSD defines equity as providing each student with the resources and conditions they need to succeed, with a focus on addressing disparities for historically underserved students. In facilities, this means prioritizing investments where conditions are poorest and student need is greatest.

Drafted from OUSD's Equity Framework

Understanding the Heat Challenge in OUSD

- Generational challenge; increasing in urgency due to changing climate conditions
- Oakland experiences urban heat islands with varying levels of exposure across communities
- **Rising temperatures, combined with lack of green spaces, aging infrastructure and limited cooling, are impacting student health and learning conditions**
- OUSD has many historic buildings and facilities that are outdated, requiring extensive and major repairs and improvements to accommodate HVAC upgrades
    - Many sites lack cooling and proper ventilation (33% of classrooms have cooling)
    - OUSD Facilities were not designed for the current or future climate reality
- The Draft 2026 Facilities Master Plan identifies “improving classroom heat and climate control” as a critical need, reinforced by the 2020 Climate Emergency Resolution and ongoing Sustainability efforts

Factors Impacting Thermal Comfort in Schools



Heat Island Impacts

2023→ Present

Lack of Trees and Green Spaces
Excessive Asphalt & Concrete
High Outdoor Temperatures
Lack of Shade
Site Layout and Density

Building Systems Heat

2026→TBD

Building Layout
Lack of Insulation
Heat Retention of Building
Roof Heat Gain
Solar Gain through Windows
Lack of Ventilation Systems
Vandalism of AC Units
Lack of AC
Lack of Fans

INCREASED HEAT IN SCHOOLS

OUSD is a national leader following heat island research to transform schoolyards by removing thousands of square feet of asphalt and concrete while adding over 700 trees, 60+ playstructure shades and nature areas.

Comparison of Citywide Temperature Change

Oakland continues to have a generally mild climate, with higher temperatures occurring on relatively few days each year. However, in recent years, we are seeing more frequent and intense heat events. Our facilities were not designed for these changing conditions.

Metric	Historical (30-Year)	Recent Trend (Last 5 Yrs)	Most Frequent Months
Hot Days (≥80°F)	20–40 Calendar Days **10-20 School Days**	30–50 calendar days **15-25 School Days**	Between August - October
Very Hot Days (≥90°F)	5–10 calendar days **2-5 School Days**	8–15 calendar days **4-7 School Days**	Between September, October
Heat Wave Frequency	Occasional	More frequent	September
Cooling at Night	More consistent - Temperatures reliably drop at night, allowing buildings to cool down	Less consistent - Temperatures stay elevated overnight so buildings don't cool properly	During Heat Events

Sources:

1) National Oceanic and Atmospheric Administration (NOAA), 1991-2020.
2) Cal-Adapt – Statewide climate data and projections.
3) Western Regional Climate Center (WRCC) – Regional climate summaries and historical weather data.

Highest Leverage Short Term Strategy: Training, Engagement, and Implementation

High temperatures in schools is a persistent, generational infrastructure issue that cannot be solved through a single solution and requires a phased, systemwide approach

1. **Site training, planning, and implementation are necessary to mitigate heat now while awaiting facility upgrades**
    a. Operational alignment across school sites, turning heat systems off to prepare for heat waves
    b. Site-level coordination during extreme heat days - Updating site emergency response plans to include extreme heat events
    c. Staff training - behavioral change strategies
2. **Identify a working group to research, identify and inform strategies and solutions moving forward**
    - Community and Local entity collaboration in a working group to prioritize heat mitigation in OUSD
3. **Implement short term strategies and pilot projects**

