



# Phase 1 Bond Plan

2020-2030

# Phase 1 Bond Plan – 2020-2030

## Presentation Overview

- Review bond campaign commitments
- Phase 1 Bond Plan – Overview
  - Early construction projects at every school
  - Summer construction projects
  - Staging facility construction
  - Major construction projects
  - Support infrastructure, furnishings and equipment
- Map of staging plan and major construction projects
- Investment timelines by sector and level
- **Environmental sustainability**
- Community engagement opportunities
- Next steps

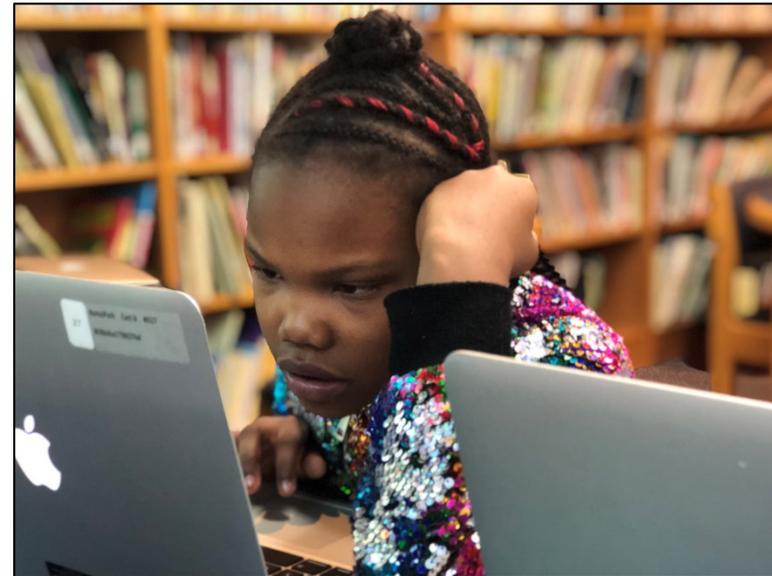
# AAPS District Statistics

- Serves 18,000 children
- Covers 125 square miles
- Responsible for 35 buildings (average age of 65 years)
- 3.4 million square feet
- 723 acres in neighborhoods



# AAPS Quality Education

- Inclusive, for all children
- Students perform at academically high levels
- High performing teachers
- Access to quality programs
- Supported by parents and community



# Review of the 2019 Bond Campaign Commitments

**2019 BOND**

|  |                    |
|--|--------------------|
|   | <b>Our Kids</b>    |
|   | <b>Our Schools</b> |
|  | <b>Our Future</b>  |

ANN ARBOR PUBLIC SCHOOLS

# 2019 Bond: Preparing for the Future



# Key Thematic Goals

|                                  |   |
|----------------------------------|---|
| <b>GOAL</b>                      | <b>TEACHING &amp; LEARNING</b><br><i>Continue the Tradition of Academic Excellence</i>  |
| <b>KEY THEMES</b>                | <ul style="list-style-type: none"><li>• Support flexible and engaging learning environments that promote collaboration, hands-on, inquiry-based learning, whole and small group instruction, and appropriate accommodations for all students</li><li>• Expand opportunities for applied learning such as STEAM, CTE, coding, and robotics</li><li>• Build upon long-standing environmental education program with new curricula and instructional models</li><li>• Continue our work to create universally designed and inclusive learning environments</li><li>• Support blended and online virtual learning</li><li>• Enable co-teaching between core classroom teachers and support staff for a vibrant and effective multi-tiered system of support</li><li>• Support multiple educational models including early learning, virtual learning, adult learning, and community college</li><li>• Maintain smaller class sizes for an effective teaching and learning environment</li><li>• Continue to enhance opportunities for music and art education</li><li>• Update environments to include: natural light, air quality, sound</li><li>• Ensure quality learning environments in every classroom</li></ul>   |
| <b>SUPPORTING INFRASTRUCTURE</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Upgrade all classrooms to update lighting, thermal, acoustical and air quality environments with more user/teacher control</li><li><input type="checkbox"/> Create STEAM/Makerspaces in all schools</li><li><input type="checkbox"/> Improve support spaces, amenities, and equipment for music and the arts</li><li><input type="checkbox"/> Continue flexible furniture purchases for art, music, science and other learning spaces</li><li><input type="checkbox"/> Address current and projected student enrollment by providing additional space in schools, particularly elementary schools at or near capacity</li><li><input type="checkbox"/> Improve and create spaces for one-on-one and small group activities including: project-based learning, counseling, tutoring, speech therapy, nurses and others</li><li><input type="checkbox"/> Provide spaces, equipment and furnishing for music and the arts, including improved performance spaces</li><li><input type="checkbox"/> Provide spaces that are customized to meet the identified social, emotional and physical needs of students</li><li><input type="checkbox"/> Provide additional storage for student personal items</li><li><input type="checkbox"/> Create updated Career &amp; Technical Education (CTE) environments, including life management studios at all high schools</li><li><input type="checkbox"/> Upgrade classrooms and office space at Freeman Environmental Education Center to ensure accessibility for all AAPS students</li></ul> |

# Key Thematic Goals

|                                  |   |
|----------------------------------|---|
| <b>GOAL</b>                      | <b>SAFETY, HEALTH &amp; WELL-BEING</b><br><i>Focus on Development of the Whole Child</i>  |
| <b>KEY THEMES</b>                | <ul style="list-style-type: none"><li>• Ensure safe and secure schools as centers of the community</li><li>• Ensure safe drinking water and quality air</li><li>• Provide healthy local food in the cafeterias</li><li>• Provide opportunities for students to engage in on-site gardening and food production</li><li>• Enhance food security for vulnerable populations</li><li>• Provide opportunities for all students to enjoy physical activity in formal and informal settings</li><li>• Repair and modernize playgrounds and athletic facilities, renovating and expanding where needed</li></ul>   |
| <b>SUPPORTING INFRASTRUCTURE</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Create secure school entrances that provide for access control and secure entry</li><li><input type="checkbox"/> Install monitoring devices on all exterior doors</li><li><input type="checkbox"/> Update and modernize security camera systems, adding cameras as needed</li><li><input type="checkbox"/> Improve school grounds to provide separation of pedestrian, bicycle, car and bus traffic</li><li><input type="checkbox"/> Continue updating water systems and air distribution systems for maximum air and water quality</li><li><input type="checkbox"/> Replace or improve fire protection/sprinkler systems in all schools</li><li><input type="checkbox"/> Design and/or construct gender neutral restrooms</li><li><input type="checkbox"/> Expand and renovate elementary and middle school kitchens to allow healthy “scratch” cooking and more variety</li><li><input type="checkbox"/> Provide improved lighting, updated equipment for enhanced line flow, and other improvements for dining environments (multi-purpose rooms and cafeterias)</li><li><input type="checkbox"/> Support construction and maintenance of school gardens that include a dedicated water source and outdoor shaded classrooms</li><li><input type="checkbox"/> Provide space for emergency food programs</li><li><input type="checkbox"/> Replace or improve elementary “black top” spaces and basketball hoops</li><li><input type="checkbox"/> Continue improvement of sports fields including baseball, softball, soccer and others</li><li><input type="checkbox"/> Continue improvement of playgrounds; including age appropriate equipment, ADA/universal design equipment, and spaces for unstructured, creative play</li></ul> |

# Key Thematic Goals

|                                  |   |
|----------------------------------|---|
| <b>GOAL</b>                      | <b>SUSTAINABLE &amp; ENVIRONMENTALLY RESPONSIBLE INFRASTRUCTURE</b><br><i>Create Resilient Schools for Climate Change</i>   |
| <b>KEY THEMES</b>                | <ul style="list-style-type: none"><li>• Create optimized learning environments based on best practice and research to utilize natural and artificial light, ensure fresh air free from pollutants, maintain classroom temperature, and optimize acoustics for maximum cognitive function and productivity.</li><li>• Prepare our schools to adapt to climate change and act as centers of neighborhood resiliency and to maintain critical life-support conditions in the event of extended power loss, heating fuel or water</li><li>• Chart a course for carbon neutrality</li><li>• Create a culture that supports recycling and composting</li><li>• Promote bio-diversity and healthy sites</li><li>• Utilize interior and exterior finishes that are long-lasting and require minimal maintenance and replacement</li><li>• Utilize the Freeman Environmental Education Center for demonstration of sustainable grounds practices that tie to Environmental Education programming</li></ul>   |
| <b>SUPPORTING INFRASTRUCTURE</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Renovate all classrooms with modern systems that provide human-centric lighting, thermal, and acoustic environments with user/teacher control</li><li><input type="checkbox"/> Design building systems for disaster resilience and passive survivability including provisions for backup power</li><li><input type="checkbox"/> Install solar energy systems</li><li><input type="checkbox"/> Utilize more efficient electric heating and cooling systems including geothermal/ground-source heat pumps and variable refrigerant flow</li><li><input type="checkbox"/> Install dimmable LED lighting</li><li><input type="checkbox"/> Upgrade bus fleet with more fuel-efficient vehicles as new technology advancements allow</li><li><input type="checkbox"/> Create spaces in schools for the collection of recyclables and compost materials and exterior collection points for service providers</li><li><input type="checkbox"/> Create bio-diverse ecologies on school grounds that support local ecosystems and manage storm water</li><li><input type="checkbox"/> Specify durable long life-cycle materials, equipment and finishes with low to no toxicity</li><li><input type="checkbox"/> Install water management systems, gardens, and other grounds projects at the Freeman Environmental Education Center</li></ul> |

