

Capital Improvement Program Environmental Sustainability Update

Board of Education – April 27, 2022 Emile Lauzzana, Executive Director, Capital Projects

Review Bond Commitments



Thank You, Ann Arbor Community!

2019 BOND PREPARING FOR THE FUTURE

TEACHING & LEARNING

Continue the Tradition of Academic Excellence

SUSTAINABLE & ENVIRONMENTALLY RESPONSIBLE INFRASTRUCTURE

Create Resilient Schools for Climate Change

SAFETY, HEALTH & WELLBEING

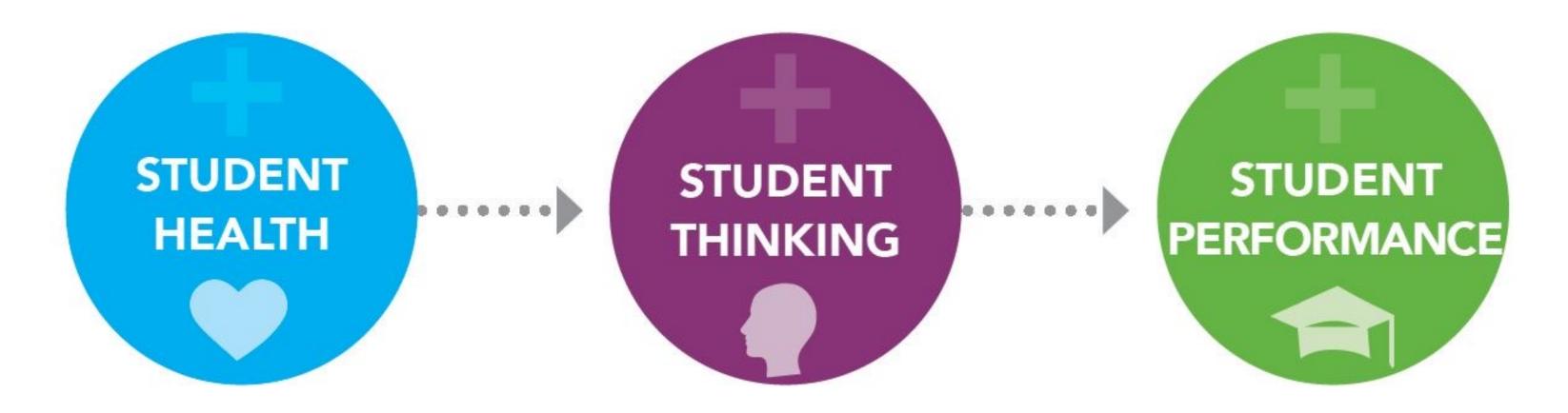
Focus on Development of the Whole Child

EFFICIENT & EFFECTIVE SUPPORT SYSTEMS & SERVICES

Continue Technology &
Transportation Replacement and
Renewal

Human Centric Design

Connection Between Health and Performance



Forhealth.org

Human Centric Design

Environmental Factors Influencing Student Outcomes



AAPS Board Policy 8000: Environmental Sustainability

- Adopted 12/12/2018

The Ann Arbor Public Schools recognizes that:

- Climate change is real, increasing, and caused by human activity; and
- the Ann Arbor community is committed to practices that support a healthy environment for present and future generations; and
- the District has a responsibility to help prepare current and future generations to respond to climate change through the reduction of harmful human activities, the promotion of human activities that restore the environment, and the development of strategies to adapt to climate change.

The District will support the prioritization of:

- **Environmental sustainability education** that prepares present and future generations to become thoughtful stewards of the environment; and
 - developing <u>student leaders</u> prepared to succeed in an uncertain climate change future; and
- maintaining and operating <u>district buildings and grounds</u> that reduce the environmental impact of human activities, promote the restoration of the environment, and adapt to climate change; and
- building and enhancing **partnerships** that support the Ann Arbor community's environmental principles.

The Superintendent and/or designee(s) will report annually to the Board of Education on activities related to this policy.

Recent and Ongoing Sustainability Efforts

Operation and Maintenance

- Optimized Filtration and Ventilation
- Continued water quality testing and remediation program
- New enhanced ventilation mode for the building automation system
- District-wide recycling infrastructure improvements EGLE Grant
- Targeted no-mow areas Freeman Environmental Education Center
- Updated building automation system; DTE rebate program*
- High performance lighting replacements; DTE rebate program*
- Retro-commissioning efforts; DTE rebate program*

*Over \$389,000 in rebates for energy efficiency efforts from DTE Energy

Recent and Ongoing Sustainability Efforts

Project Highlight:

District-wide recycling infrastructure improvements – EGLE Grant

- 2,500 classroom recycling baskets
- 400 double recycling/trash containers
- 5,000 recycling education posters

Goals:

- 30% solid waste diversion rate
- Continue recycling education efforts
- Support increased residential recycling thru education efforts



Recent and Ongoing Sustainability Efforts **Electric Bus Pilot Program**

Electric Bus Pilot Program:

- All four electric buses in service
 - ✓ Logged over 10,000 combined service miles
 - Tracking performance through software tool; reporting results to EGLE
 - Many lessons learned; Thomas Built, Hoekstra, Proterra and DTE all involved in corrective actions and issues
- DTE/Proterra working on deploying **Vehicle** to Grid/Vehicle to Building capacity



Proterra Charging Equipment



New Electric School Bus – fossil fuel free

Recent and Ongoing Sustainability Efforts

Additional Completed to date

- Synthetic Turf Fields organic infill; enhanced recycling
 - Skyline, Huron, Pioneer
- Shade Tree planting program
 - Planted over 500 native hardwood trees
- Stormwater improvements / paving program
 - Pioneer HS
 - Scarlett MS
 - Mitchell Elementary
 - Carpenter Elementary
- Natural play area @ AA Open
- Freeman improvements
 - Demonstration floors and high efficiency LEDs
 - Summer 2022 enhanced outdoor learning area