Oakland Heat Exposure During Heat Waves, 2025

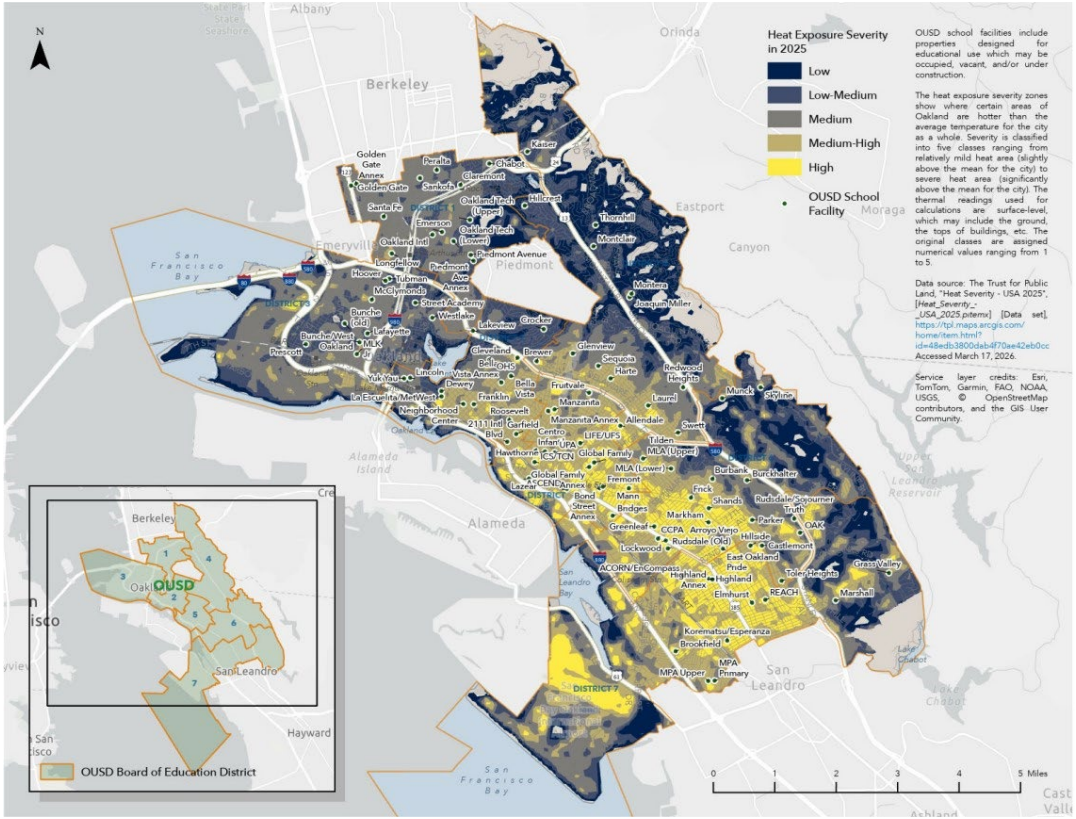
August - October

Map helps us understand how heat is experienced in Oakland during heat events

Heat is not evenly distributed

Some neighbhorhoods experience significantly higher temperatures

Blue areas → cooler, less heat stress
Grey/Tan areas → moderate heat stress
Yellow areas → highest heat exposure



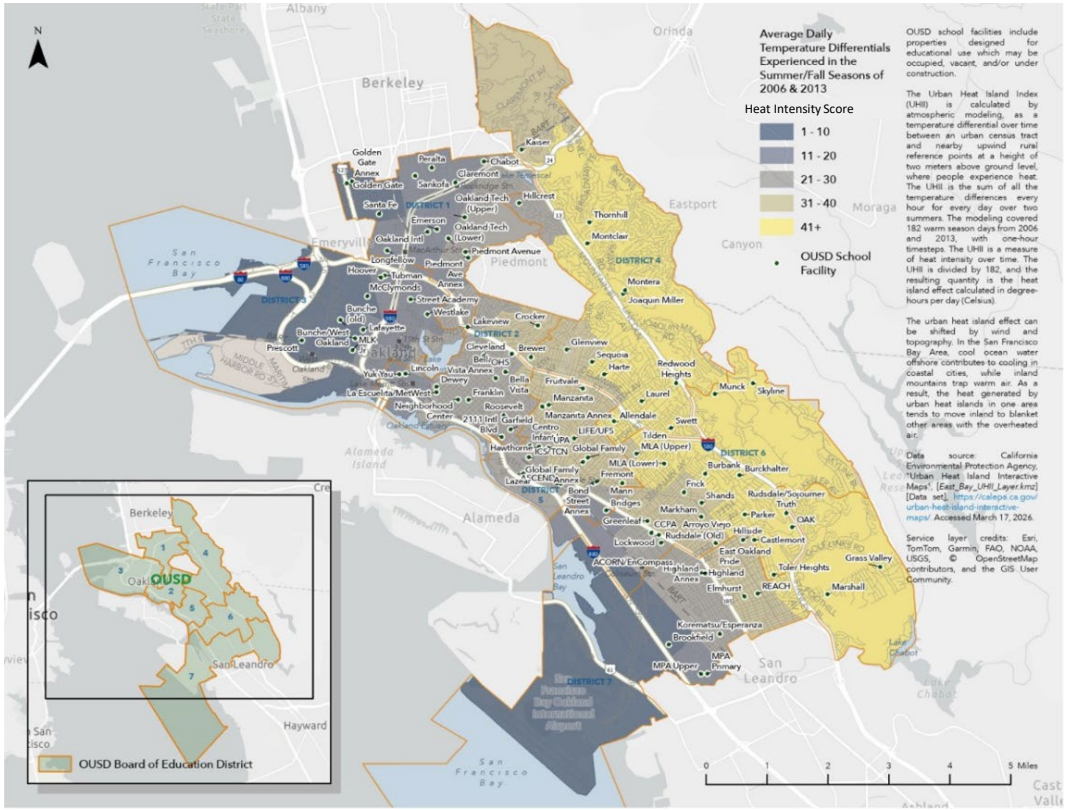
Heat Exposure Shift During a Hot Day, 2006-2013

Map helps us understand where heat exposure is consistently highest across Oakland over time

Relative heat burden map, not actual temperatures

Shows where heat builds over time

Blue areas → cooler, less heat buildup
Grey/Tan areas → moderate heat stress
Yellow areas → most heat exposure + longest heat duration + least cooling



Heat Mitigation Strategies - Implemented

Exterior Heat Mitigation Efforts

Overview of District Actions

Exterior Efforts - Living Schoolyards & Greening

30+ Living Schoolyards Projects Completed

Different ground materials to decrease heat

- Every new play structure includes as many shade canopies as possible
- 700+ trees have been strategically placed and sourced to provide immediate and ever-expanding shade across the schoolyard
- Expanding gardens and green spaces on campuses