# Key Thematic Goals

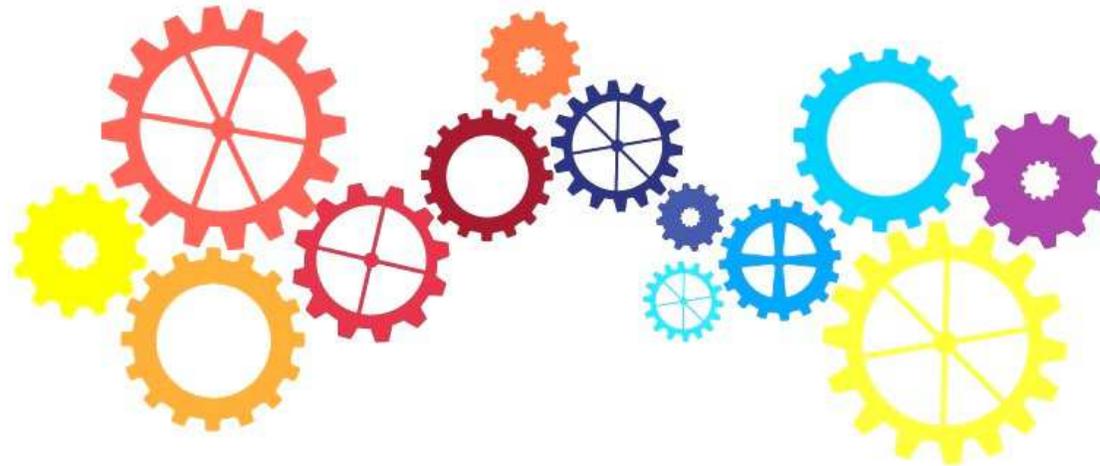
|                                  |  |
|----------------------------------|--|
| <b>GOAL</b>                      | <b>EFFICIENT AND EFFECTIVE SUPPORT SYSTEMS &amp; SERVICES</b><br><i>Continue Technology and Transportation Replacement &amp; Renewal</i>   |
| <b>KEY THEMES</b>                | <ul style="list-style-type: none"><li>• Provide appropriate technology for our students to develop the skills and attributes they need to meet their individual goals</li><li>• Ensure our teachers are supported with appropriate classroom technology</li><li>• Transform media centers to support digital learning and collaborative pedagogy</li><li>• Provide needed spaces for custodial and other building support services</li></ul>   |
| <b>SUPPORTING INFRASTRUCTURE</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Continue regularly scheduled laptop replacement program</li><li><input type="checkbox"/> Add new state-of-the-art classroom devices / equipment to support curriculum goals</li><li><input type="checkbox"/> Renovate media centers to support digital learning and collaboration</li><li><input type="checkbox"/> Continue bus fleet replacement schedule to reduce repair costs and promote bus fleet safety</li><li><input type="checkbox"/> Provide improved custodial, information technology, public address, and audio/visual support spaces</li></ul> |

# Preliminary Bond Phase 1 Plan 2020-2030



# Components of Bond Phase 1 Plan

- Early construction projects at every school
- Summer construction projects
- Staging facility construction
- Major construction projects
- Support infrastructure projects, furnishings, and equipment



# Early Projects at Every School

- Solar and other renewable energy sources
- Air conditioning and air quality improvements
- Energy efficient LED lights
- Outdoor learning enhancements
- Music, arts, science, and athletics improvements
- Small group and special needs learning spaces

## **Continued replacement and enhancement of:**

- Musical instruments and furnishings
- Building management system upgrades
- Bus fleet and technology replacement
- Roofing, paving and stormwater management systems

# Intermediate Summer Projects

- Intermediate Summer Projects are included for schools whose major project occurs later in the plan.
- They will provide custom designed improvements for each school based on their particular needs.
- Care will be taken to protect investments made before a school's major project.



Bryant Elementary



Pioneer High School

# Staging School Construction

- With an average age of 65 years, some AAPS school buildings need extensive work that is not feasible to complete while the school is occupied and requires longer than the short summer recess to complete.
- Staging Locations will provide for temporary relocation of a school while construction activities are completed at the home school location.
- The plan includes staging locations in each quadrant of the city to be utilized over the next 10 years to complete major projects at all AAPS elementary and K-8 schools.



# Major Projects

## Goals for Every School

- Net Zero Ready, electric, sustainable, vibrant, and programmatically enhanced learning environments for current & future generations
- Opportunity for community engagement in the design process, as promised in the bond campaign
- Evaluation of buildings to determine if replacement, retrofitting, or a combination of each is appropriate

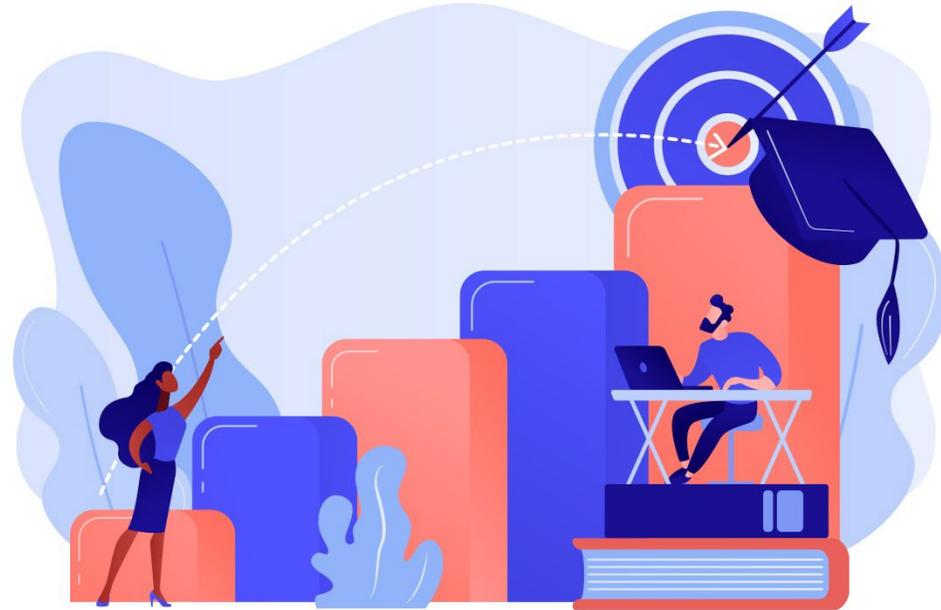
## Evaluation criteria will include:

- Academic program implications
- Construction first cost and operating costs
- Impacts on health, wellbeing and universal access
- Environmental sustainability, including embodied carbon and operating carbon emissions



# Project Prioritization Considerations

- Capital Needs
  - Upgrades needed to maintain the building in good to excellent condition
- Matriculation
  - Minimize disruptions to students' academic careers
- Housing Development
  - Anticipated enrollment growth



# Project Prioritization – Capital Needs

| BUILDING + CAPITAL INVESTMENT NEEDS |               | BUILDING + CAPITAL INVESTMENT NEEDS |               |
|-------------------------------------|---------------|-------------------------------------|---------------|
| Elementary and K-8                  |               | High School                         |               |
| School / Location                   | 10-Year \$/SF | School / Location                   | 10-Year \$/SF |
| Carpenter                           | \$ 283        | Community                           | \$ 176        |
| Mitchell                            | \$ 260        | Pathways                            | \$ 175        |
| Dicken                              | \$ 243        | Pioneer                             | \$ 149        |
| Burns Park                          | \$ 195        | Huron                               | \$ 138        |
| Wines                               | \$ 192        | Skyline                             | \$ 119        |
| Angell                              | \$ 186        |                                     |               |
| Eberwhite                           | \$ 177        | BUILDING + CAPITAL INVESTMENT NEEDS |               |
| Logan                               | \$ 174        | Middle School                       |               |
| Lakewood                            | \$ 173        | School / Location                   | 10-Year \$/SF |
| King                                | \$ 163        | Slauson                             | \$ 146        |
| A2 STEAM                            | \$ 162        | Clague                              | \$ 143        |
| Bach                                | \$ 147        | Scarlett                            | \$ 129        |
| Thurston                            | \$ 141        | Tappan                              | \$ 128        |
| Pittsfield                          | \$ 136        | Forsythe                            | \$ 116        |
| Lawton                              | \$ 134        |                                     |               |
| Abbot                               | \$ 130        |                                     |               |
| AA Open                             | \$ 116        |                                     |               |
| Haisley                             | \$ 111        |                                     |               |
| Pattengill                          | \$ 102        |                                     |               |
| Bryant                              | \$ 101        |                                     |               |
| Allen                               | \$ 55         |                                     |               |

The Facilities Condition Assessment conducted by outside experts identified the level of investment needed at each school to maintain the building in good to excellent condition over the next 10 years.

# Project Prioritization - Matriculation

With the highest level of investment need at the elementary level, the plan begins with major projects at elementary schools.

To minimize disruptions to students' academic careers, the plan then proceeds to major projects at high schools and concludes with major projects at middle schools, so elementary students are less likely to again be disrupted by construction while at middle school and high school.

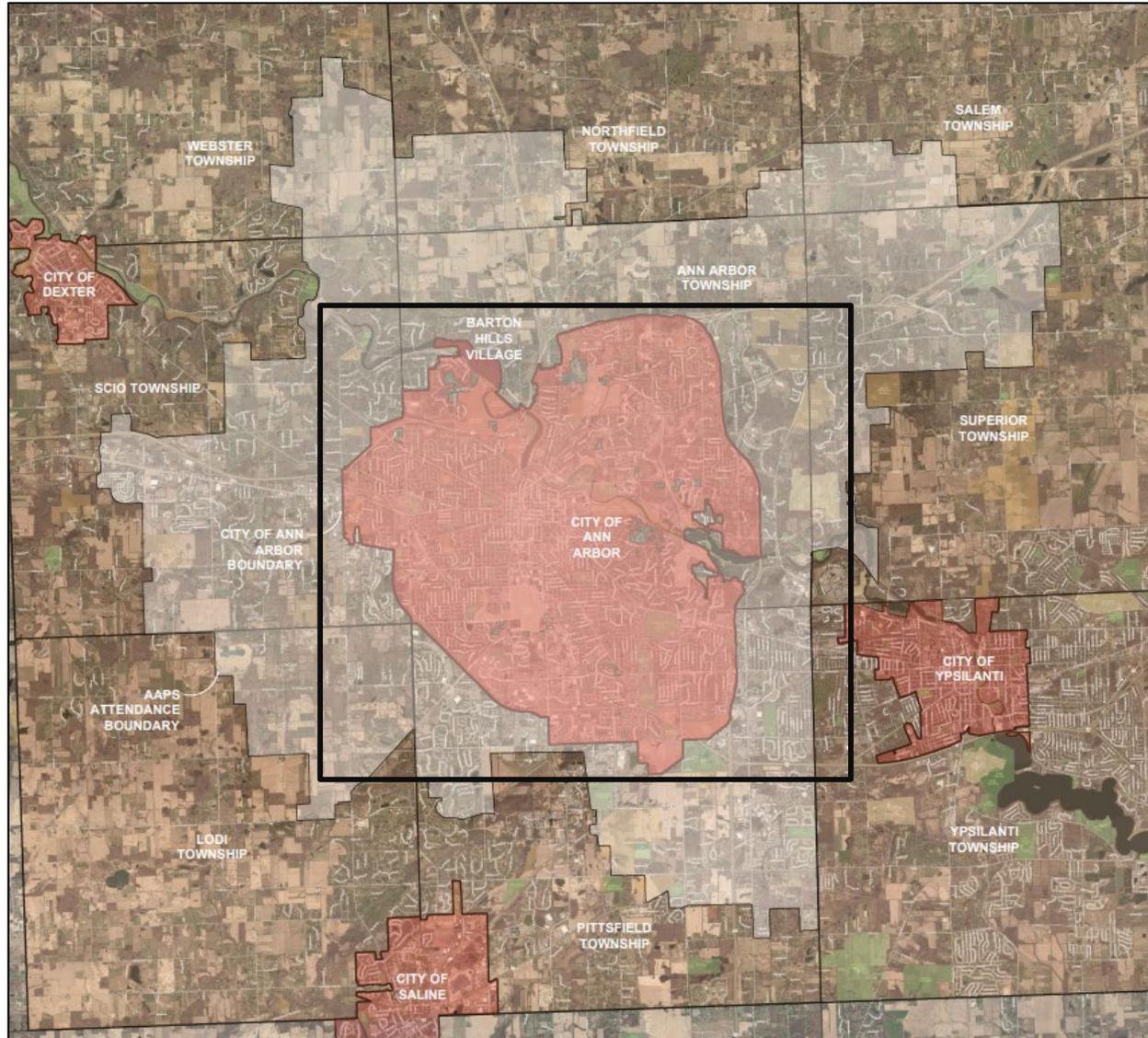
Recognizing that middle schools are late in the AAPS Bond Plan, all 5 middles schools will receive significant renovations over the next 4 years including:

- School-wide air conditioning and ventilation improvements
- New lights and ceilings
- Fire suppression sprinkler system





# AAPS Attendance Boundary

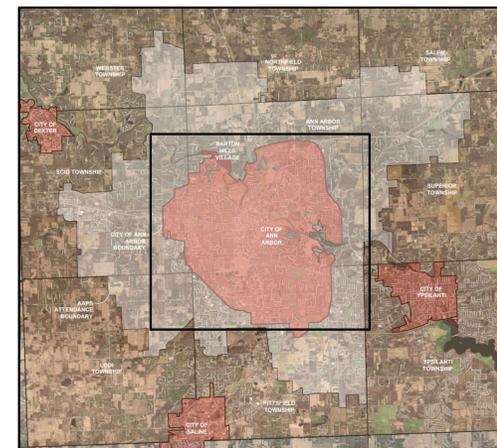


# Staging Plan – Phase 1 Bond Plan 2020-2030



## Legend

- School which stages at location ( Number indicates order )
- Staging Location - Current Mitchell  
Current Mitchell becomes staging school once New Mitchell is built
- Staging Location - TBD
- Staging Location - TBD
- Staging Location - TBD
- Building that does not require staging



# Overall AAPS Bond Plan 2020-2030

## Elementary Schools

| School                      | 2021                          | 2022                                     | 2023                          | 2024                                  | 2025                                      | 2026                                      | 2027                                      | 2028                                    | 2029         | 2030                           | 2031                                      | 2032         | 2033                                      | 2034    |
|-----------------------------|-------------------------------|--|-------------------------------|---------------------------------------|---|---|---|---|--------------|--------------------------------|---|--------------|---|---------|
| <b>Southeast</b>            |                               |  |                               |                                       |   |   |   |   |              |                                |   |              |   |         |
| Carpenter Elementary        | A/C and Lighting              |  |                               |                                       | Major Project (Does Not Stage)            |   |   |   |              |                                |   |              |   |         |
| Burns Park Elementary       | A/C and Lighting              | Paving                                   |                               | Major Project (Stages at OH Mitchell) |   |   |   |   |              |                                |   |              |   |         |
| Angell Elementary           | A/C and Lighting              |  |                               |                                       | Major Project (Stages at OH Mitchell)     |   |   |   |              |                                |   |              |   |         |
| Pittsfield Elementary       |                               | A/C and Lighting, and Paving             | Outdoor Learning Enhancements |                                       | Major Project (Stages at OH Mitchell)     |   |   |   |              |                                |   |              |   |         |
| Pattengill Elementary       |                               | Roofing and Paving                       |                               | Outdoor Learning Enhancements         |   | Major Project (Does Not Stage)            |   |   |              |                                |   |              |   |         |
| Allen Elementary            | Paving                        | Lighting                                 | Outdoor Learning Enhancements |                                       |   |   | Major Project (Does Not Stage)            |   |              |                                |   |              |   |         |
| Bryant Elementary           | Roofing and Solar             |  | Outdoor Learning Enhancements | Paving                                |   |   |   | Major Project (Does Not Stage)          |              |                                |   |              |   |         |
| Current Mitchell Elementary | A/C and Lighting              |  |                               | Stages Burns Park                     | Stages Angell                             | Stages Pittsfield                         | Stages Pattengill                         |   |              |                                |   |              |   |         |
| New Mitchell Elementary     | Project Planning              |  | New Construction              |                                       |   |   |   |   |              |                                |   |              |   |         |
| <b>Northeast</b>            |                               |  |                               |                                       |   |   |   |   |              |                                |   |              |   |         |
| Logan Elementary            |                               | Paving                                   | Outdoor Learning Enhancements | Lighting                              | Major Project (Stages at NE Staging Site) |   |   |   |              |                                |   |              |   |         |
| King Elementary             | NE Sector Study               |  | Outdoor Learning Enhancements | Lighting                              |   | Major Project (Stages at NE Staging Site) |   |   |              |                                |   |              |   |         |
| Thurston Elementary         |                               | Outdoor Learning, Paving, Roofing, Solar | A/C and Lighting              |                                       |   |   | Major Project (Stages at NE Staging Site) |   |              |                                |   |              |   |         |
| <b>Southwest</b>            |                               |  |                               |                                       |   |   |   |   |              |                                |   |              |   |         |
| Dicken Elementary           | A/C and Lighting, plus Paving |  |                               | Major Project (Does Not Stage)        |   |   |   |   |              |                                |   |              |   |         |
| Lakewood Elementary         | A/C and Lighting              |  |                               |                                       | Major Project (Does Not Stage)            |   |   |   |              |                                |   |              |   |         |
| Eberwhite Elementary        |                               | A/C and Lighting                         | Paving                        | Outdoor Learning, Roofing and Solar   |   | Major Project (Stages at New SW School)   |   |   |              |                                |   |              |   |         |
| Bach Elementary             |                               | A/C and Lighting                         | Paving                        | Outdoor Learning Enhancements         |   |   | Major Project (Stages at New SW School)   |   |              |                                |   |              |   |         |
| Lawton Elementary           |                               | Outdoor Learning Enhancements            | A/C and Lighting              |                                       | Roofing                                   | Paving                                    |   | Major Project (Stages at New SW School) |              |                                |   |              |   |         |
| Southwest Staging Site      |                               |  | Project Planning              |                                       | New Construction                          | Stages Eberwhite                          | Stages Bach                               | Stages Lawton                           |              |                                |   |              |   |         |
| <b>Northwest</b>            |                               |  |                               |                                       |   |   |   |   |              |                                |   |              |   |         |
| Wines Elementary            |                               | A/C and Lighting, plus Paving            | Roofing and Solar             | Outdoor Learning Enhancements         |   | Intermediate Summer Project               |   |   |              | Major Project (Does Not Stage) |   |              |   |         |
| Abbot Elementary            |                               | Outdoor Learning Enhancements            | Roofing and Solar             | A/C and Lighting                      |   |   | Intermediate Summer Project               |   |              |                                | Major Project (Stages at NW Staging Site) |              |   |         |
| Haisley Elementary          |                               | Outdoor Learning Enhancements            | Paving                        | A/C and Lighting                      |   |   |   | Intermediate Summer Project             |              |                                |   |              | Major Project (Stages at NW Staging Site) |         |
| Northwest Staging Site      |                               |  |                               |                                       |   | Project Planning                          | New Construction                          | Stages A2 Steam                         | Stages Abbot | Stages A2 Open                 | Stages Haisley                            | Stages Wines | Stages Bach                               | TouchUp |

## K-8s, Secondary Schools, and Other Buildings

| School                 | 2021 | 2022  | 2023   | 2024                                     | 2025                                     | 2026     | 2027                          | 2028                        | 2029                        | 2030                        | 2031                                      | 2032                                      | 2033                        | 2034                        | 2035                        | 2036                        | 2037 | 2038                        | 2039                 | 2040                 |
|------------------------|------|---|--|--|--|----------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|---|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------|-----------------------------|----------------------|----------------------|
| <b>K-8s</b>            |      |   |  |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| A2 STEAM K8            |      | Outdoor Learning Enhancements   | A/C and Lighting   | Paving                                   |  |          |                               | Intermediate Summer Project |                             |                             | Major Project (Stages at NW Staging Site) |   |                             |                             |                             |                             |      |                             |                      |                      |
| A2 Open K8             |      |   | Lighting   | Outdoor Learning Enhancements and Paving |  |          |                               | Intermediate Summer Project |                             |                             |   | Major Project (Stages at NW Staging Site) |                             |                             |                             |                             |      |                             |                      |                      |
| <b>Middle Schools</b>  |      |   |  |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| Slauson Middle School  |      |   | Renovation including Air Conditioning, Lighting, and Fire Suppression            |  | Outdoor Learning Enhancements            |          |                               | Paving                      |                             |                             |   |   | Major Project (Staging TBD) |                             |                             |                             |      |                             |                      |                      |
| Clague Middle School   |      |   | Renovation including A/C, Lighting, Fire Suppression, Paving, Roofing, and Solar |  | Outdoor Learning Enhancements            |          |                               |                             | Intermediate Summer Project |                             |   |   |                             | Major Project (Staging TBD) |                             |                             |      |                             |                      |                      |
| Scarlett Middle School |      | Renovation including Air Conditioning, Lighting, and Fire Suppression         |  | Roofing, Solar and Paving                |  |          | Outdoor Learning Enhancements |                             |                             | Intermediate Summer Project |   |   |                             |                             | Major Project (Staging TBD) |                             |      |                             |                      |                      |
| Tappan Middle School   |      | Renovation including Air Conditioning, Lighting, Fire Suppression, and Paving |  | Solar                                    | Plaza and Cafeteria Renovations          |          |                               |                             |                             | Intermediate Summer Project |   |   |                             |                             |                             | Major Project (Staging TBD) |      |                             |                      |                      |
| Forsythe Middle School |      |   | Renovation including Air Conditioning, Lighting, Fire Suppression, and Paving    |  |  |          | Outdoor Learning Enhancements |                             |                             |                             | Intermediate Summer Project               |   |                             |                             |                             |                             |      | Major Project (Staging TBD) |                      |                      |
| <b>High Schools</b>    |      |   |  |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| Pioneer High School    |      | Lighting, plus Roofing and Solar  | Lighting, plus Paving  |  |  |          |                               |                             |                             |                             | Major Project (Does Not Stage)            |   |                             |                             |                             |                             |      |                             |                      |                      |
| Huron High School      |      | Roofing   | Paving   |  | Lighting                                 | Lighting |                               |                             |                             | Intermediate Summer Project |   |   |                             |                             |                             | Major Project (Staging TBD) |      |                             |                      |                      |
| Skyline High School    |      |   | Initial Summer Project   |  |  |          |                               |                             | Intermediate Summer Project |                             |   |   |                             |                             |                             |                             |      |                             | Final Summer Project |                      |
| Community High School  |      | Renovation including Air Conditioning, Lighting, and Fire Suppression         |  |  | Outdoor Learning Enhancements and Paving |          |                               | Intermediate Summer Project |                             | Paving                      |   |   |                             | Major Project (Staging TBD) |                             |                             |      |                             |                      |                      |
| Pathways to Success    |      |   | Major Project (Does Not Stage)   |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| <b>Other Buildings</b> |      |   |  |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| Preschool              |      | Outdoor Learning, Roofing, and Solar  |  |  |  |          |                               |                             |                             |                             | Intermediate Summer Project               |   |                             |                             |                             |                             |      |                             |                      | Final Summer Project |
| Freeman                |      | Paving  | Outdoor Learning and the Enhancements  |  | Roofing and Solar                        | Lighting |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| Balas Bldg             |      | Office Utilization Analysis   |  |  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      |                      |
| Transportation Bldg    |      |   | Interior Updates and Lighting  | Outdoor Seating, plus Roofing and Solar  |  |          |                               |                             |                             |                             |   |   |                             |                             |                             |                             |      |                             |                      | Final Summer Project |