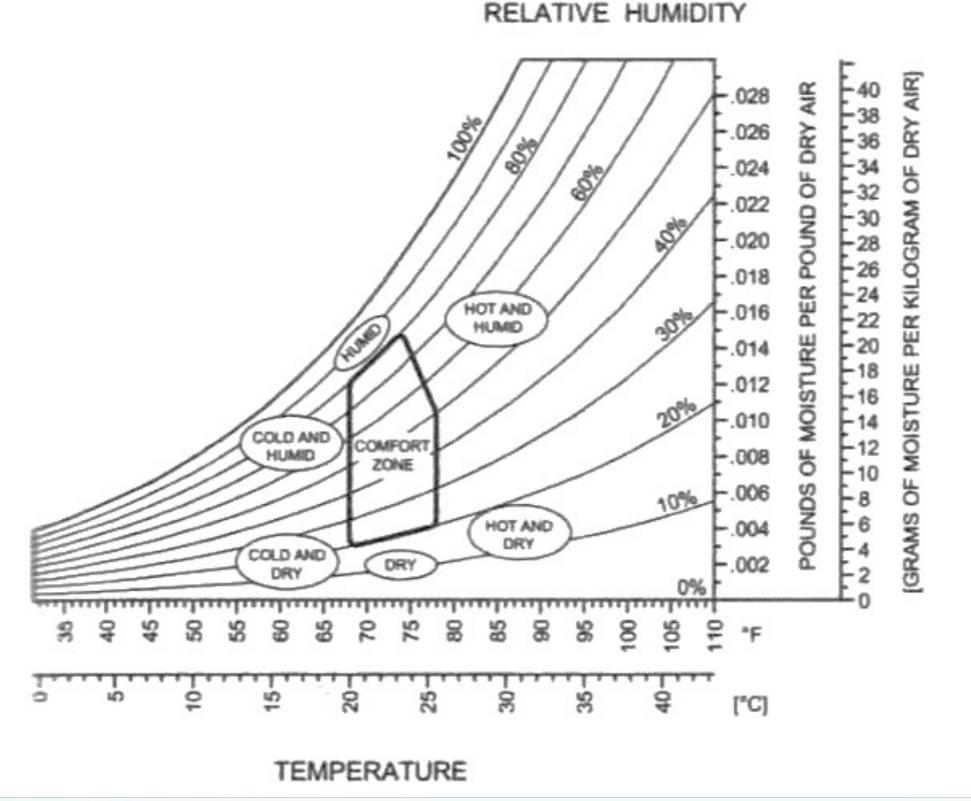
Pioneer High School public space



Pioneer High School stormwater feature

Benefits of Optimized Thermal Environments

- A reasonable and constant temperature and humidity has been shown to positively impact student health and learning and teacher wellbeing
- Research continues to emphasize linkages between thermal comfort and performance



Air Conditioning Update

Air Conditioning Program Schedule

School Year	Square Footage with A/C *	Percentage of SF with A/C	Number of Schools with A/C
Fall 2020	1,579,990	45.7%	
Fall 2021	1,813,035	52.4%	14
Fall 2022	2,464,615	71.3%	24
Fall 2023	3,156,987	91.3%	30
Fall 2024	3,457,874	100.0%	32

*Does not include miscellaneous spaces in buildings without classroom A/C



Air Conditioning Update

School	Status	Completion Date			
Angell Elementary	Awaiting Electrical Service Upgrade Conversion	Summer 2022			
Burns Park Elementary	Awaiting Electrical Service Upgrade Conversion	Summer 2022			
Carpenter Elementary	Awaiting Electrical Service Upgrade Conversion	Summer 2022			
Dicken Elementary	Completed	Summer 2021			
Lakewood Elementary	Completed	Summer 2021			
Mitchell Elementary	Completed	Summer 2021			
Community High School	Third Floor Completed	Fall 2022			
Scarlett Middle School	In Process	Fall 2022			
Tappan Middle School	In Process	Fall 2022			
	STARTING SUMMER 2022				
Bach Elementary		Summer 2023			
Eberwhite Elementary		Summer 2023			
Pittsfield Elementary		Summer 2023			
Wines Elementary		Summer 2023			
Clague Middle School		Fall 2024			
Forsythe Middle School		Fall 2024			

Classroom Window Shades Replacement - Old Shades







Classroom Window Shades Replacement - New Shades

Schools with window shade replacements completed:

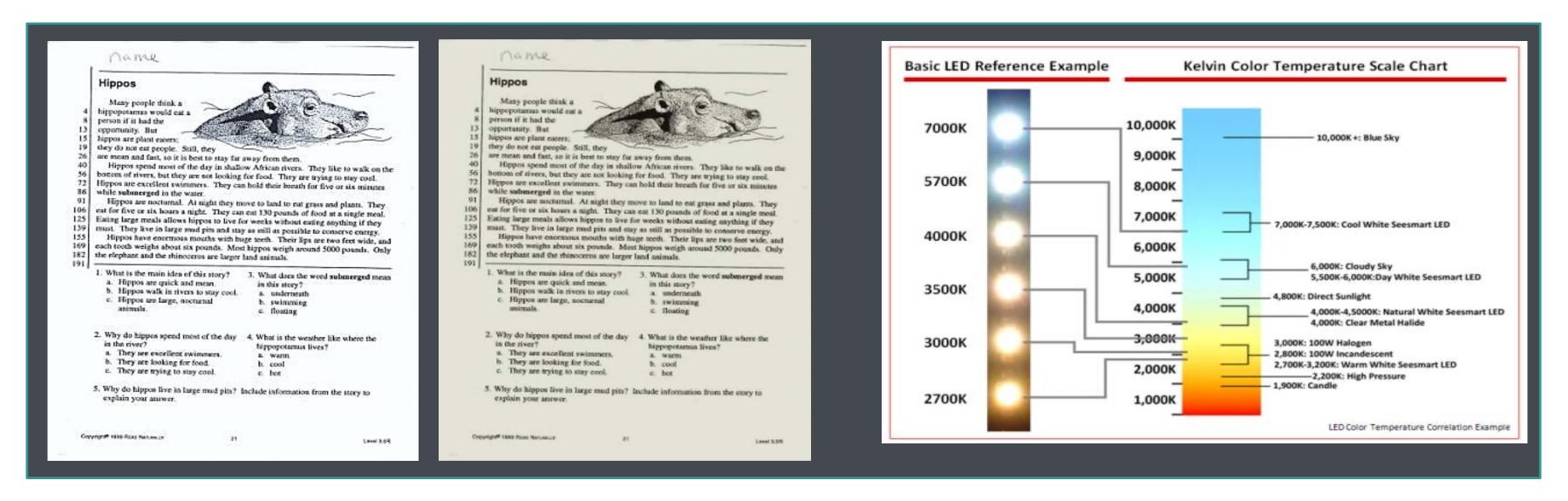
- Angell Elementary
- Burns Park Elementary
- Carpenter Elementary
- Dicken Elementary
- Lakewood Elementary
- Mitchell Elementary

Schools in progress with window shade replacements:

- Community High School
- Scarlett Middle School
- Tappan Middle School



Benefits of Enhanced Lighting Environments



- Recognized relationship between higher student performance and presence of daylight and views (Boyce et al., 2003)
- Optimized lighting environments led to as much as **21% increase in** student learning rates (Gordon, 2010)

Classroom and Hallway Energy Efficient LED Lighting and Ceiling Replacements

Schools with lighting and ceiling upgrades completed:

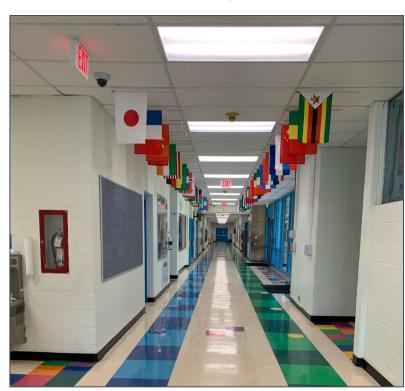
- Angell Elementary
- Burns Park Elementary
- Carpenter Elementary
- Dicken Elementary
- Lakewood Elementary
- Mitchell Elementary

Schools in progress with lighting and ceiling upgrades:

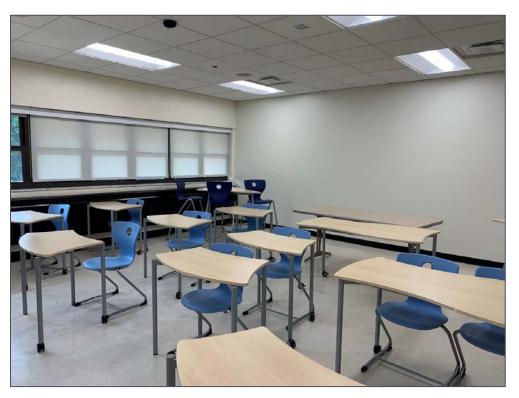
- Community High School
- Scarlett Middle School
- Tappan Middle School