Expanding gardens/green spaces - Hoover ES

Trees & asphalt removal - Laurel ES

Shade installations with play structures - Global Family ES

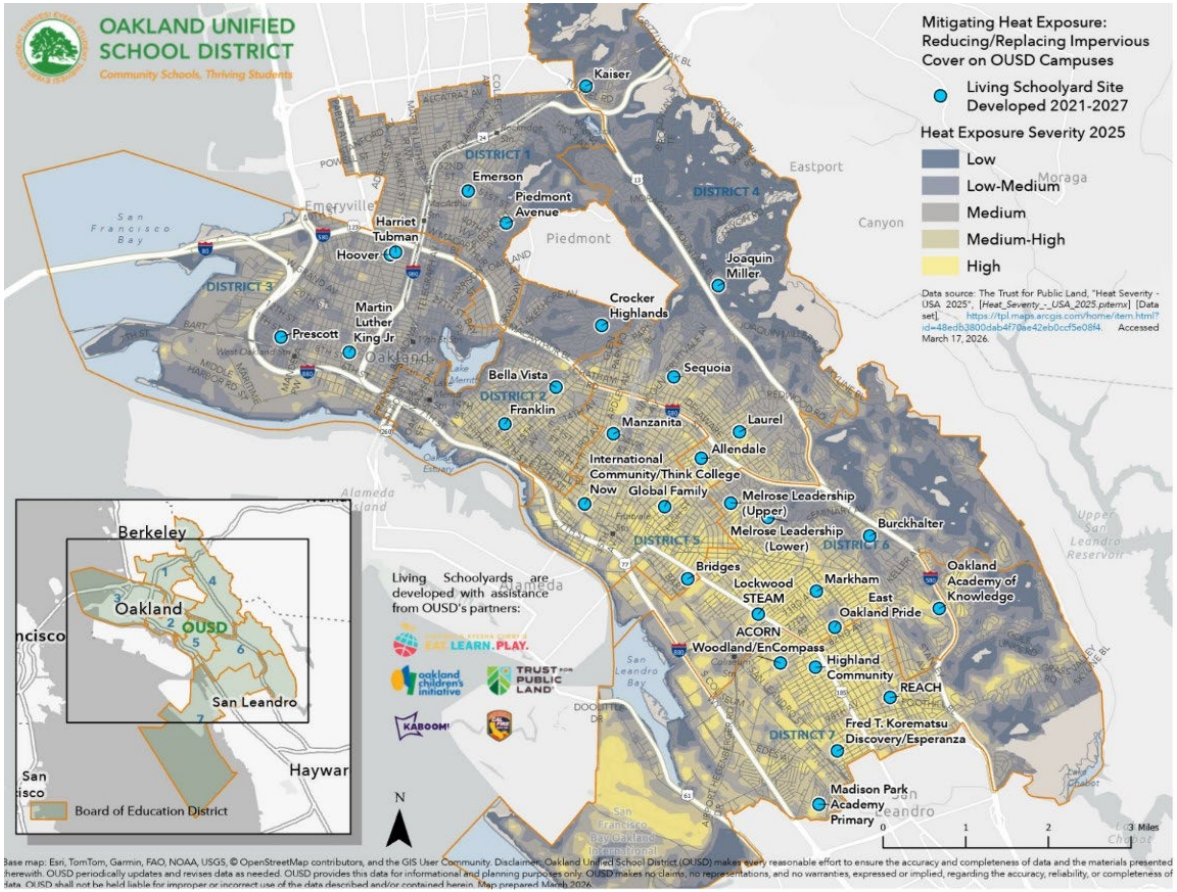
Overview of District Actions

Exterior Efforts - LSY - Asphalt Removal

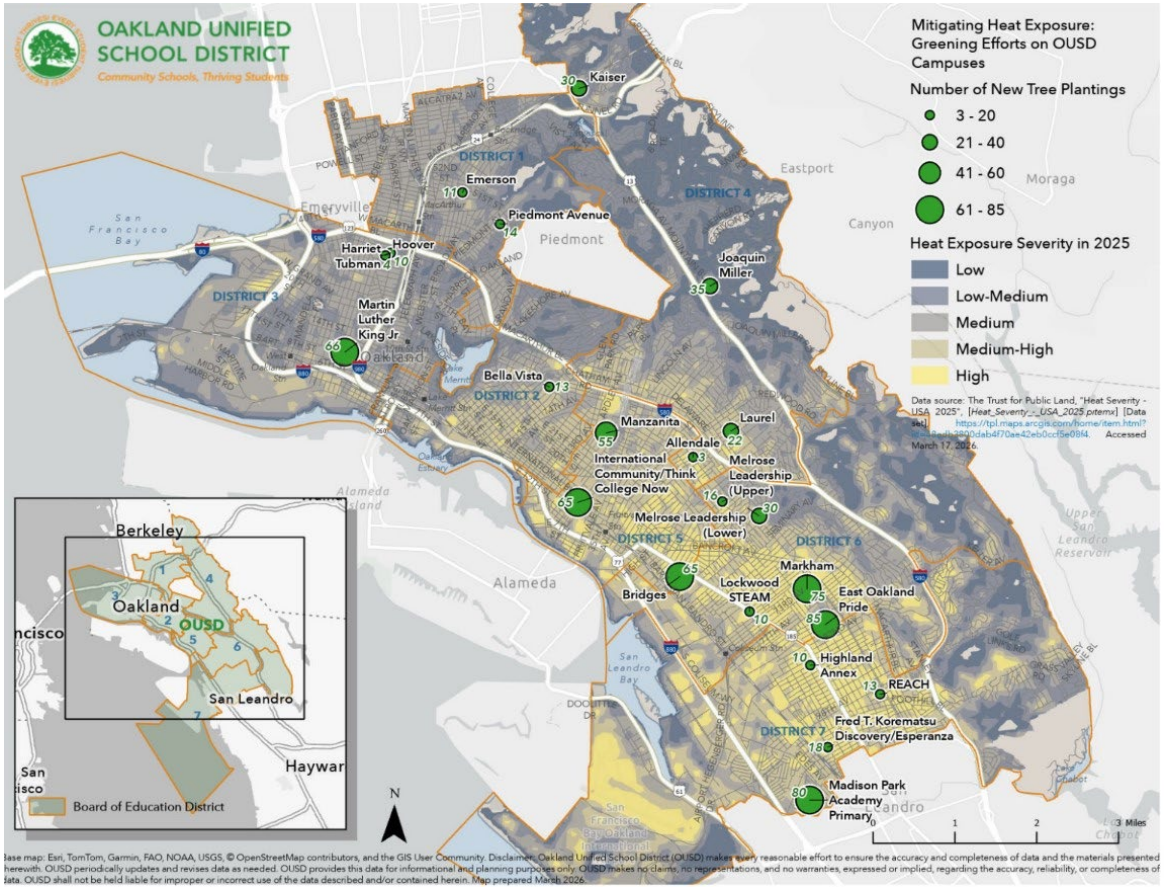
Adding shade

- Remove asphalt where not needed and add pervious surfaces (engineered wood fiber, corkeen, park tread, decomposed granite, etc.)
- Sport Court tiles and ground art decrease heat of remaining asphalt
- Solar Installation shade structures are being added in the near future (2026-27)