\*Note – Major Project Planning begins 18-24 months prior to the start of construction



# Southeast Elementary Schools

| School    | 2021                        | 2022              | 2023                         | 2024                          | 2025                                      | 2026                                      | 2027                                      | 2028                                      | 2029   | 2030                              |        |                   |
|-----------|-----------------------------|-------------------|------------------------------|-------------------------------|---|---|---|---|--------|-----------------------------------|--------|-------------------|
| Southeast | Carpenter Elementary        | A/C and Lighting  |                              |                               |   | Major Project<br>(Does Not Stage)         |   |   |        |                                   |        |                   |
|           | Burns Park Elementary       | A/C and Lighting  | Paving                       |                               | Major Project<br>(Stages at Old Mitchell) |   |   |   |        |                                   |        |                   |
|           | Angell Elementary           | A/C and Lighting  |                              |                               |   | Major Project<br>(Stages at Old Mitchell) |   |   |        |                                   |        |                   |
|           | Pittsfield Elementary       |                   | A/C and Lighting, and Paving | Outdoor Learning Enhancements |   |   | Major Project<br>(Stages at Old Mitchell) |   |        |                                   |        |                   |
|           | Pattengill Elementary       |                   | Roofing and Paving           |                               | Outdoor Learning Enhancements             |   |   | Major Project<br>(Stages at Old Mitchell) |        |                                   |        |                   |
|           | Allen Elementary            | Paving            | Lighting                     | Outdoor Learning Enhancements |   |   |   | Major Project<br>(Does Not Stage)         |        |                                   |        |                   |
|           | Bryant Elementary           | Roofing and Solar |                              | Outdoor Learning Enhancements | Paving                                    |   |   |   |        | Major Project<br>(Does Not Stage) |        |                   |
|           | Current Mitchell Elementary | A/C and Lighting  |                              |                               | Staging Prep                              | Stages Burns Park                         | Summer                                    | Stages Angell                             | Summer | Stages Pittsfield                 | Summer | Stages Pattengill |
|           | New Mitchell Elementary     | Project Planning  |                              | New Construction              |   |   |   |   |        |                                   |        |                   |

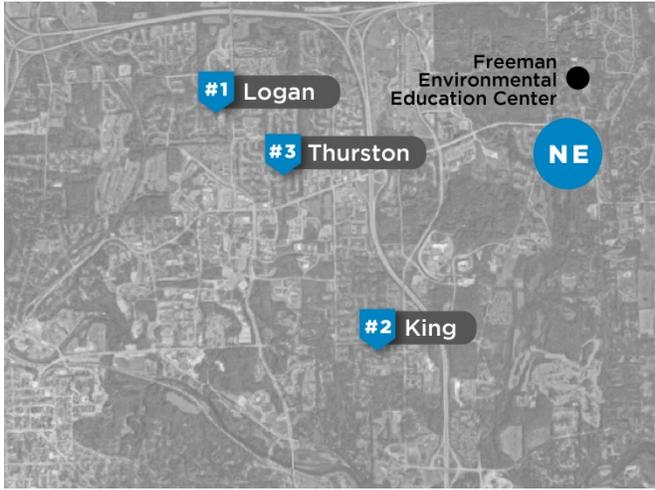
\*Note – Major Project Planning begins 18-24 months prior to the start of construction



# Northeast Elementary Schools

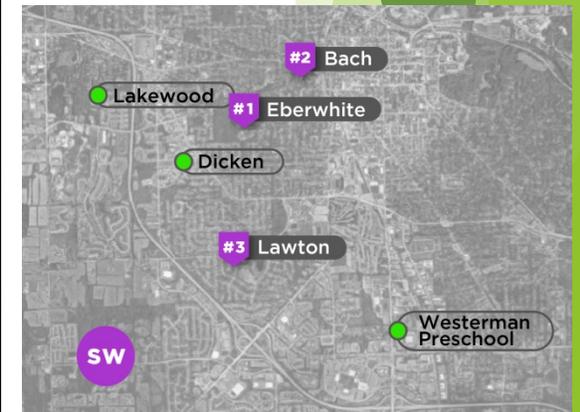
| School    | 2021                | 2022            | 2023                                     | 2024                          | 2025     | 2026                                      | 2027                                      | 2028 |  |
|-----------|---------------------|-----------------|--|-------------------------------|----------|---|---|------|--|
| Northeast | Logan Elementary    | NE Sector Study | Paving                                   | Outdoor Learning Enhancements | Lighting | Major Project (Stages at NE Staging Site) |   |      |  |
|           | King Elementary     |                 |  | Outdoor Learning Enhancements | Lighting | Major Project (Stages at NE Staging Site) |   |      |  |
|           | Thurston Elementary |                 | Outdoor Learning, Paving, Roofing, Solar | A/C and Lighting              |          |   | Major Project (Stages at NE Staging Site) |      |  |

\*Note – Major Project Planning begins 18-24 months prior to the start of construction



# Southwest Elementary Schools

| School    | 2021                   | 2022                          | 2023                          | 2024             | 2025                                | 2026             | 2027                                       | 2028             | 2029                                       |             |        |               |
|-----------|------------------------|-------------------------------|-------------------------------|------------------|-------------------------------------|------------------|--|------------------|--|-------------|--------|---------------|
| Southwest | Dicken Elementary      | A/C and Lighting, plus Paving |                               |                  | Major Project<br>(Does Not Stage)   |                  |  |                  |  |             |        |               |
|           | Lakewood Elementary    | A/C and Lighting              |                               |                  | Major Project<br>(Does Not Stage)   |                  |  |                  |  |             |        |               |
|           | Eberwhite Elementary   |                               | A/C and Lighting              | Paving           | Outdoor Learning, Roofing and Solar |                  | Major Project<br>(Stages at New SW School) |                  |  |             |        |               |
|           | Bach Elementary        |                               | A/C and Lighting              | Paving           | Outdoor Learning Enhancements       |                  | Major Project<br>(Stages at New SW School) |                  |  |             |        |               |
|           | Lawton Elementary      |                               | Outdoor Learning Enhancements | A/C and Lighting |                                     | Roofing          | Paving                                     |                  | Major Project<br>(Stages at New SW School) |             |        |               |
|           | Southwest Staging Site |                               |                               | Project Planning |                                     | New Construction |  | Stages Eberwhite | Summer                                     | Stages Bach | Summer | Stages Lawton |



\*Note – Major Project Planning begins 18-24 months prior to the start of construction

# Northwest Elementary Schools and K-8s

| School / Building | 2021                   | 2022 | 2023                          | 2024              | 2025                          | 2026 | 2027                        | 2028                        | 2029             | 2030                           | 2031                                      | 2032         | 2033                                      | 2034           |        |                |
|-------------------|------------------------|------|-------------------------------|-------------------|-------------------------------|------|-----------------------------|-----------------------------|------------------|--------------------------------|---|--------------|---|----------------|--------|----------------|
| Northwest         | Wines Elementary       |      | A/C and Lighting, plus Paving | Roofing and Solar | Outdoor Learning Enhancements |      | Intermediate Summer Project |                             |                  | Major Project (Does Not Stage) |   |              |   |                |        |                |
|                   | Abbot Elementary       |      | Outdoor Learning Enhancements | Roofing and Solar | A/C and Lighting              |      | Intermediate Summer Project |                             |                  |                                | Major Project (Stages at NW Staging Site) |              |   |                |        |                |
|                   | Haisley Elementary     |      | Outdoor Learning Enhancements | Paving            | A/C and Lighting              |      |                             | Intermediate Summer Project |                  |                                |   |              | Major Project (Stages at NW Staging Site) |                |        |                |
|                   | Northwest Staging Site |      |                               |                   |                               |      | Project Planning            |                             | New Construction | Stages A2 Steam                | Summer                                    | Stages Abbot | Summer                                    | Stages A2 Open | Summer | Stages Haisley |

| School | 2021        | 2022 | 2023                          | 2024             | 2025                                     | 2026 | 2027                        | 2028                        | 2029 | 2030                                      | 2031 | 2032                                      | 2033 | 2034 |
|--------|-------------|------|-------------------------------|------------------|--|------|-----------------------------|-----------------------------|------|---|------|---|------|------|
| K-8s   | A2 STEAM K8 |      | Outdoor Learning Enhancements | A/C and Lighting | Paving                                   |      | Intermediate Summer Project |                             |      | Major Project (Stages at NW Staging Site) |      |   |      |      |
|        | A2 Open K8  |      |                               | Lighting         | Outdoor Learning Enhancements and Paving |      |                             | Intermediate Summer Project |      |   |      | Major Project (Stages at NW Staging Site) |      |      |

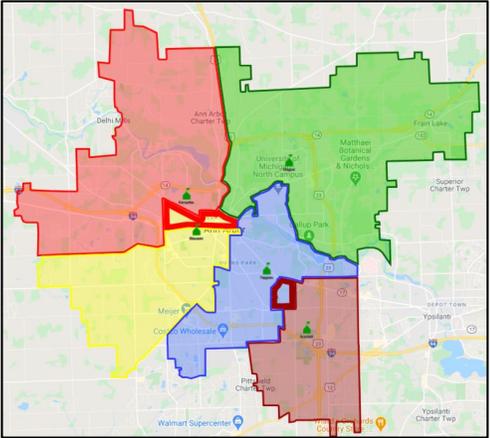
\*Note – Major Project Planning begins 18-24 months prior to the start of