- Burns Park Elementary



- Lakewood Elementary



- Tappan Middle School



Community High School

Rooftop Solar Arrays

Completed:

- Pattengill Elementary (100 kW) 2020
- Haisley Elementary (133 kW) 2021
- A2 STEAM @ Northside (150 kW) 2021
- Forsythe Middle School (150 kW) 2021
- Huron High School (133 kW) 2021

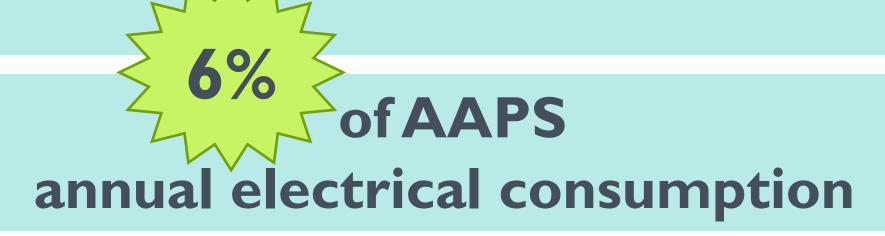
Contracts Awarded:

- Bryant Elementary (150 kW) 2022
- Pioneer HS (150 kW) 2022
- Westerman Preschool (150 kW) 2022

1.12 MW (AC output) of rooftop solar

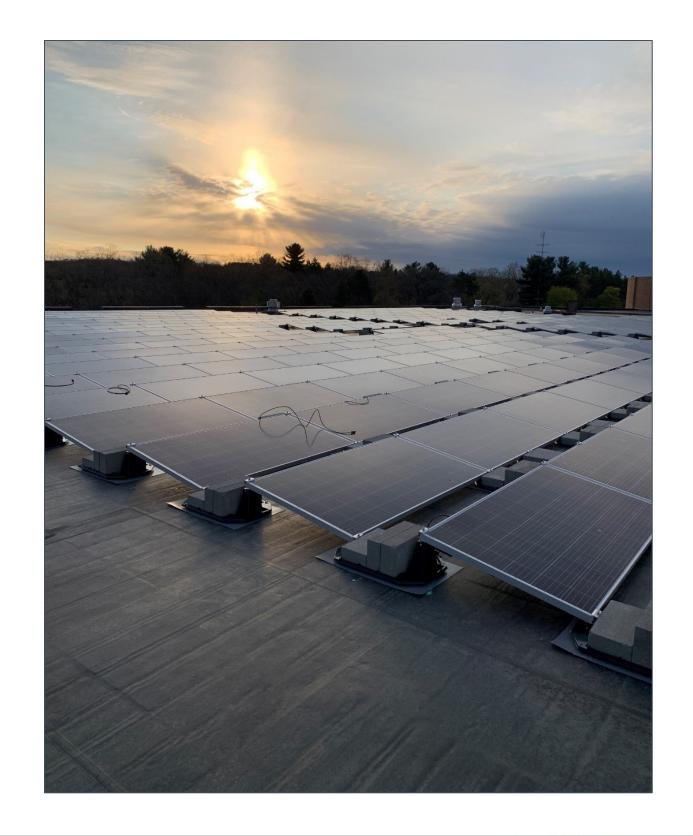
In 2022 will be equivalent to offsetting carbon of:

- 2,900,000 miles driven by cars; or
- 1,280,000 pounds of coal burned; or
- 212 homes annual electricity usage