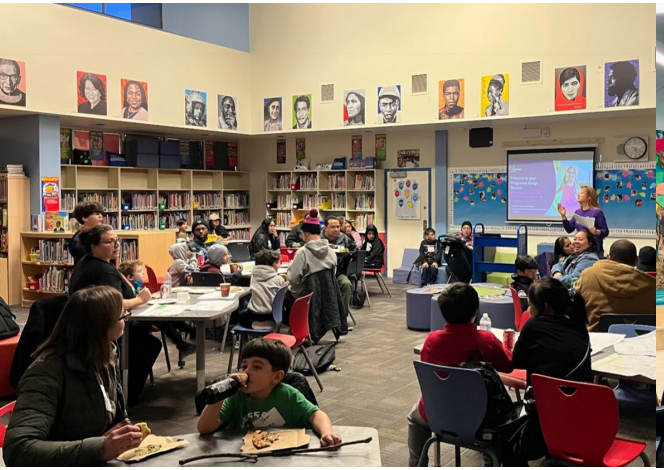
Districtwide Living Schoolyards Projects: 30+



Districtwide Trees Planted : 700+



Interior Heat Mitigation Efforts



CalSHAPE CO2 and Temp Classroom Sensors

CO2 and temperature sensors are being deployed Districtwide:

- To date, installed in 33 schools lacrosse district
- District-wide deployed completed by July

Benefits of the sensors

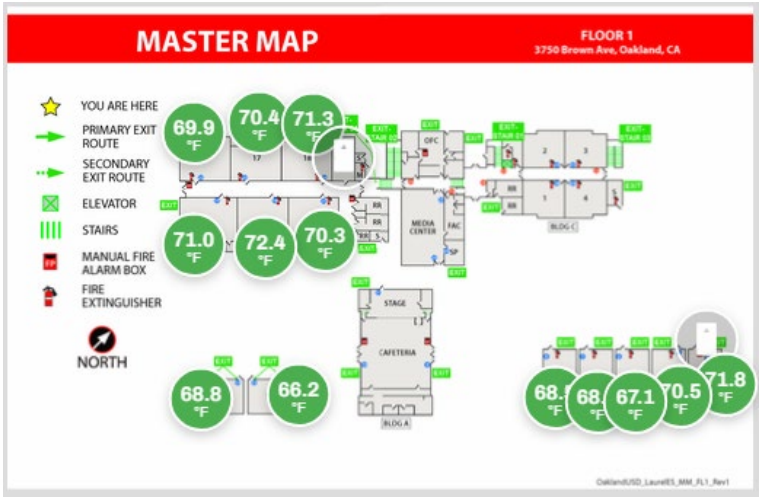
- Enables classroom-level visibility
- Will identify highest-need spaces based on classroom conditions
- Supports targeted, cost-effective interventions rather than one-size-fits-all solutions

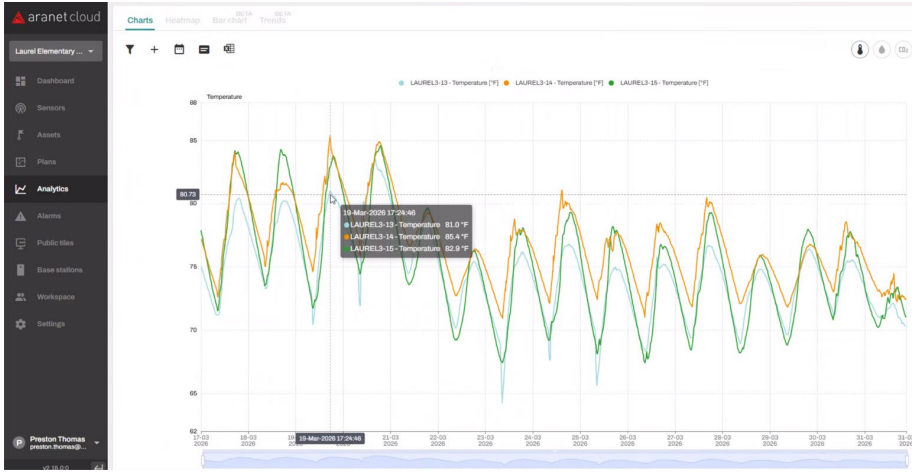
How this data informs our heat mitigation approach

- Guide mitigation strategy deployments based on highest needs
- Inform long-term investments (HVAC, building upgrades)

CalSHAPE Sensors in Action

- Displays temperature data every 15 minutes
- Tracks individual classrooms
  - Allows us to identify rooms/schools with the hottest temperatures





Equity Centered Working Rubric - Summer 2026

Criteria	Impacted (4)	Affected (3)	Moderate (2)	Lower (1)
1. Student Groups	**PK-2**	**3-5**	**6-8**	**9-12**
2. Equity Frame # of UPP + Special Education/Enrollment	**>90%**	**89%-55%**	**54%-35%**	**<34%**
3. Sun Exposure	Direct sun ≥ 8 hrs OR peak afternoon exposure (west facing)	6–8 hrs sun exposure (south facing)	4–6 hrs sun exposure (east facing)	Limited or shaded < 4 hrs (north facing)
4. Heat Severity Index (Site-Level) and Heat Exposure Shift	High heat zone (top quartile districtwide) AND High Heat Retainment	Moderate-high heat zone AND moderate heat retainment	Moderate heat zone OR Moderate heat retainment	Lower heat exposure zone and/or low heat retainment
5. Classroom Location	2nd & 3rd floor	1st floor classroom	Interior classroom / partial exposure	Portable, shaded or protected
6. Classroom Usage	Full Day	80% to 60%	Partial Day (40-60%)	>40%, After School Only, Pull out or admin space