# Middle Schools

| School         | 2021                   | 2022  | 2023   | 2024  | 2025                            | 2026                          | 2027 | 2028                          | 2029                        | 2030                        | 2031 | 2032                        | 2033 | 2034                        | 2035                        | 2036 | 2037                        | 2038 | 2039                        |
|----------------|------------------------|---|--|---|---------------------------------|-------------------------------|------|-------------------------------|-----------------------------|-----------------------------|------|-----------------------------|------|-----------------------------|-----------------------------|------|-----------------------------|------|-----------------------------|
| Middle Schools | Slauson Middle School  |   |  | Renovation including Air Conditioning, Lighting, and Fire Suppression |                                 | Outdoor Learning Enhancements |      | Paving                        |                             |                             |      |                             |      | Major Project (Staging TBD) |                             |      |                             |      |                             |
|                | Clague Middle School   |   | Renovation including A/C, Lighting, Fire Suppression, Paving, Roofing, and Solar |   |                                 | Outdoor Learning Enhancements |      |                               | Intermediate Summer Project |                             |      |                             |      | Major Project (Staging TBD) |                             |      |                             |      |                             |
|                | Scarlett Middle School | Renovation including Air Conditioning, Lighting, and Fire Suppression         |  |   | Roofing, Solar, and Paving      |                               |      | Outdoor Learning Enhancements |                             | Intermediate Summer Project |      |                             |      |                             | Major Project (Staging TBD) |      |                             |      |                             |
|                | Tappan Middle School   | Renovation including Air Conditioning, Lighting, Fire Suppression, and Paving |  | Solar   | Plaza and Cafeteria Renovations |                               |      |                               |                             | Intermediate Summer Project |      |                             |      |                             |                             |      | Major Project (Staging TBD) |      |                             |
|                | Forsythe Middle School |   | Renovation including Air Conditioning, Lighting, Fire Suppression, and Paving    |   |                                 | Outdoor Learning Enhancements |      |                               |                             |                             |      | Intermediate Summer Project |      |                             |                             |      |                             |      | Major Project (Staging TBD) |

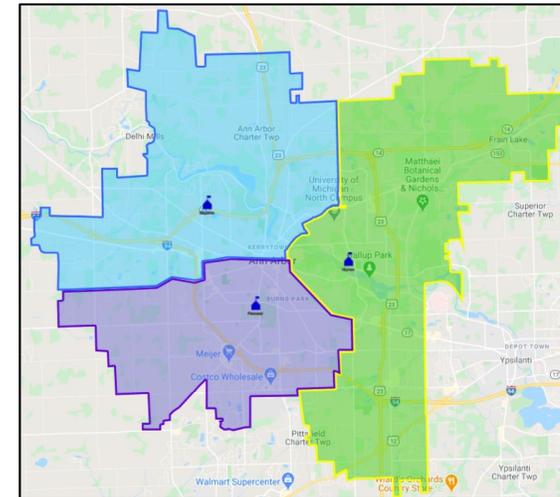
\*Note – Major Project Planning begins 18-24 months prior to the start of construction



# High Schools

| School       | 2021                  | 2022  | 2023                             | 2024                   | 2025                                     | 2026     | 2027                        | 2028                        | 2029                           | 2030 | 2031                        | 2032                        | 2033                 |
|--------------|-----------------------|---|----------------------------------|------------------------|--|----------|-----------------------------|-----------------------------|--------------------------------|------|-----------------------------|-----------------------------|----------------------|
| High Schools | Pioneer High School   |   | Lighting, plus Roofing and Solar | Lighting, plus Paving  |  |          |                             |                             | Major Project (Does not Stage) |      |                             |                             |                      |
|              | Huron High School     | Roofing   | Paving                           |                        | Lighting                                 | Lighting |                             | Intermediate Summer Project |                                |      |                             | Major Project (Staging TBD) |                      |
|              | Skyline High School   |   |                                  | Initial Summer Project |  |          |                             | Intermediate Summer Project |                                |      |                             |                             | Final Summer Project |
|              | Community High School | Renovation including Air Conditioning, Lighting, and Fire Suppression |                                  |                        | Outdoor Learning Enhancements and Paving |          | Intermediate Summer Project | Paving                      |                                |      | Major Project (Staging TBD) |                             |                      |
|              | Pathways to Success   |   | Major Project (Does not Stage)   |                        |  |          |                             |                             |                                |      |                             |                             |                      |

\*Note – Major Project Planning begins 18-24 months prior to the start of construction



# Other Buildings

| School / Building | 2021                | 2022                        | 2023                                 | 2024                                   | 2025                                    | 2026     | 2027 | 2028                        | 2029 | 2030 | 2031 | 2032                 | 2033                 |
|-------------------|---------------------|-----------------------------|--------------------------------------|--|---|----------|------|-----------------------------|------|------|------|----------------------|----------------------|
| Other Buildings   | Preschool           |                             | Outdoor Learning, Roofing, and Solar |  |   | Paving   |      | Intermediate Summer Project |      |      |      |                      | Final Summer Project |
|                   | Freeman             |                             | Paving                               | Outdoor Learning and Site Enhancements | Roofing and Solar                       | Lighting |      |                             |      |      |      |                      |                      |
|                   | Balas Bldg          | Office Utilization Analysis |                                      |  |   |          |      |                             |      |      |      |                      |                      |
|                   | Transportation Bldg |                             |                                      | Interior Updates and Lighting          | Outdoor Seating, plus Roofing and Solar |          |      |                             |      |      |      | Final Summer Project |                      |

# Support Infrastructure, Furnishings, and Equipment

## Ongoing investments include:

- Music, arts and science
- Buses
- Technology
- Solar energy and roofing
- Paving and stormwater
- Building management systems



# Environmental Sustainability and The AAPS 2019 Bond



ANN ARBOR PUBLIC SCHOOLS  
LEAD. CARE. INSPIRE.



ANN ARBOR PUBLIC SCHOOLS  
LEAD. CARE. INSPIRE.



# 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 **student leaders** prepared to succeed in an uncertain climate change future; and
- maintaining and operating **district buildings and grounds** 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
- 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 \$315,000 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

## Rooftop Solar Arrays

### Completed:

Pattengill Elementary (100kW)

### Under Construction:

Haisley Elementary (133 kW)

A2 STEAM @ Northside (150 kW)

Forsyth Middle School (150 kW)

Huron High School (160 kW)

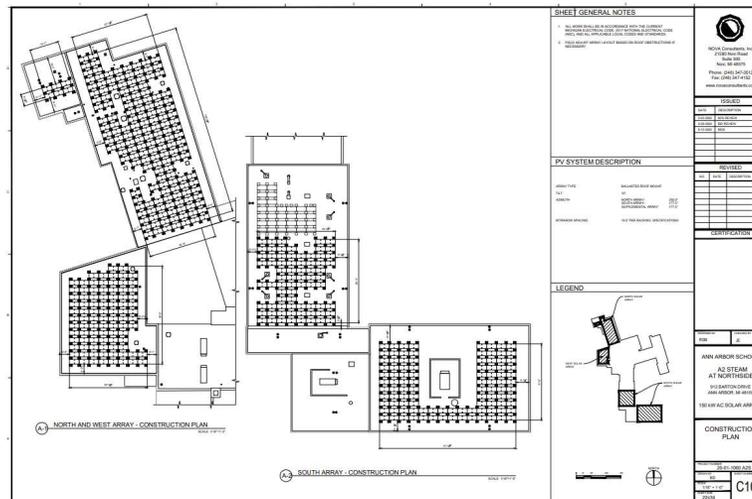
### Pre-Construction:

Bryant Elementary (150 kW)

**Nearly 1 MW of rooftop solar by the end of 2021.**

*Every year the energy produced will offset carbon emissions equivalent to:*

- 1,900,00 miles driven by cars; or
- 850,00 pounds of coal burned; or
- 160 homes annual electricity usage



A2 STEAM



Pattengill Elementary



# Recent and Ongoing Sustainability Efforts

Completed to date

## Bryant Elementary School

- High Efficiency LEDs
- Increased access to daylight and views to nature
- Enhanced user and building automation controls



*Before classroom*



*After classroom (pre set-up)*



*Before exterior*



*After exterior*

# Recent and Ongoing Sustainability Efforts

## Pattengill Elementary School

- High Efficiency LEDs
- Rooftop Solar Array
- New A/C with enhanced ventilation/filtration
- Improved thermal comfort
- Daylight improvements



*Rooftop solar*



*Skylight - Construction*



*Before classroom*



*After classroom (pre set-up)*



*After skylight - Makerspace*

# Recent and Ongoing Sustainability Efforts

## Electric Bus Purchase and Charger Installation:

- 4 new electric buses
  - Range up 135 miles/charge
  - EGLE grant supported purchase
- 4 new chargers, can add capacity (2x)
  - Fast charging DC (full charge in ~3 hrs)
  - Vehicle to Grid (V2G) capability
  - EGLE grant supported purchase (VW Settlement Funds)



*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



*Pioneer High School public space*



*Pioneer High School stormwater feature*

# Roofing and Solar Improvement Plan

| Building Name             | 2020    |       | 2021    |       | 2022    |       | 2023    |       | 2024    |       | 2025    |       | 2026    |       |
|---------------------------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
|                           | Roofing | Solar |
| Pioneer High School       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Huron High School         |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Forsythe Middle School    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| A2 STEAM                  |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Eberwhite Elementary      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Pattengill Elementary     |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Haisley Elementary        |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Freeman                   |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Balas Administration      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Huron High School         |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Bryant Elementary         |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Dicken Elementary         |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Pioneer High School       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Slauson Middle School     |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Pattengill Elementary     |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Thurston Elementary       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Westerman Preschool       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Skyline High School       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Pathways to Success       |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Tappan Middle School      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Clague Middle School      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Abbot Elementary          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Carpenter Elementary      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Wines Elementary          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Eberwhite Elementary      |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Freeman Elementary        |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Transportation Building   |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Lawton Elementary         |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Scarlett Middle School    |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Mitchell Elementary (new) |         |       |         |       |         |       |         |       |         |       |         |       |         |       |
| Logan Elementary          |         |       |         |       |         |       |         |       |         |       |         |       |         |       |

Every roof in the district has been assessed by professional engineers and a multi-year plan has been developed to ensure the roofs stay in good condition.