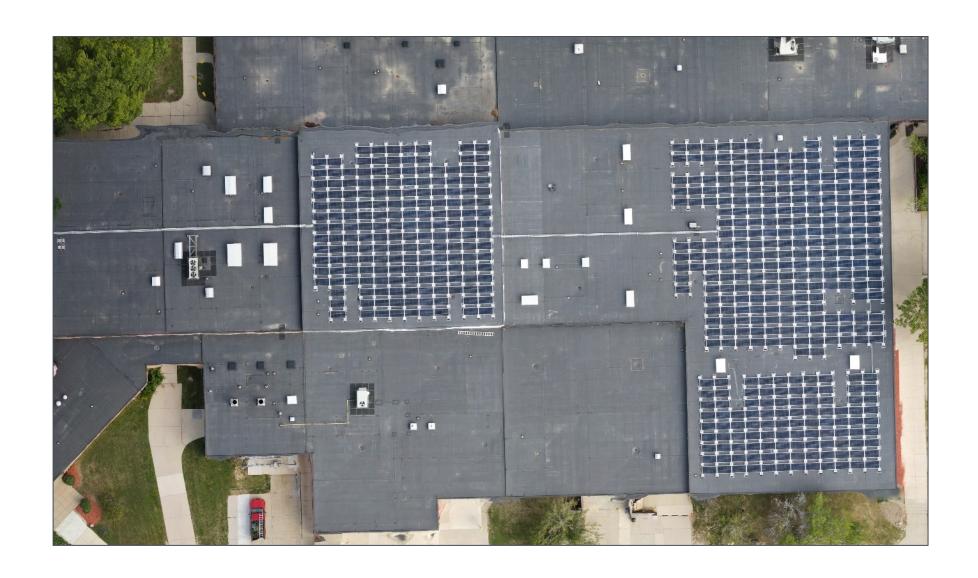
Annual Savings of \$180,000/year

Huron High School - Solar





Forsythe Middle School - Solar

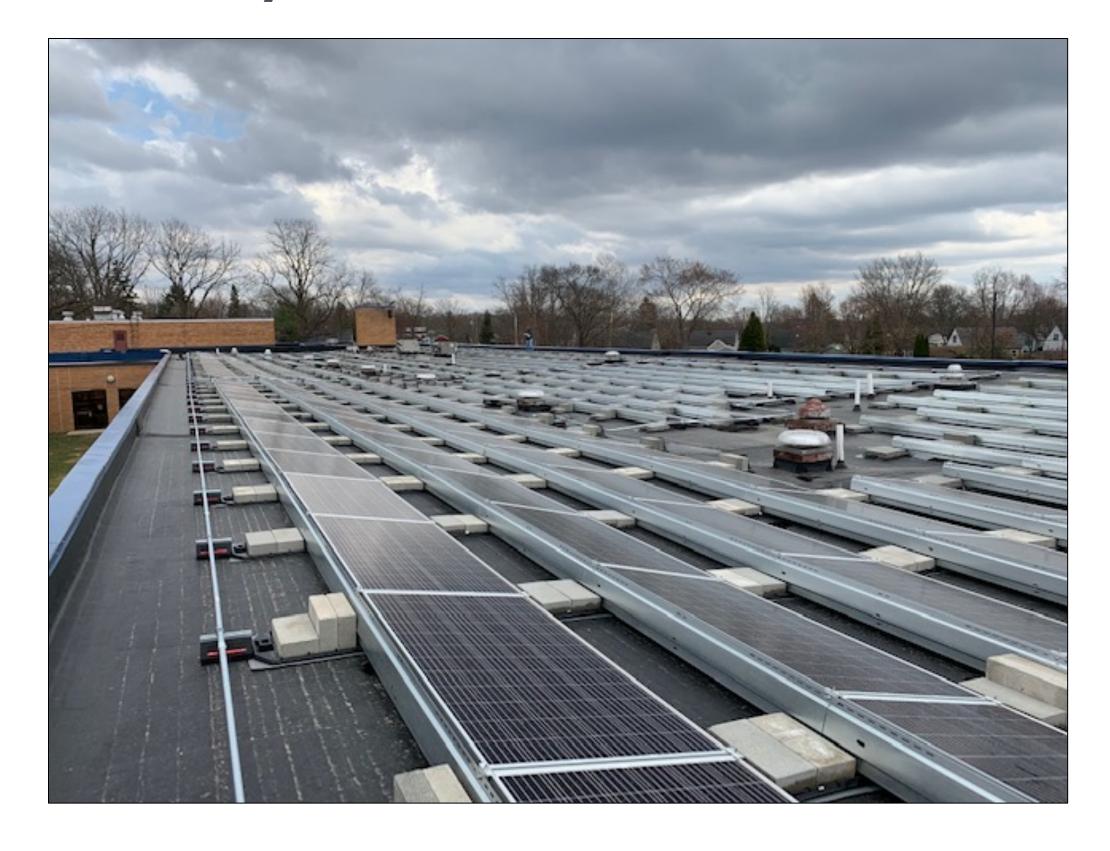




A2 STEAM - Solar



Haisley Elementary - Solar



Recent and Ongoing Sustainability Efforts Site Improvements – Low Embodied Carbon

Lower Carbon Impact Paving and Site Improvements Initiatives:

Recycled Asphalt Base Material

- ✓ Dicken ES and Allen ES sites
- Increased recycled content in pavement; meets MDOT specification

Low Carbon Concrete Pilot

- ✓ Dicken ES and Allen ES sites
- Reduces use of Portland Cement in sidewalks/concrete; meets MDOT specification

Low Embodied Materials Task Force

Participation in local group of institutions, businesses, manufacturers, engineers



Allen ES site improvements

Recent and Ongoing Sustainability Efforts

A/C Lighting Projects - C&D Recycling

Material Recovery and Construction and Demolition Debris Recycling:

- Over 110 tons of Steel recycled at seven project locations
 - Recycling scrap steel uses 75% less energy that energy used to process iron ore (virgin steel)
- Over 40 pallets (one semi trailer) or 160 cubic feet of acoustic ceiling tiles recycled
 - Participated in a pilot effort to recover ceiling tiles through Armstrong Worldwide Industries





Palletized acoustic ceiling tiles - ready for processing

Recent and Ongoing Sustainability Efforts **Geothermal System Planning**

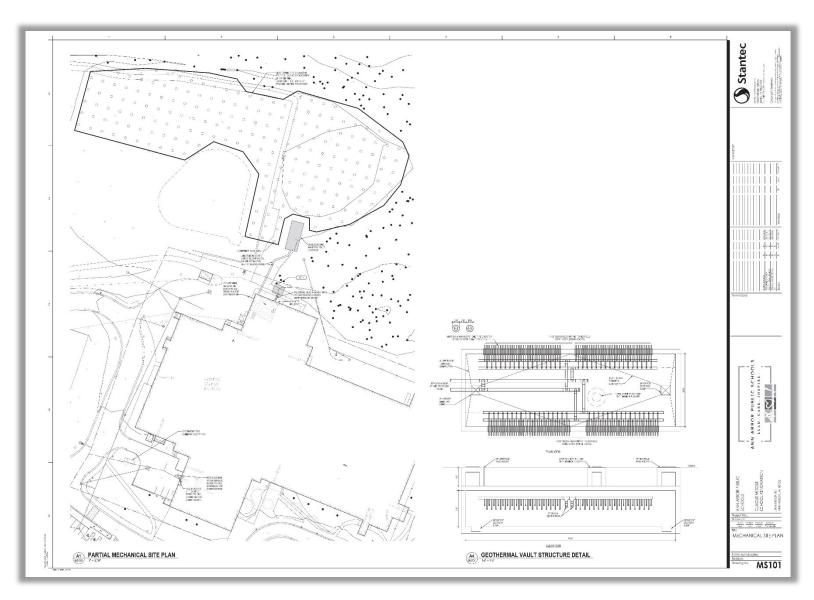
High Efficiency Systems:

Geothermal

- ✓ Clague MS (Phase I 2022)
- Forsythe MS (Phase I -2022)
- Provides significant energy and efficiency to HVAC and hot water systems
- All electric heating and cooling systems with supplemental peak load natural gas backup

Electrification

- ✓ Substantial transition of HVAC system to electric
- ✓ Step forward in advancing longer term carbon neutrality goals



Clague MS - Preliminary Geothermal Site Diagram

Environmental Sustainability in AAPS - Upcoming Outdoor Learning Environments (OLE)

GOAL: Provide exterior capital improvements to support outdoor <u>academic</u> opportunities for students across all elementary/K-8 school campuses with direct ties to instruction

Materials and strategies designed to:

- Support and enhance existing outdoor learning initiatives;
- Create new opportunities for outdoor academic activities;
- *Increase access to nature and the connection to the environment;*
- Promote health and wellness;
- Utilize local, natural, and low carbon materials; and
- Add color and moments of joy to outdoor environments.

The tentative schedule for these projects is as follows:

Summer 2022: A2 STEAM, Abbott, Haisley, Lawton, Thurston and Preschool

Summer 2023: Allen, Bryant, King, Logan, and Pittsfield

Summer 2024: A2 Open, Bach, Eberwhite, Pattengill, and Wines

The following schools will receive OLE enhancements as part of a Major Project in the bond program over the next 5 years: Angell, Burns Park, Carpenter, Lakewood, Mitchell





Environmental Sustainability in AAPS - Upcoming Environmental Sustainability Task Force

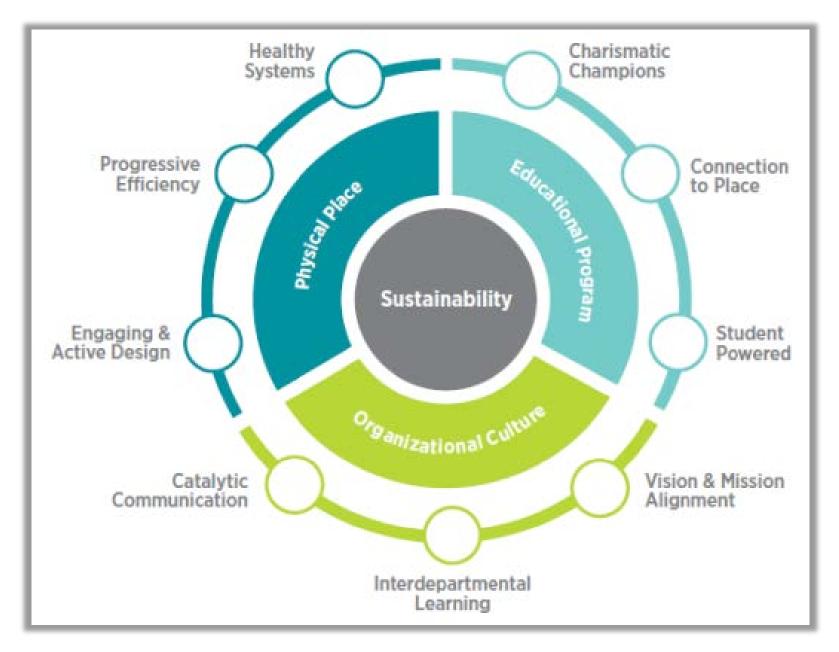
Launched 2021

Focus

Advise the AAPS BOE on a formal sustainability plan that will support achieving the goal of sustainability, guide adjustments in operations, and advise on AAPS capital improvement planning, and other district endeavors related to sustainability