Equity Centered Working Rubric - 2027

Once CalSHAPE temperature data is available at 83 sites

Criteria	Impacted (4)	Affected (3)	Moderate (2)	Lower (1)
1. Student Groups	PK-2 Elementary SDC Medically Fragile Programs	3-5 Middle SDC	6-8 High School SDC	9-12
2. Equity Frame # of UPP + Special Education/Enrollment	>90%	89%-55%	55%-35%	<34%
3. Indoor Temperature (CalSHAPE Data) • South-Facing Classrooms • Floor	≥ 85°F for ≥ 3 hrs/day OR frequent spikes above comfort range	80–84°F for sustained periods	75–79°F occasionally elevated	< 75°F consistently
4. Classroom Usage	Full Day	80% to 60%	Partial Day (40-60%)	>40%, After School Only, Pull out or admin space

Heat Mitigation Strategies - Proposed

$8M allocated in Draw 3 of Measure Y Spending Plan to Air Quality and Heat Mitigation (May 2026)

What We're Learning & How It Shapes Our Approach

What the Data is Showing

- Classroom **conditions vary significantly** across sites, buildings, and time of day
- Some classrooms **consistently experience** higher heat exposure
- **Passive strategies alone are not sufficient** in all cases
- A one-size-fits-all solution will **not meet districtwide needs**

How This Informs Our Strategy

- **Data-informed:** Using temperature, building, and site data to guide decisions
- **Equity-centered:** Prioritizing highest-need students and most impacted schools
- **Targeted & tiered:** Matching solutions to classroom conditions and severity
- **Scalable & sustainable:** Balancing immediate impact with long-term feasibility, cost, and maintenance

Planned Strategies for Heat Mitigation-Tier 1

Tiers	Strategy	Scope of Work	Scale	Estimated Costs	Considerations
Tier 1 - Immediate, Low Cost, Primarily Passive Strategies	Low-cost, low complexity, scalable (potential for additional pilots)	**Window Films:** Install at sites without major capital projects; proven reduction in indoor temps by ~5–10°F, lowers cooling costs	Districtwide	$	Not applicable to Fire Rated windows
		Tree Planting, Living School Yards and Plantings on South Facing Walls: Increasing Green Space and Canopy cover on campuses to provide natural shade and evaporative cooling	Districtwide - where feasible	$	Design, asphalt removal
		Reflective Blinds: Replace outdated blinds or add where none exist (pending further assessment data)	Districtwide - where feasible	$$	Existing blind condition and effectiveness
		Reflective Roof Coating ("cool roofs"): White or reflective coatings on roofs to reduce heat gain building-wide	Districtwide	$	Accessibility, Roof Shape
		Exterior Shade Screens: Overhangs or canopies over windows	Districtwide - where feasible	$$	Classroom location, construction feasibility

Note: Estimated costs subject to change, assessed during procurement and design process.

Planned Strategies for Heat Mitigation-Tier 2

Tiers	Strategy	Scope of Work	Scale	Estimated Costs	Considerations
Tier 2 - Immediate, Active or Complex Systems	**Moderate complexity; focussed investments** based on need and feasibility	**Cooling Rooms** : Install at sites lacking at least one room with cooling; focus on elementary populations, first Focus on front office and libraries	Districtwide	$$	Electrical capacity, structural integrity (if infrastructure is through roof)
		Ceiling Fans: In priority classrooms and cooling rooms	Highest Priority Sites	$$	Electrical/structural capacity/integrity (ex)
		Targeted Portable Heat Pump HVAC Systems (full electrification)	Pilot - Hottest Classrooms	$$$	Electrical capacity
		Classroom Night Flushing Systems: Fans in windows/wall vents to assist replacement of hot air with cool air in indoor spaces	2nd or 3rd story classrooms without A/C	$$	Security, pest management, responsible party
		Solar Turbine Roof Fans: Install on rooftops to extract hot air from attic/plenum spaces	Where feasible	TBD	Electrical and roof capacity/integrity
		Exterior Shade Window Coverings (as feasible)	Districtwide - where feasible	$$$	Complex/Scalable

Note: Estimated costs subject to change, assessed during procurement and design process.

Planned Strategies for Heat Mitigation-Tier 3

Tiers	Strategy	Scope of Work	Scale	Estimated Costs
Tier 3 **Long-Term Investments**	**High Complexity, High Cost,** Active Cooling and Overhall of Building Systems	**Comprehensive HVAC Upgrades & Building Envelope Improvements:** Comprehensive modernization including ventilation, cooling systems, and insulation.	HVAC and Building Envelope	$9-12M per site
		Incorporated in Major Modernization Projects Garfield, McClymonds, Roosevelt, Melrose (MLA), Fremont, CCPA	**231 classrooms (11% of Classes)**	$32 M Committed Measure Y
		Chillers to Ventilation System: A centralized system that uses chilled water to cool air distributed through existing ventilation, efficiently serving multiple classrooms or buildings.	Site by Site Increased Electrical Costs	$800K – $1.8M per site
		Evaporative Coils and Condenser to Existing Units: A retrofit that adds cooling to existing systems using coils and condensers, providing improved comfort at a lower cost and faster timeline.	Site by Site Increased Electrical Costs	$2M – $4M per site
		Individual Packaged Units (Floor-Mounted): Standalone classroom units that provide immediate heating and cooling but require electrical upgrades to support increased power demand.	Site by Site Increased Electrical Costs	$1.8M to $4.0M per school

Note: Estimated costs subject to change, assessed during procurement and design process.