As roof sections with good solar potential are replaced solar energy systems will be installed

**By 2026 - 3,000 kW of solar across 21 schools**

- Approximately 150kW AC per school, the maximum allowable under current regulations
- Every year the energy produced will offset carbon emissions equivalent to:
  - 6,300,000 miles driven by cars; or
  - 3,000,000 pounds of coal burned; or
  - 550 homes annual electricity usage



# Environmental Sustainability and The AAPS 2019 Bond

## Key Themes and Areas of Consideration

- **Human Centric Design** – Maximize the health and well-being of our students and staff through careful attention to:
  - Air quality and the thermal environment;
  - Natural and artificial light;
  - Acoustics; and
  - Access to views and nature
- **Net Zero Energy Ready (ZER)** - design new schools and major renovations to be ZER
- Consider both **Embodied and Operational Carbon**
- Utilize **Life Cycle Analysis (LCA)** and **Environmental Product Declarations (EPD)** in evaluation design decisions
- Develop AAPS specific **Sustainable Design Guidelines (SDG)** with the advisement of the 2019 Bond Environmental Sustainability Advisory Working Group



# Human Centric Design

*Connection Between Health and Performance*



*Forhealth.org*

# Human Centric Design

*Environmental Factors Influencing Student Outcomes*

**HEAR**

**BREATHE**

**SEE**

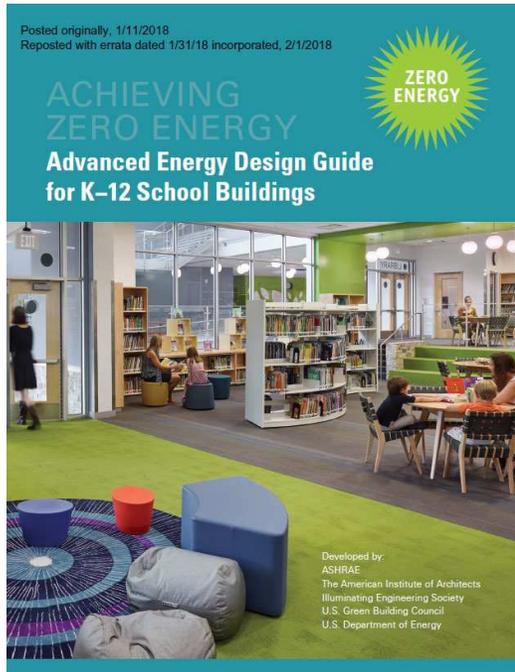
**FEEL**

**THINK  
AND  
LEARN**

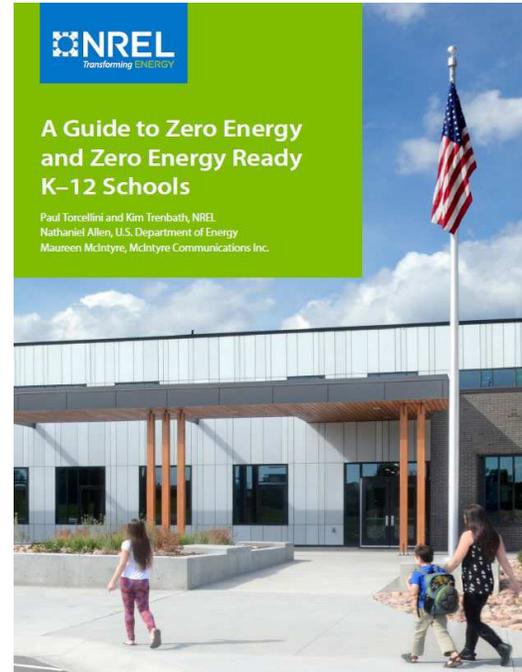


# Net Zero Energy (NZE) and Zero Energy Ready (ZER)

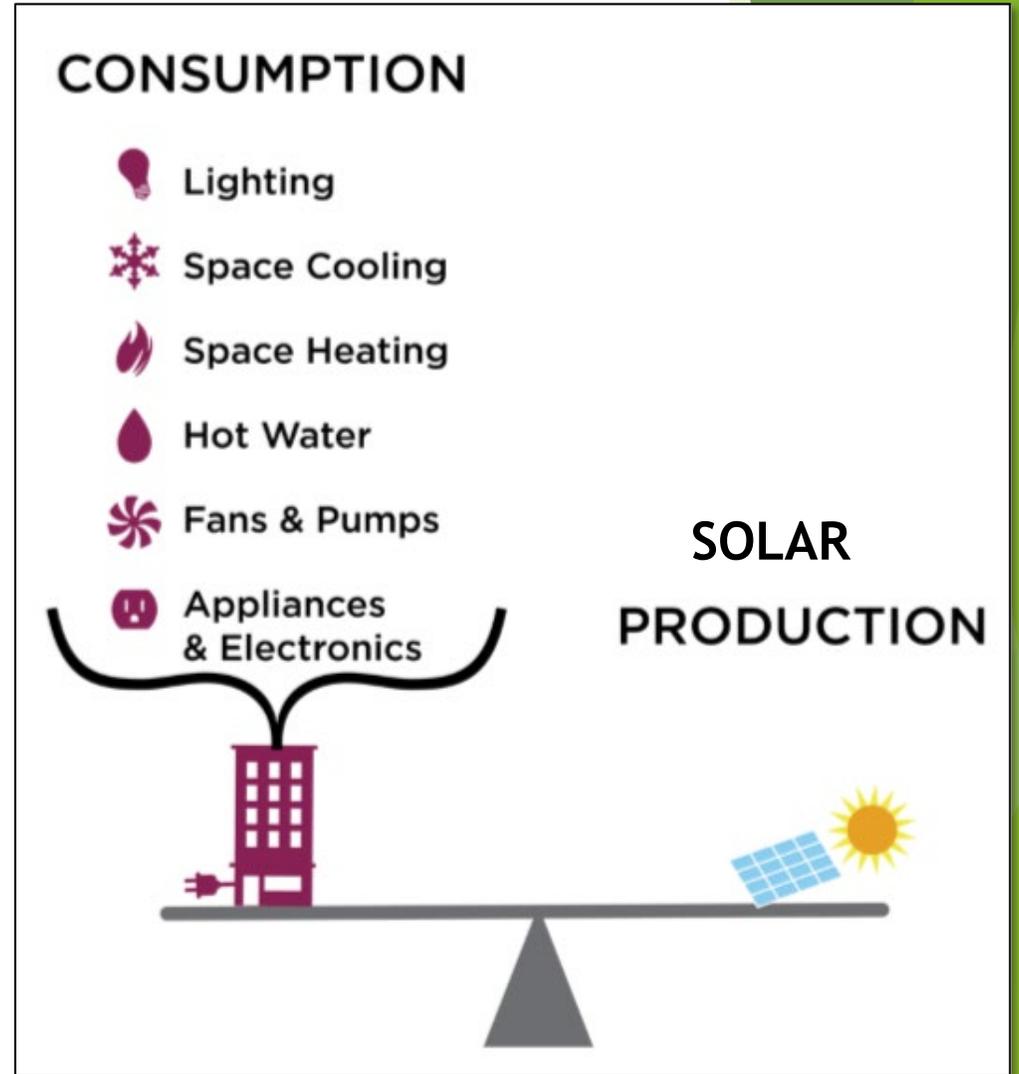
*Major Projects in the AAPS bond program offer the opportunity to achieve significant carbon footprint reductions and achieve Net Zero Energy and Zero Energy Ready school buildings.*



US DOE Advanced Energy Design Guide



NREL Guide for Zero Energy Ready Schools

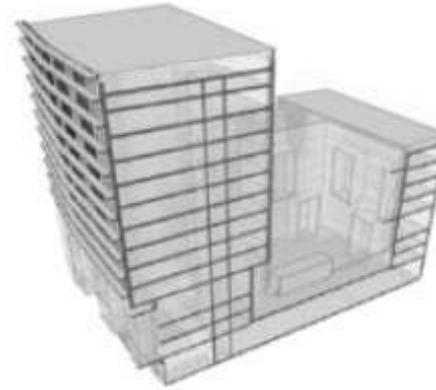


# Net Zero Energy (NZE) and Zero Energy Ready (ZER)

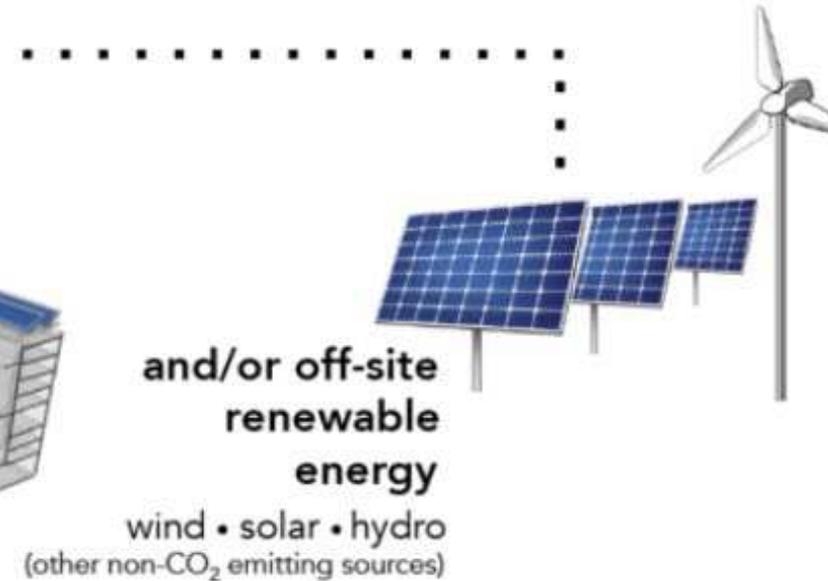
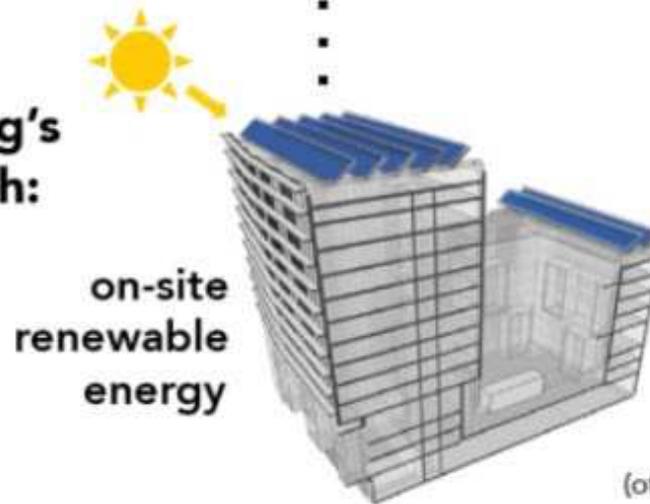
## 1 Design an energy efficient building

Efficiency Standard: ASHRAE 90.1-2016 minimum;  
ASHRAE 189.1-2017; others

- Efficient building envelope / daylighting
- Passive heating / cooling / ventilation
- Efficient systems / equipment / controls