Process

- Monthly meetings
- Five groups/teams preparing case study presentations to share out with the group; will identify bestpractice K-I2 examples to draw from in developing an AAPS Sustainability Management Plan



SAMPLE - Whole School Sustainability Framework

Environmental Sustainability in AAPS - UpcomingDirector of Environmental Sustainability



POSITION TITLE: Director - Environmental Sustainability

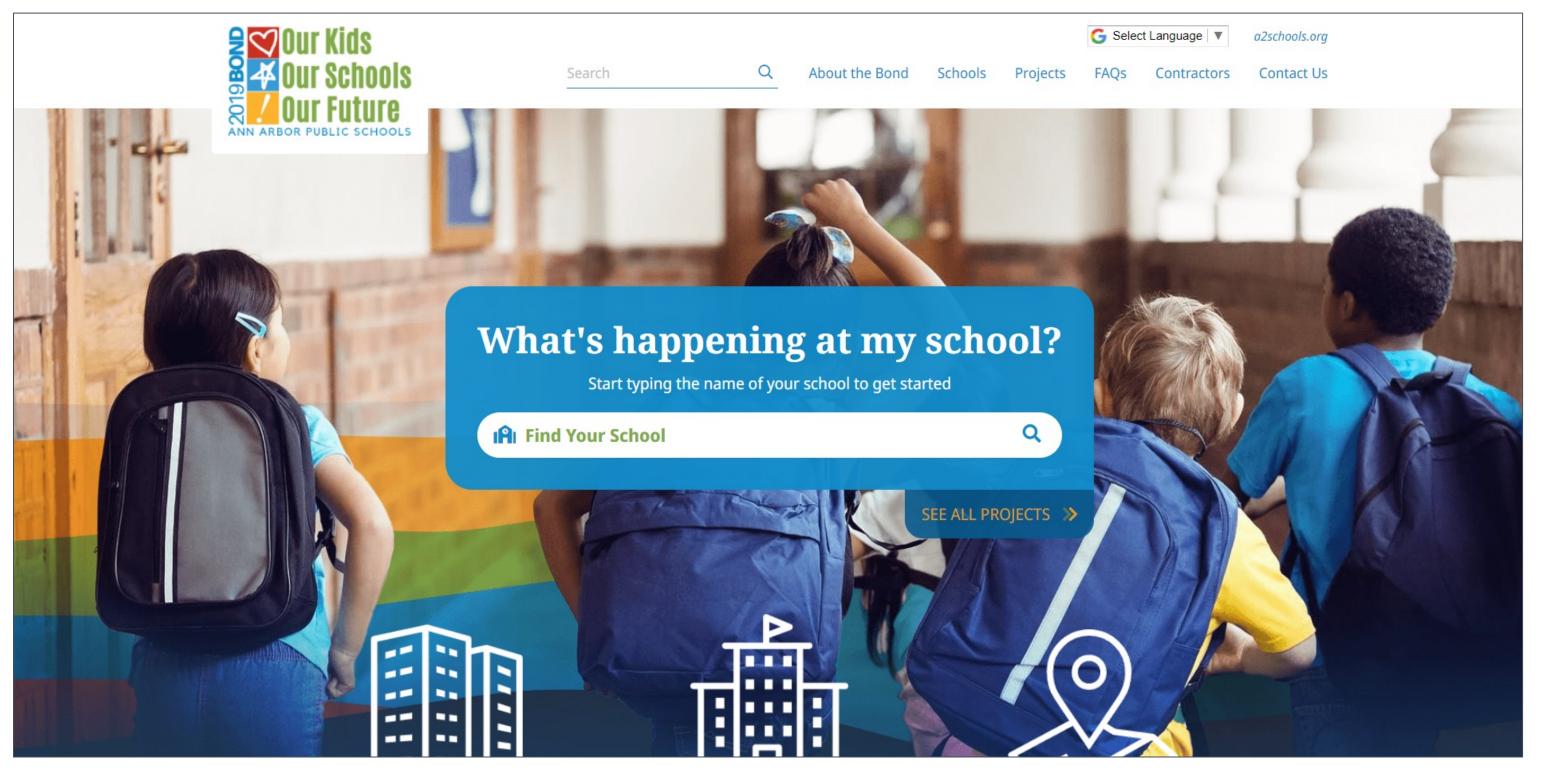
FTE: 1.00

POSITION LOCATION: Balas Administrative Building

POSITION SUMMARY:

Under the direction of Assistant Superintendent, Finance and Operations, directs the development and implementation of a new Ann Arbor Public Schools Environmental Sustainability Management Plan (ESMP) in coordination with the district's Environmental Sustainability Taskforce and in alignment with Board of Education Policy 8000: Environmental Sustainability. Achieves fulfillment and ongoing compliance of the ESMP with aligned implementation and evaluation of sustainability initiatives, education, programs, operations and capital improvements.

Capital Improvement Program - Website Home Page



https://a2schoolsbond.org/



Thank You, Ann Arbor Community!





Environmental Sustainability Task Force Update

Board of Education – April 27, 2022 Emile Lauzzana, Executive Director, Capital Projects

Environmental Sustainability Task Force Purpose

The focus of the AAPS Environmental Sustainability Task Force is to advise the AAPS Board of Education on a formal sustainability plan that will support achieving the goal of environmental sustainability, guide adjustments in operations, and advise on AAPS capital improvement planning, and other district endeavors related to sustainability.

Environmental Sustainability Task ForceRoster

Name	Contact
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Steven Giardini	stevegiardini@hotmail.com
Virginia He	306749@aaps.k12.mi.us

Environmental Sustainability Task ForceTimeline

July 2021
Introductory
Meeting

[Summer Break]

Oct 2021

Second Meeting

- Presentation Environmental
 Sustainability in
 AAPS
- Case Study
 Homework

Dec 2021

Fourth Meeting

- Case study presentations:
 - Seattle Public Schools
 - St. Paul Public Schools
- Case Study Analysis Matrix

Feb 2022

Sixth Meeting

- Case Study
 Highlights/Ranking
- SWOT
- SOAR

Apr 2022

Eighth Meeting

Interviews:
 Director of
 Environmental
 Sustainability

June/beyond

Presentations

- Working Groups
 Focus Areas
- SMARTIE Goal setting



















[Construction Season]

Nov 2021

Third Meeting

- Presentation –GHG Inventory
- Case Study group homework

<u>Jan 2022</u>

Fifth Meeting

- Case Study Presentations:
 - Poudre Public Schools
 - Berkeley Public Schools
 - New South Wales Schools
- Case Study Analysis Matrix

Mar 2022

Seventh Meeting

- SOAR
- Focus Areas
- Working Group Assignments

May 2022

Ninth Meeting

- Working Groups
 Focus Areas
- SMARTIE Goal setting

Environmental Sustainability Task Force ESMP Case Study Analysis Matrix (outline)