Immediate Next Steps (Beginning Summer 2026) - Phase 1

In addition to major modernization projects, tree planting and living schoolyard expansion :

1. **Install Outdoor Temperature Sensors at all School**
2. **Near-term upgrades: Reflective window films prioritizing 2nd story buildings**
    - 2nd story, Elementary Schools
        - Tier 1 Targeted Universalism: Horace Mann, Fruitvale, Markham, Lockwood Steam, Webster/East Oakland PRIDE, Whittier/Greenleaf, Lincoln, Franklin, Allendale, Sankofa, Burckhalter, Piedmont, Hoover, Reach Academy
        - Tier 2: Sequoia, Laurel, Redwood Heights, Bella Vista, Montclair, Cleveland, Chabot, Glenview, Crocker, and Maxwell
        - Tier 3: All single story elementary schools
    - 2nd Story, Middle Schools
        - Tier 1 Targeted Universalism: Frick, CCPA, Life Academy, and Elmhurst.
        - Tier 2: Edna Brewer, Claremont
1. **Cool Roof Applications (Assessment Underway)**

Immediate Next Steps (Beginning Summer 2026) - Phase 2

In addition to major modernization projects, tree planting and living schoolyard expansion :

Summer 2026

1. **Ensure all elementary schools without A/C will have a cooling room on campus**
2. **Launch Tier 1 and 2 Pilots :**
    - Solar Turbine Roof Fans where feasible (3 sites)
    - Pilot Night Flush Ventilation Systems in 2nd Story Building
    - Exterior Shade Screens (2nd Story Window)
    - Reflective Blinds (2nd Story Window)

2026--27 Requires contracting and bidding that will not meet board deadlines

1. Individual Site Assessments Based on Sensor Data
2. Ceiling Fans
3. Portable Heat Pump HVAC Systems in Our Hottest Classrooms

Heat Mitigation - Funding Strategies

- **$8M in Measure Y (May 2026)**
- **Potential Gaps in Funding**
  - *Based on district financial status, the General Fund (01) may not be able to cover fans and other non-capital expenditures such as portable AC unites and floor fans.*
- **External Funding Opportunities**

Pursuing Upcoming Grant Opportunities

Wildfire Smoke Prevention Grant - EPA (Actively Applying)

- $1.8M to fund indoor air quality monitoring, reporting, and mitigations
- Will be able to help fund necessary HVAC upgrades and further emergency response planning efforts

Extreme Heat Community Resilience Program (EHCRP) - CA Governor's Office (Planning to Apply Once Released, Est. May 2026)

- Up to $4M to fund indoor and outdoor heat mitigation strategies throughout district
- Leverages and expands current heat mitigation efforts

Next Steps

Heat Mitigation Implementation Roadmap

NOW (Spring 2026) – Build the Foundation

- Complete sensor deployment including outdoor sensors and apply equity rubric to identify highest-need classrooms
- Begin Bid and Contracting Process for Implementation in Summer 2026 to address heat issues in 2nd story elementary schools

SUMMER 2026 – Immediate Action

- Deploy targeted cooling solutions and pilot strategies across elementary schools
- Develop site training and standardized heat response protocols in partnership with Risk Management and Network Team

2026–27 SCHOOL YEAR – Analysis and Planning

- Report out findings to Facilities Committee and community.
- Establish formal Working Group to inform District Strategy.
- Monitor data and identify effective strategies to apply to additional high-need sites as defined by sensor data and equity rubric
- Advance design standards, specifications, and procurement for expansion of Tier 1 and Tier 2 strategies

LONG-TERM (2027 and Beyond) – System Transformation

- Bring forward a formal Districtwide Heat Mitigation & Cooling Plan in 2027


KABOOM
Thank you!
Thank you everybody

Any Questions?

For more information, please reach out:

Preston Thomas, OUSD Chief of Systems & Services
Pranita Ranbhise, OUSD Director, Facilities Planning & Management
JaQuan Cornish, Project Manager, Facilities Planning & Management
Hannah Press, Sustainability & Energy Efficiency, Facilities Planning & Management
Olivia Boitano,Sustainability & Energy Efficiency, Facilities Planning & Management

Appendix

OAKLAND UNIFIED SCHOOL DISTRICT

Community Schools, Thriving Students

Overview of District Actions

Interior Efforts - Addressing Infrastructure Challenges

- The district has significant challenges/opportunities to bring buildings up to modern standards.
  - Insufficient electrical capacity, large and extensive investments, ductwork, etc. Requires major renovations and facility upgrades to solve

- **Current Major Modernization Projects:** 231 classrooms + active systems (Garfield, McClymonds, Roosevelt, Melrose (MLA), Fremont, CCPA
- **Other Projects**:
  - **Energy Efficiency Audit:** Identified upgrades opportunities include: HVAC, LED lighting, building envelope improvements, and window replacements.
    - Upgrading the building envelope will increase the effectiveness of implemented heat mitigation strategies.
  - **Electric Water Heater Replacement :** Contributes to building efficiency upgrades
  - **CalSHAPE Sensors :** Tracks CO2 and Temperature → Informs where intervention is needed

These projects are designed to be funded through energy savings, creating a self-sustaining model that accelerates infrastructure improvements.