## 2 Address the remaining building's energy needs with:



Source: Architecture 2030  
Graphic adaptations: Sefaira; DOE

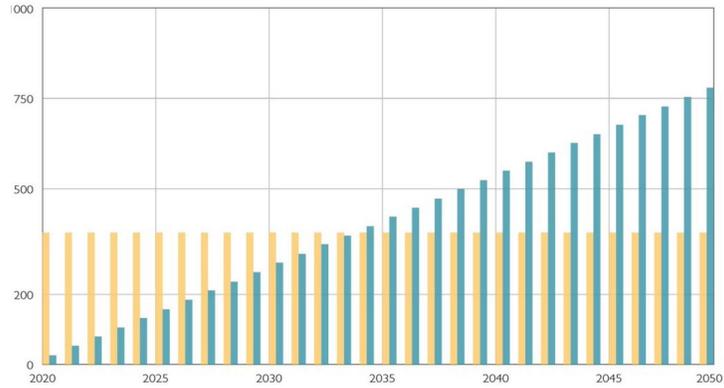


# Net Zero Energy (NZE) and Zero Energy Ready (ZER)



*NYC Public Schools -The Kathleen Grimm School for Leadership and Sustainability at Sandy Ground - First Net Zero School*

# Other Considerations



**Embodied Carbon vs. Operational Carbon**



**Environmental Product Declaration (EPD)**

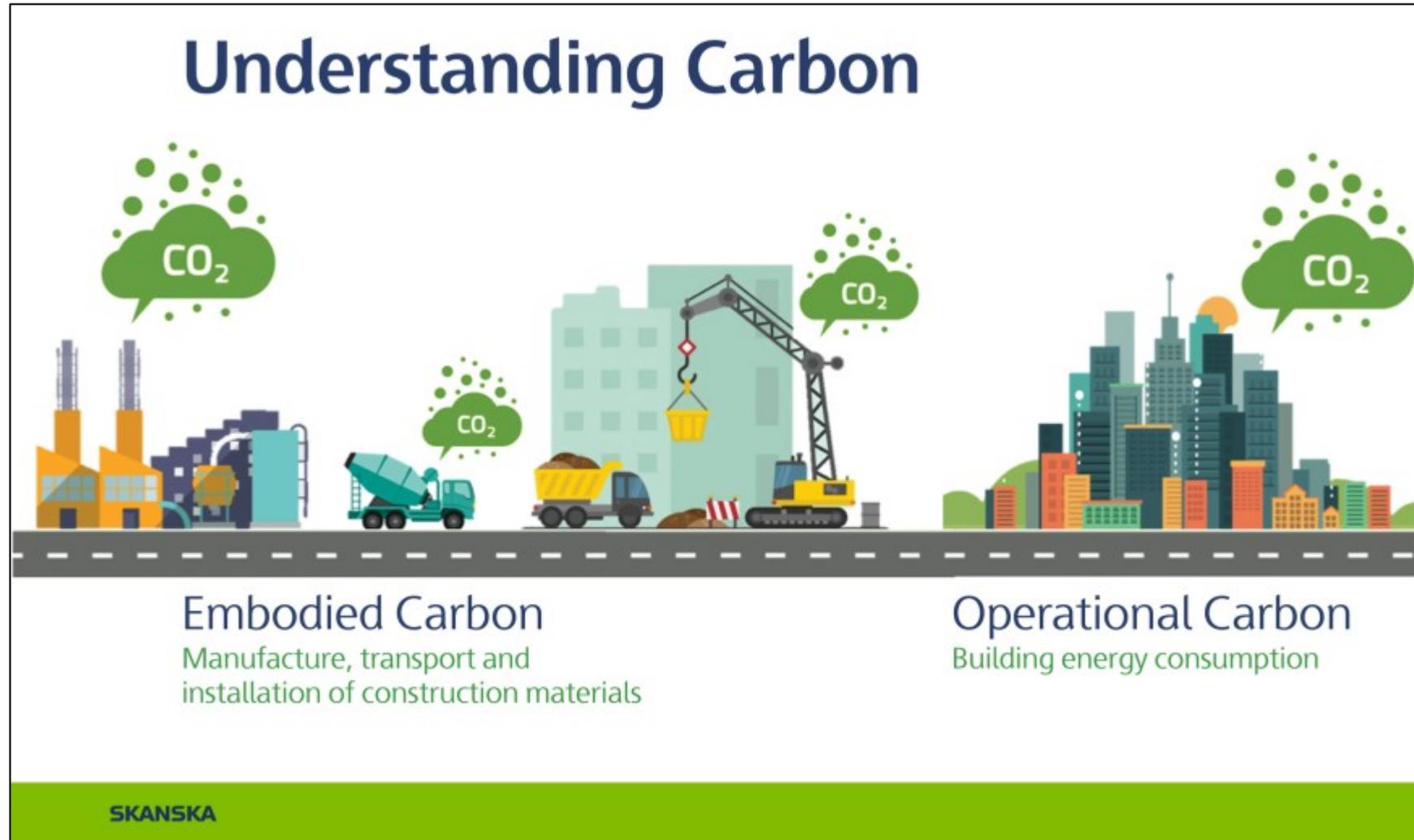


**Life Cycle Analysis (LCA)**

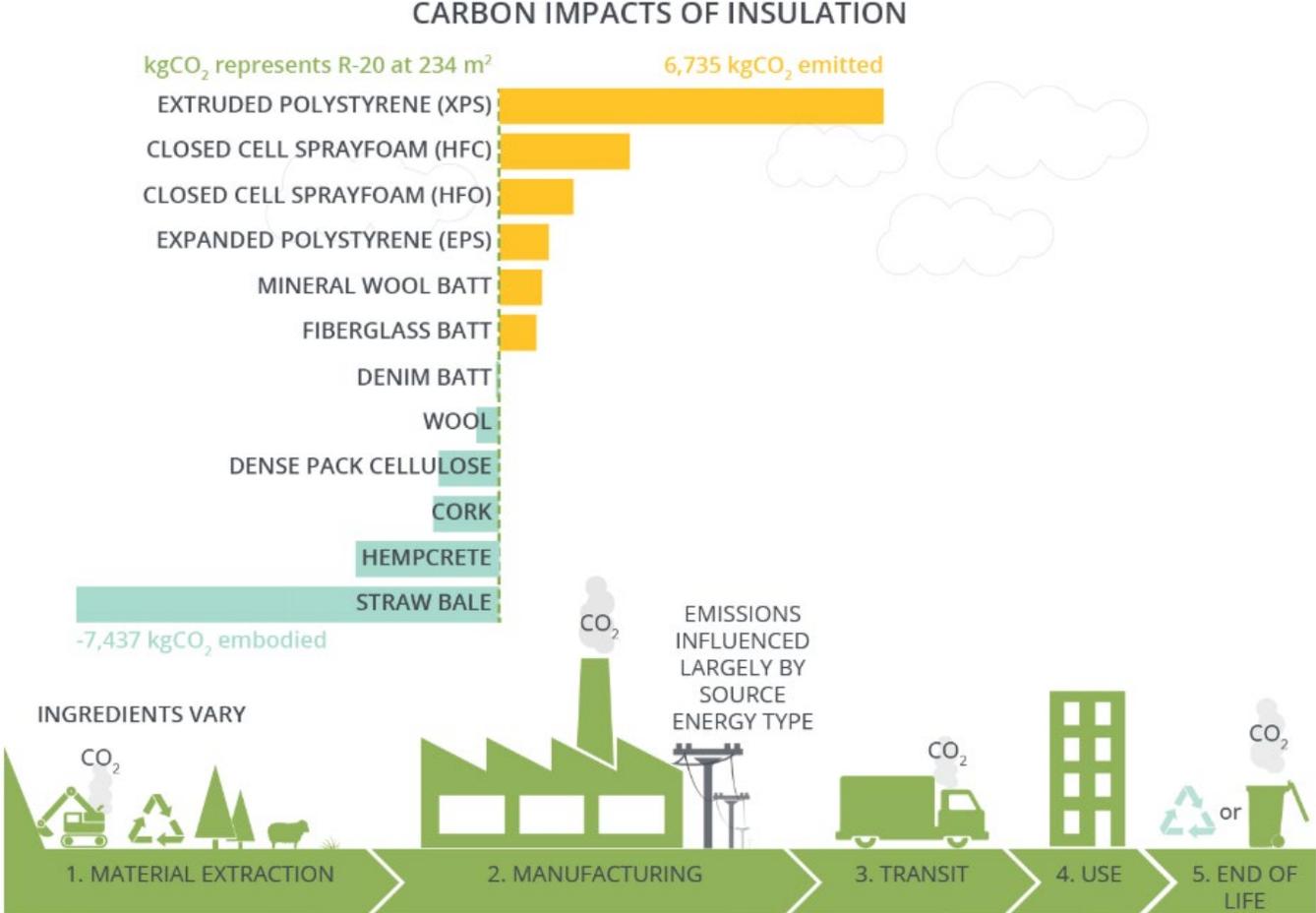


**Human Centric Design**

# Embodied vs. Operational Carbon Emissions



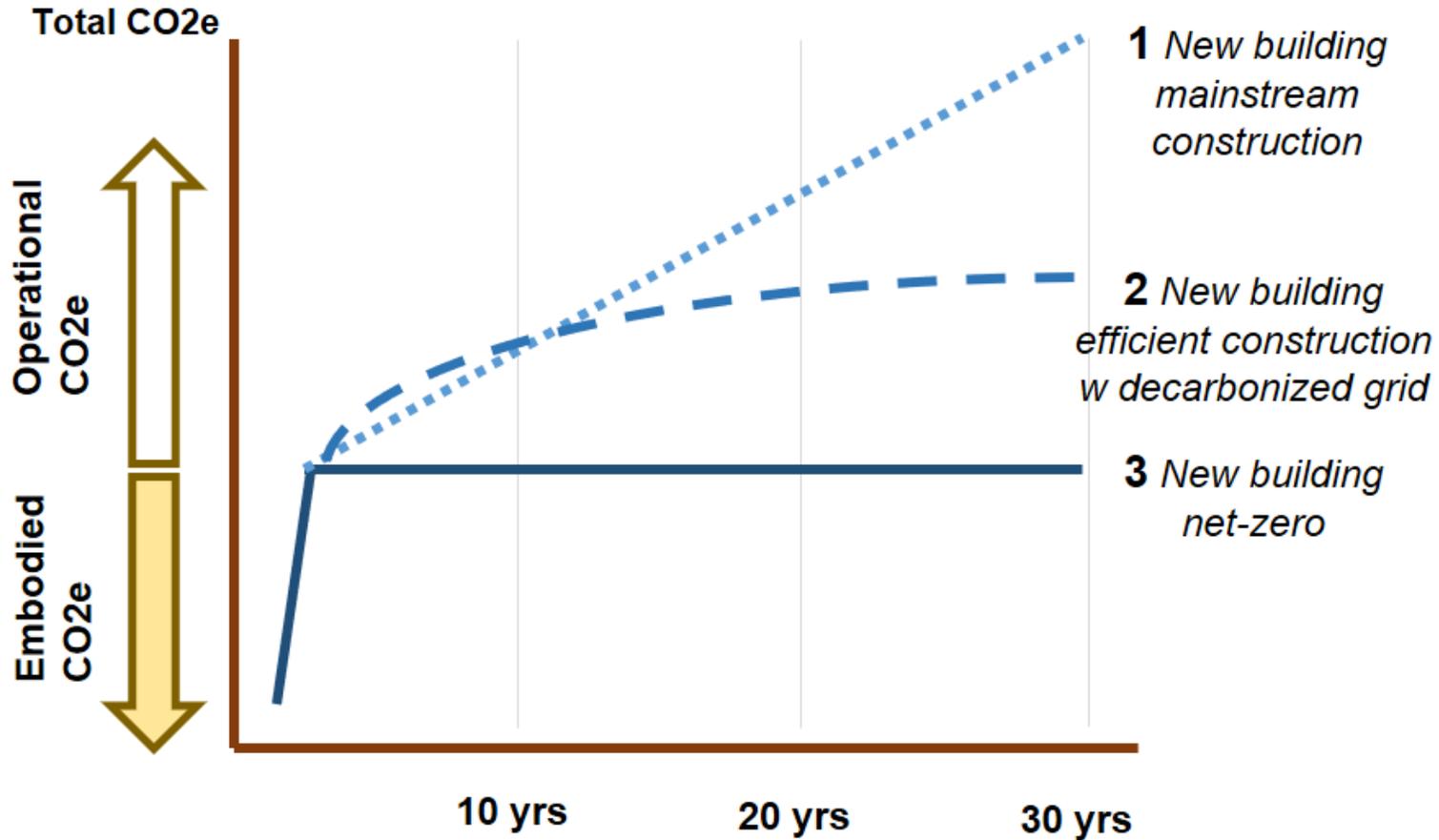
# Embodied Carbon Example - Insulation



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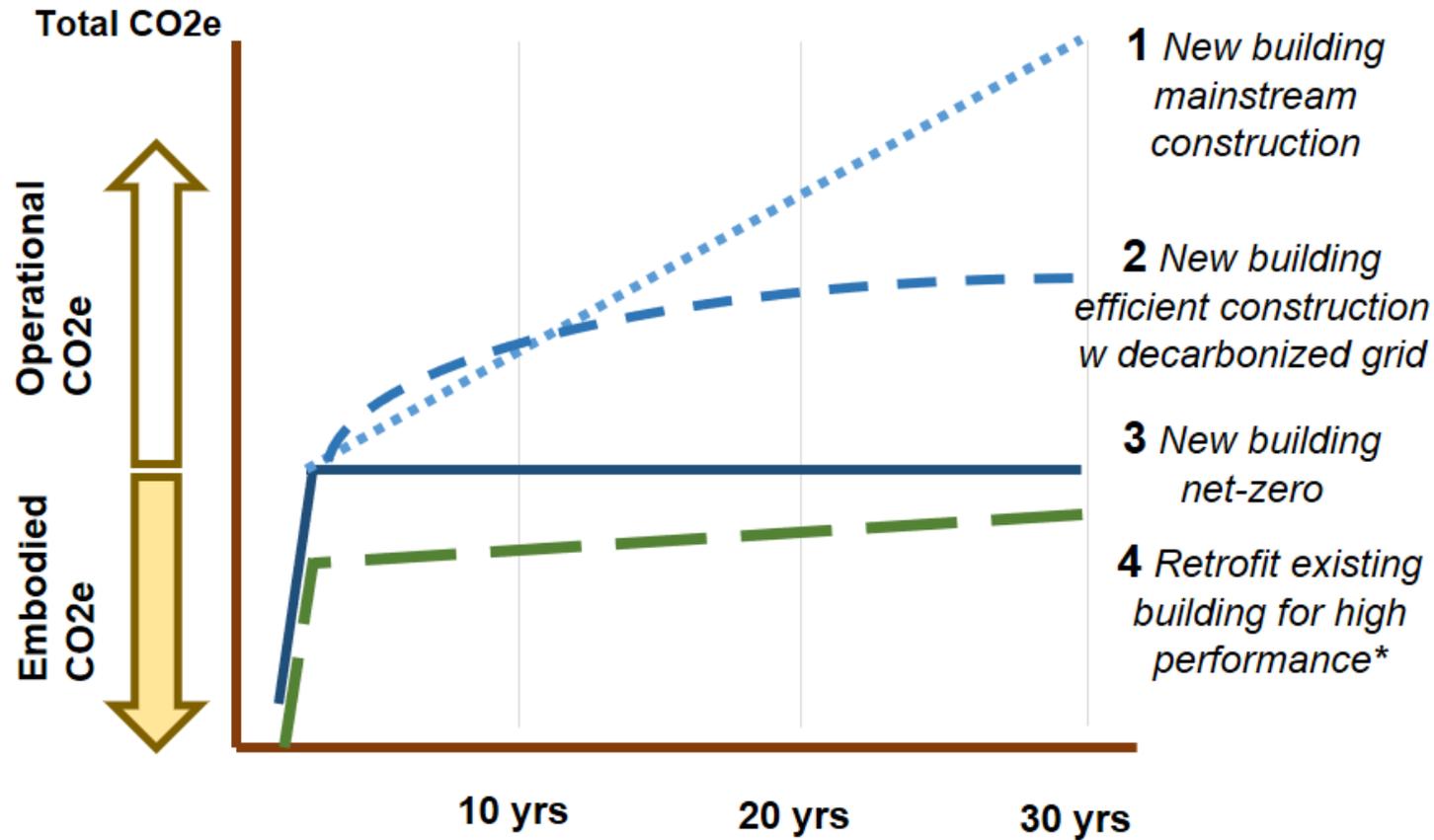
Carbon impacts data source: Builders for Climate Action - 2019 White Paper "Low-Rise Buildings as a Climate Change Solution", Chris Magwood, 2019;

# Embodied Carbon and Operational Carbon - *New Construction*



**New Construction - Carbon Impacts over Time**

# Embodied Carbon and Operational Carbon - *Deep Retrofit/Renovation*



## Deep Retrofit - Carbon Impacts

*\* Complicating factors are present in existing buildings such as programmatic constraints, legacy environmental health hazards and antiquated infrastructure*

# Life Cycle Assessment (LCA)



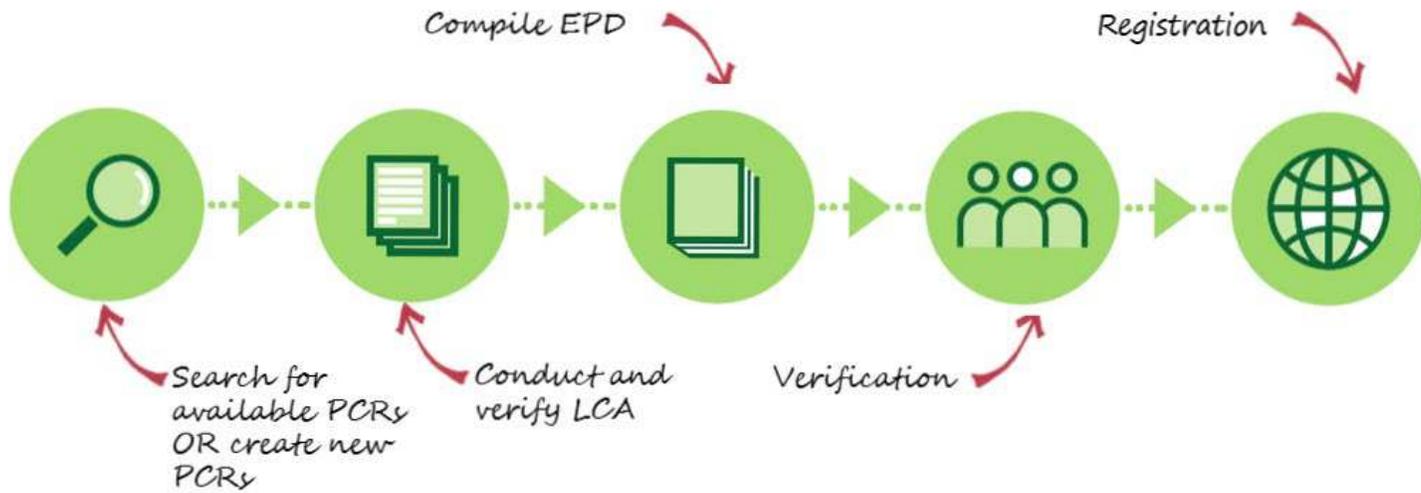
**Life cycle assessment** is a cradle-to-grave or cradle-to-cradle analysis technique to assess environmental impacts associated with all the stages of a product's **life**.

Addressing the true impact of a building's carbon footprint includes a Whole Building Life Cycle Assessment, which is comprised of two major components:

1. the building's embodied carbon
2. the building's operational carbon

# Environmental Product Declarations (EPD)

An Environmental Product Declaration (EPD) is an independently verified and registered document that verifies Life Cycle Assessment (LCA) data and communicates transparent and comparable information about the life-cycle environmental impact of products.