	INPUTS Resources			ACTIVITIES Ongoing			OUTPUTS		S	GOALS			VISION			
							5	Annual		Sł	Short/Mid Term			Long Term		
.1		c ability Manag	□ gement Plan - 0	E Case Study F	F Review	G	н	I	J	к	L	M	N	0	P	
Group	MODEL	Approximate Scale Compared to AAPS	Staffing	Student			upport plan development a Governing Board	Non-Profit / Institutional	Other Resources	Categories - Areas of Fc	cu-Curriculum Integrati	ACTIVITIES o Operations	School Level Integration	Other Activities	MODEL School/District	Energy
4	Seattle Public Schools (WA)	Three times	Resource Conservation team currently in place; staff has recommended the addition of a Chief Sustainability Director and Chief Environmental Justice Director	Create network of Green Teams; encourage team communicatio n across schools; program as possible academic	Contracted McLennan Group to catalog current/past sustainability efforts, and to develop/capture aspirations and gools for the future	Capital program commitments - BEX	Resolution 2006/2007 - 18 The Climate Change resolution; Resolution 2012/2013 - 12 The Green Resolution; Policy No 6896 2012 Drinking Water Quality and Access; Policy No 6810 2017 Natural Resource Conservation; Superintende Procedure 6810 SP - Natural Resource Conservation	/) - ent	2019-24 Seattle Public Schools Strategic Plan	Policy; Staffing; Education Equity; Measurement; Buildings + Site	Efforts to integrate sustainability into curriculum; provide ongoing sustainability training; draft a comprehensive sustainability plan notes this resource https://www.energizeschools.org/	Efforts in energy, water	Green Teams, operations programs	Green schoolyard program	Seattle Public Schools (WA)	Carbon F
2	St. Paul Public Schools (MN)	Two times larger	No full-time employees hired to implement the work Building operation and maintenance crew also conduct energy efficiency improvements with the support from local utilities.		A consulting firm was hired to develop the implementation plan to reach zero hunger and zero waste by 2029.		1 district COO, 1 principal, teacher, 5 facilities member 1 parent, 1 MN Green Corp members. Xoel energy and Community Facilitators	5, 5		Waste Recycling and Organics: trash, recyclabl and food waste. Energy action plan: energy convervation, efficiency, a education.	Lesson plans for 5th graders and a Club K		Energy audits, student competitions with results on district website		St. Paul Public Schools (MN)	Reduce emission by 2030
		.5x in terms of enrollment	Full-time Sustainability Program Coordinator; Maintenance Manager heavily involved; Sustainability Teacher Leaders at each site (Small	2018 Summer internship program for HS students to research aspects of SMP; School-based "Green Teams"	A consultant was hired to lead the Sustainability Plan working group, conduct stakeholder meetings and focus groups,	"Shared Savings" program (Savings from energy and waste reduction go back to sustainability programs after paying back the	Board resolutions pertaining		Waste reduction grants; Funding for garden programming through city "Soda Tax"; "Parcel Tax" provides ongoing funding for	Green Buildings & Materi	instruction. District passed a Climate Literacy Resolution in November to develop a climate change curriculum for the district over the next	g services throughout district—all meals are made from scratch with no pre-packaged meals (local & organic as possible). Have dedicated maintenance on staff. Note: City has	Focus has been on waste reduction, particularly in the cafeteria. For example, starting reusable pilot program with stainless steel. Networks of teachers & students at every site to help implement, including Green Teams,	A lot of coordination with local		Achieve

ES TF – Assessment Exercise Case Study Review – Highlighted Items

Meeting #6 – MIRO board in review

CASE STUDY ANALYSIS MATRIX - HIGHLIGHTS
Which Items identified in our breakouts should be elevated?
Which of these items are gaps needing to be addressed at AAPS?

Please take a colored "Dot" or star from below and highlight those items



INPUTS/RESOURCES

- School Green Teams ★ ★ ★★★
- ·Sustainability Director and Environmental Justice Director 🖈 🙀 👃
- ·Utilizing consultants to support plan development
- Community Involvement ★ ★ ★
- Green Revolving Fund/Designated ES Funds
 ★
- ·Teacher compensation/support for ES initiatives
- ·City/External Funding diversity of funding sources
- ·Use of State/Federal (centralized) resources

ACTIVITIES

Robust Curriculum integration ★ ★★ ★★ ★★ ★ ★

CASE STUDY ANALYSIS MATRIX - HIGHLIGHTS

Which Items identified in our breakouts should be elevated?
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INPUTS/RESOURCES

- ·School Green Teams * * ***
- -Sustainability Director and Environmental Justice Director *
- Utilizing consultants to support plan development
- Community Involvement * * *
- ·Green Revolving Fund/Designated ES Funds * *
- Teacher compensation/support for ES initiatives
- ·City/External Funding diversity of funding sources
- ·Use of State/Federal (centralized) resources

ACTIVITIES

- ·Robust Curriculum integration * * * * * * * * * *
- ·Environmental Justice Initiatives **
- ·Transportation/multi-modal plan *
- ·School/District based Competitions
- ·Eat Local: Nutrition connections to ES **
- Students take lessons home **
- Annual instruction on recycling/composting * * * *
- ·Electrification of Grounds/Maintenance
- Water conservation initiatives
- ·Support Next Gen science standards
- ·Outdoor Learning Environments campus as living learning lab *** *
- Building on Strengths, Focus on low-hanging fruit
- ·CTE Connections * *
- ·Communicating Success
- ·Solar My Schools

OUTPUTS/REPORTING

- ·High performance building standards **
- Visibility of Key Projects
- ·Frequent/Regular Reporting requirements accountability** * *
- ·Clear Metrics and Monitoring/Measurement* * *
- ·Clear Roadmap
- ·Benchmarking/Monitoring Tools for curriculum integration
- ·Use web sites for tracking, resources, reporting

RESULTS/GOALS

- ·"Backcasting" to develop carbon goals **
- ·Environmental Sustainability Management Plan Adoption (becomes policy) ★★
- Modest Goals into Ambitious Goals
- ·Local Alignment City, County, State GOALS ** * *
- ·No Kid Hungry * *
- ASPIRATIONS/RESULTS
- Local Alignment City, County, State
- Focus on Institutional Change





ES TF – Assessment Exercise Case Study Review – Highlighted Items

Items receiving more than 2 dots include:

Inputs/Resources

- School Green Teams (5)
- Sustainability Director and Environmental Justice Director (3)
- Community Involvement (3)
- Green Revolving Fund/Designated ES Funds (3)

Activities

- Robust Curriculum Integration (11)
- Outdoor Learning Environments campus as living learning lab (5)
- Annual instruction on recycling/composting (4)
- Environmental Justice Initiatives (2)
- Transportation/multi-modal plan (2)
- Eat Local; Nutrition connections to ES (2)
- Students take lessons home (2)
- CTE connections (2)

Outputs/Reporting

- Frequent/Regular Reporting requirements accountability (5)
- Clear Metrics and Monitoring/Measurement (4)
- High performance building standards (2)

Results/Goals

- Local Alignment City, County, State Goals (4)
- Environmental Sustainability Management Plan Adoption (becomes policy) (3)
- No Kid Hungry (2)
- "Backcasting to develop carbon goals" (2)

ES TF – Assessment Exercise Strengths, Weaknesses, Opportunities, Threats (SWOT) - Outputs

What is a SWOT?