Projects Overview: Alignment to OUSD Policies

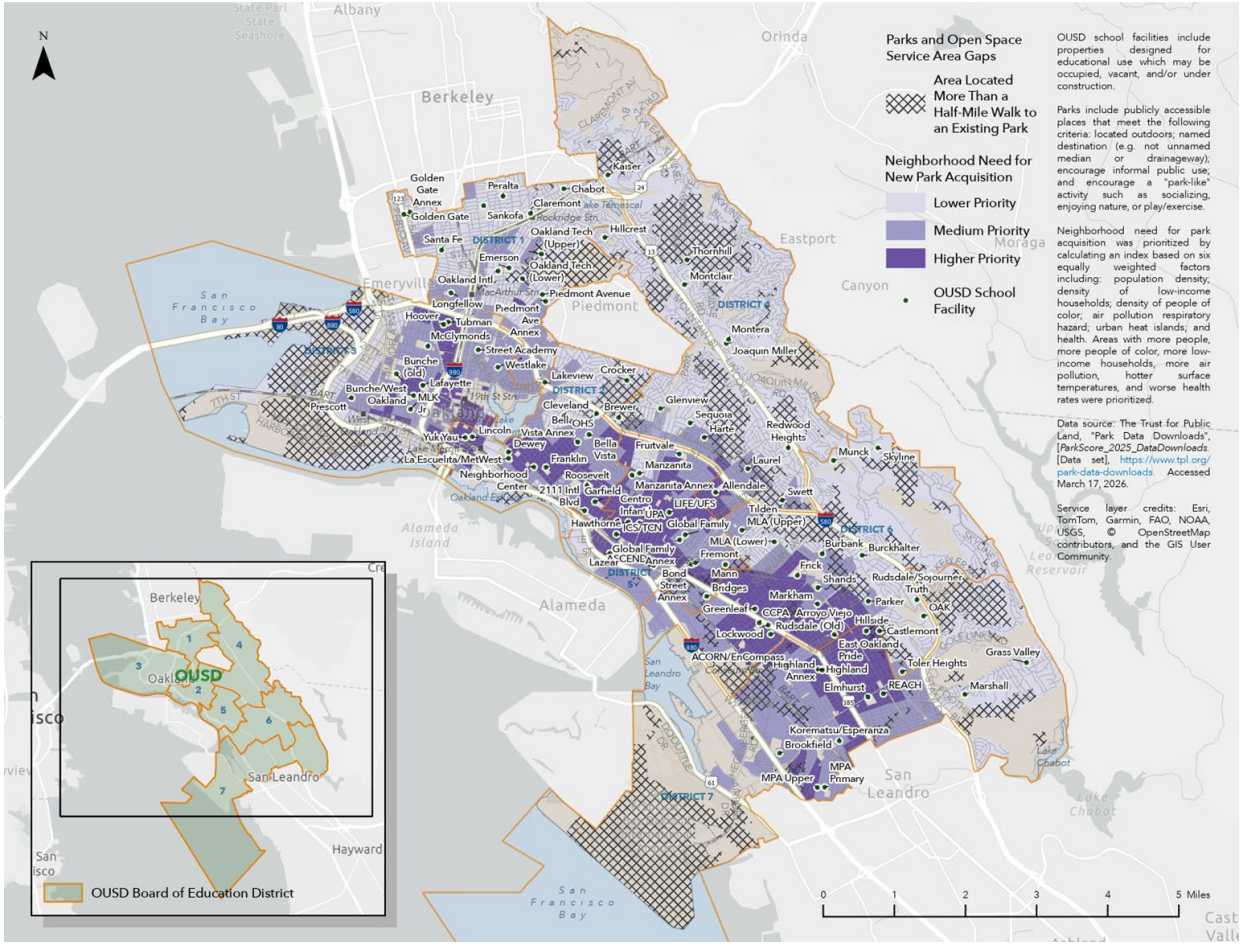
Policy Alignment	Project	Outcome (Heat Reduction)
Sustainability Policy: Energy Efficiency & Electrification	1. Districtwide Energy Efficiency Investment Grade Audit 2. Water Heater Replacement Projects	1. Districtwide proposed various energy efficiency infrastructure upgrades 2. 65 schools converting gas to electric water heater systems, reducing fossil fuel usage throughout District
Sustainability Policy: Renewable Energy & Resilience	1. Solar Phases 1–2 2. Battery Backup Systems 3. Renewable Energy Procurement Contract	1. 29 school sites; 4.7 MW, some solar shade structures. 2. 2 schools, resiliency against outages. 3. Districtwide renewable power supply
Sustainability Policy: Facilities (Air Quality, Heat, and Ventilation)	1. HVAC Assessments, Calshape CO2/Temp Sensors 2. Heat mitigation site condition assessments	1. 70+ schools assessed and monitored 2. Districtwide building envelope, ventilation, electrical analysis
Sustainability Policy: Living Schoolyards	1. Tree Planting, Asphalt Removing, Shade Structure Projects, Expansion of Green Spaced	1. 30+ projects 2. Green Spaces absorb heat and provide cooling
Facilities Master Plan	1. Building health and assessments 2. Student and Site Demographics 3. Ventilation assessments	1. District-wide evaluation 2. Informs approach for prioritization and tiering

Passive Strategies - Approach for Near Term Action

Data Collection	Identify High Need Sites	Implement Mitigation Strategies
• Building characteristics (age, envelope, insulation, windows) • Ventilation and cooling conditions (A/C, fans, airflow) • Site conditions (heat exposure, roof exposure, shading, heat island) • Indoor sensor data (e.g., CO2 and temperature monitors	• Prioritize vulnerable populations (youngest) • Identify classrooms without adequate cooling or ventilation • Flag buildings with highest heat exposure and indoor temperatures • Apply equity lens (geographic distribution)	• Deploy near-term solutions • Tailor strategies to site-specific conditions • Focus on actions that can be implemented before next school year • Document findings to inform long-term HVAC and capital upgrades

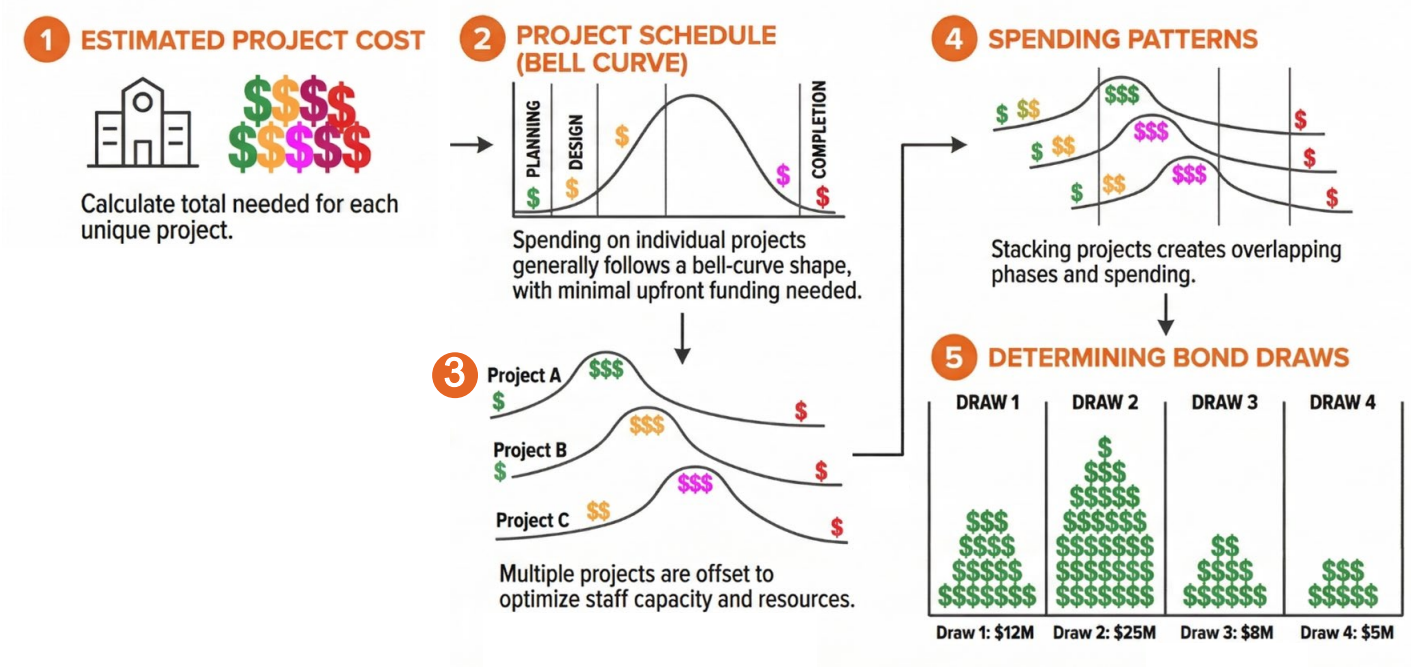
Oakland Access to Parks & Open Space Service Area Gaps

- Map shows need for park access across the city



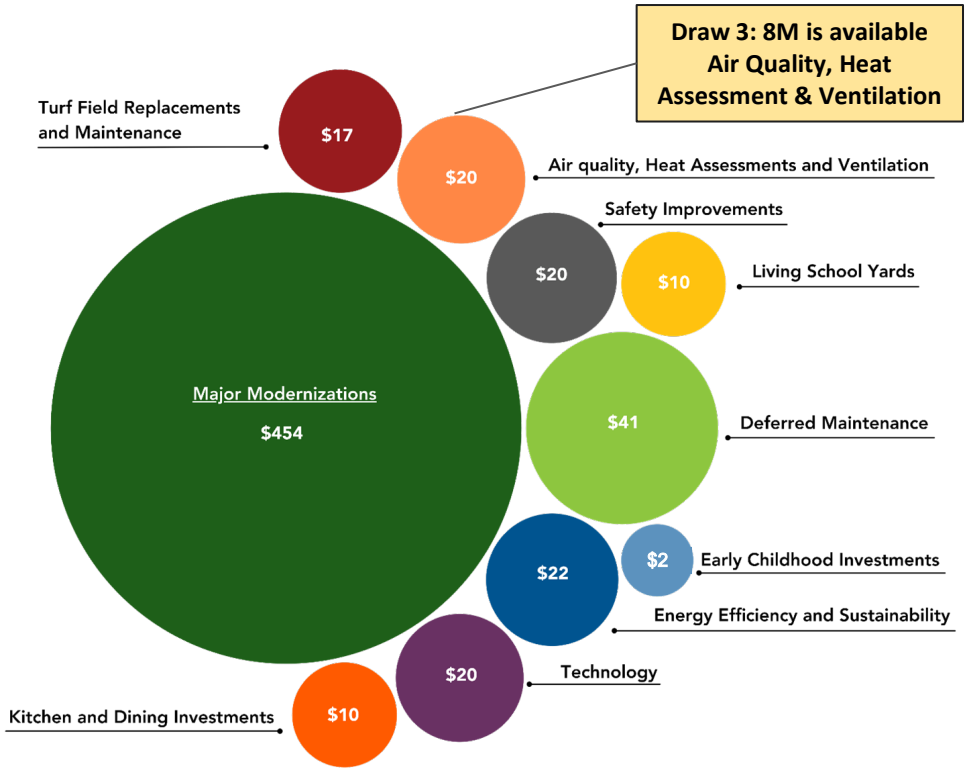
Bond Cycle and Next Draw for Heat Mitigation

$8M for heat mitigation in Bond Draw 3



Major Initiatives Within the Bond Program (in Millions)

- These priorities were identified through the 2020 Facilities Master Plan, Measure Y Development, and Implemented through the Spending Plan.
- Measure Y has a **$60M Contingency** that is holding to cover escalation costs in the Major Modernizations.
- Once we hit the 4th Draw and the major projects are further along, we will use the new prioritization to guide remaining contingency funds.



Notes:

1. Budget investments as of February 2025.
2. All values in Millions of Dollars, rounded down to the nearest whole number.
3. Early Childhood Investments is funded by Measure AA.