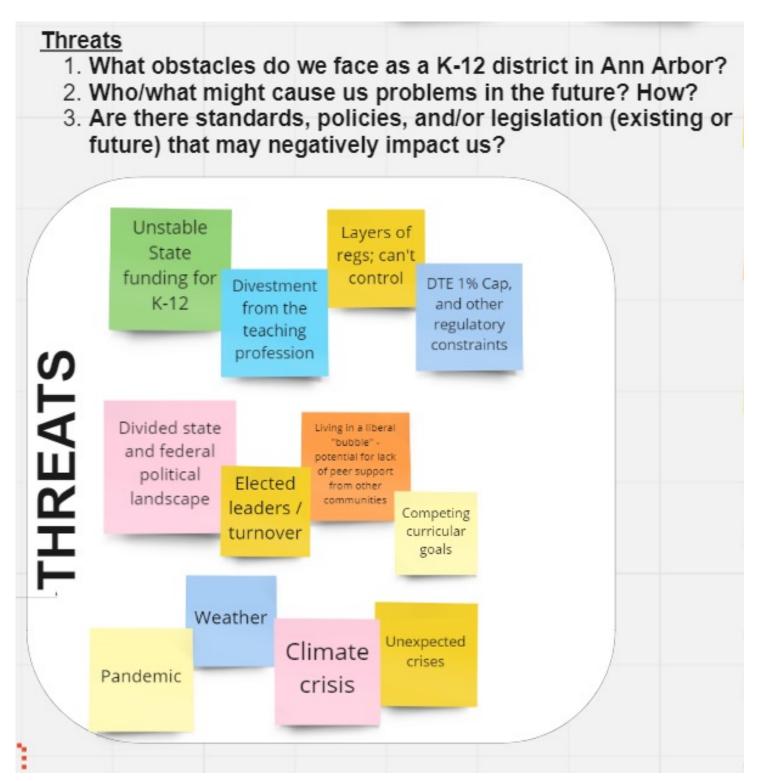
A tool used in strategic planning, a SWOT analysis is a method used for gaining an overview of an institution by assessing internal and external factors that affect the institution and identify its strengths and weaknesses in relation to the opportunities and the threats existing in the K-I2 institutional, local and regional landscape - in the AAPS pursuit of Environmental Sustainability.

- Internal Factors Strengths and Weaknesses
- External Factors Opportunities and Threats



ES TF – Assessment Exercise Strengths, Weaknesses, Opportunities, Threats (SWOT) - Outputs





ES TF – Assessment Exercise

1. What unique knowledge, talent or resources do

Strengths

Strengths, Weaknesses, Opportunities, Threats (SWOT) - Outputs

we have? 2. What do we do best? 3. What strengths can we build on? Families Teachers engaged with and parents, Supportive their individual supporters board Schools with passion Community District that supports Environmental leadership sustainability Ed program is support amazing (committee, etc.) existing and Financial potential abundance of support outside Some Ш partnerships funding Generous Bond and ~ already City, Sinking Fund county, resources already on building solar installation progress

Threats

- 1. What obstacles do we face as a K-12 district in Ann Arbor?
- 2. Who/what might cause us problems in the future? How?
- 3. Are there standards, policies, and/or legislation (existing or future) that may negatively impact us?



ES TF – Visioning Exercise Strengths, Opportunities, Aspirations, Results (SOAR)

What is a SOAR?

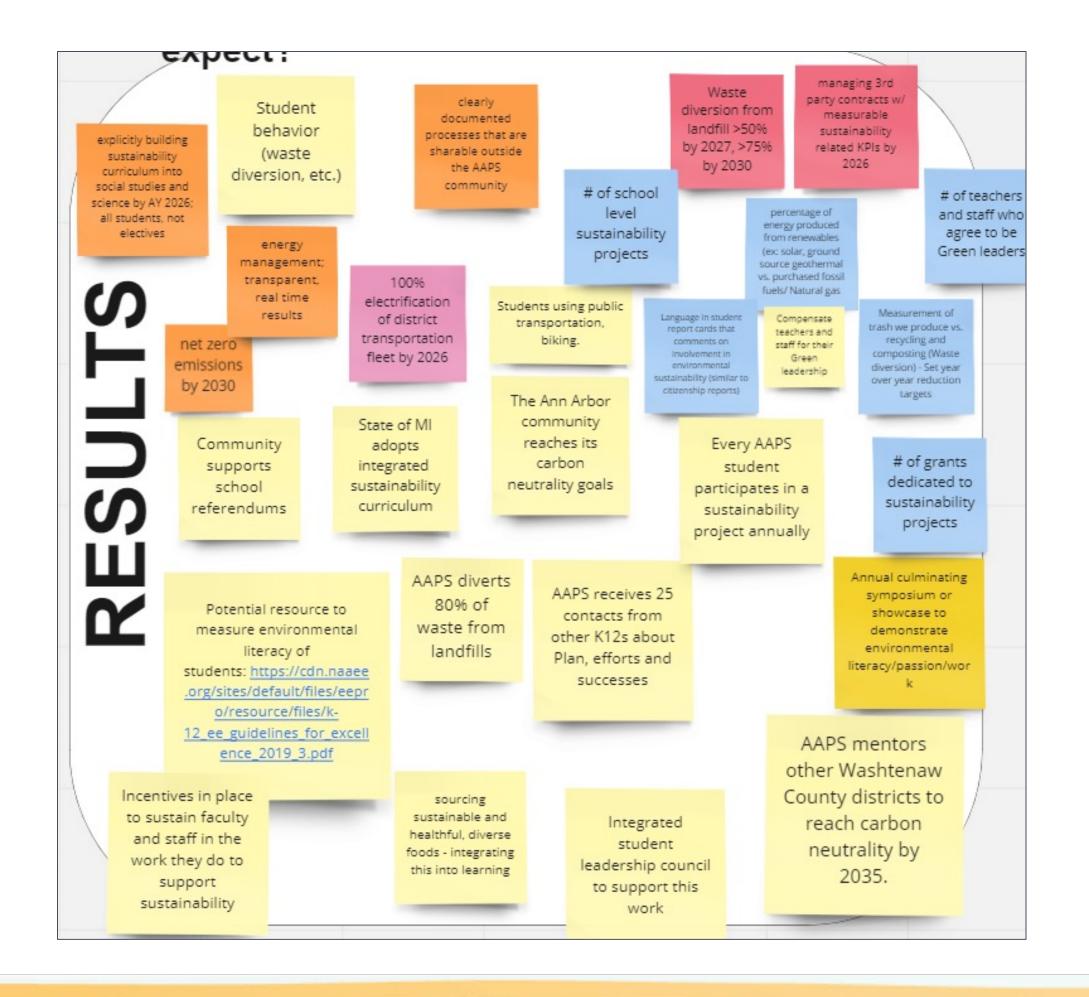
Another strategic planning tool, a SOAR analysis is a technique that is used to consider the current Strengths and Opportunities of an organization to create a vision of future Aspirations and the Result they will bring. The SOAR analysis encourages an organization to focus on what is known to work to strive for shared aspirations and measurable results.

A SOAR is action oriented and focused on outcomes.



Exercise – Brainstorm Vision for Environmental Sustainability in AAPS



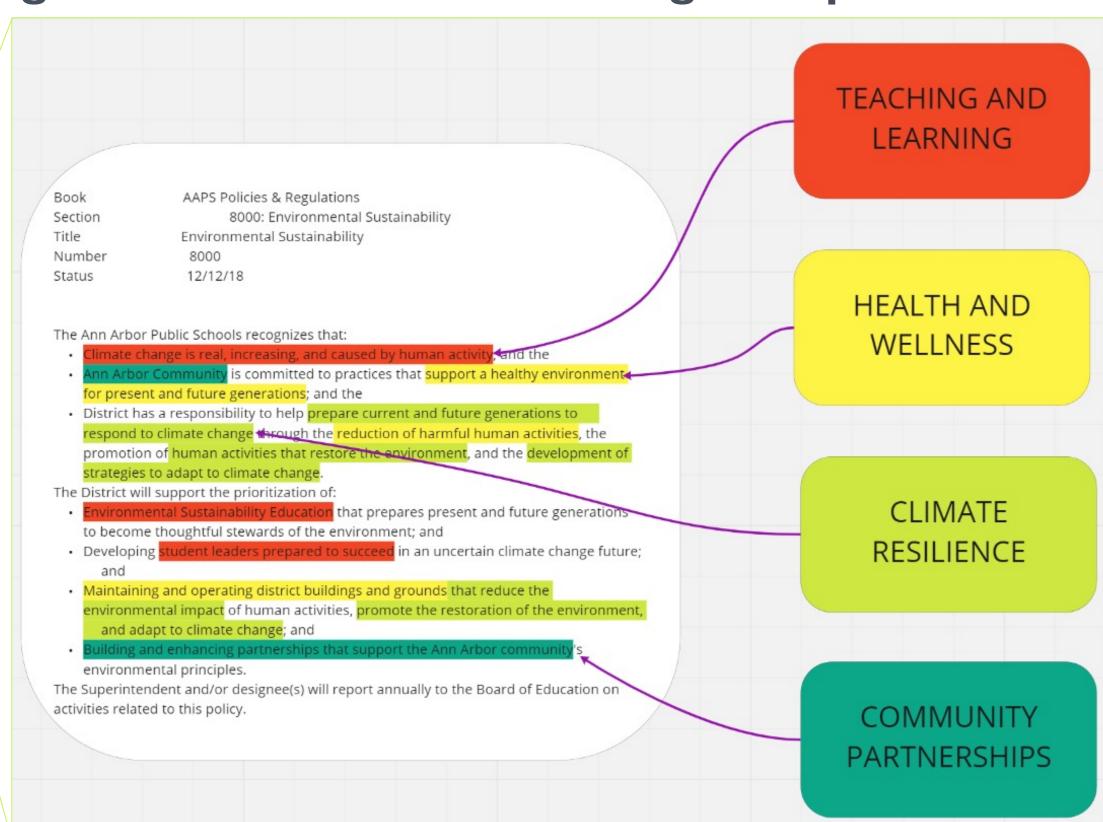


ES TF – Working Group Exercise BOE Policy 8000: Guiding Four Focus Areas / Working Groups

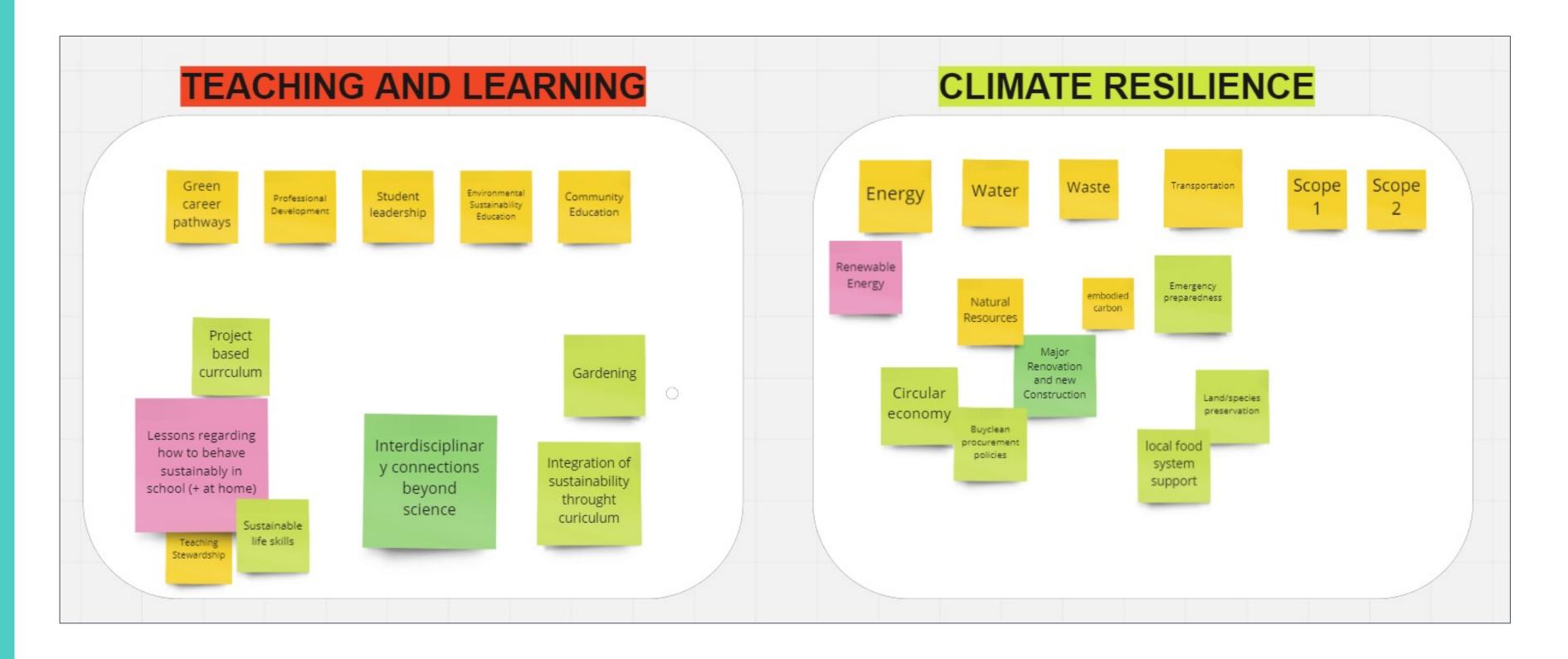
Considering BOE Policy 8000 as the ES roadmap to identify:

Four organizing FOCUS AREAS

- I. Teaching and Learning
- 2. Health and Wellness
- 3. Climate Resilience
- 4. Community Partnerships



ES TF - Working Groups - Preliminary Areas of Work



ES TF - Working Groups - Preliminary Areas of Work



ES TF – Working Group SMARTIE Goals/Targets - Introduction

Specific

• Can we identify a single or concise factor on which the AAPS team will focus?

Measurable

• Do we have quantitative (or qualitative) measurable outcomes?

Attainable

• Do we have the resources (inputs including dollars, staffing, etc) required?

Relevant

• Does this in any way contradict our values, mission, or strategy?

• Is the goal aligned internally and externally (city, county, university)?

Time Based

• Have we considered typical academic cycles and internal and external supply chain/factors?

Inclusive

• Could any stakeholders be excluded with this proposed Goal? How can this goal create better access and participation?

Equitable

• Have we considered how to mitigate unintended biases and how we can support our most vulnerable stakeholders in AAPS?



Thank You!