Products with Verified EPDs have demonstrated improved life cycle environmental impacts

# Preview – DRAFT Sustainable Design Guidelines

AAPS is in the early stages of developing **Sustainable Design Guidelines (SDG)** with the assistance of professional consultants

- They will be reviewed and informed by the Bond Advisory Committee and Environmental Sustainability Working Group
- Submitted to architecture & engineering design teams to guide major projects

## GOALS



# Preview – DRAFT Sustainable Design Guidelines

## *SDG areas:*

- The SDG will include both project-level guidelines and district-level guidelines and goals
- The SDG will utilize/reference sustainable design rating systems including:
  - Leadership in Energy and Environmental Design
  - Collaborative for High Performance Schools
  - Living Building Challenge
  - Sustainable SITES Initiative
  - WELL Building Standard, and others

### **0.0 Design Strategy and Innovation**

#### **1.0 Design Process**

#### **2.0 Site Design**

#### **3.0 Energy Systems**

#### **4.0 Water Systems**

#### **5.0 Lighting and Daylighting**

#### **6.0 Thermal Comfort**

#### **7.0 Air Quality**

#### **8.0 Acoustics**

#### **9.0 Material Systems**

#### **10.0 Carbon Footprint**

#### **11.0 Education**

#### **12.0 Operations**

# Draft – AAPS SDG List, Sections 0-5

## 0.0 Design Strategy and Innovation - *District priorities that fall across numerous SDG Sections*

- Prioritizing Student and Faculty Health in terms of air quality, water quality, food quality, thermal comfort, acoustics, and the luminous environment including artificial and natural light and access to views
- Low/Zero Energy/Carbon Design
- Passive Systems, Resiliency and Adaptability
- Moments of Joy, Splashes of Color, and Curvilinear elements
- Biophilic Design
- Cooking Kitchens and Local foods
- Community Responsiveness, Equity and Social Justice
- Universal Access

## 1.0 Design Process

- Integrative design process
- Community/Stakeholder engagement

## 2.0 Site Design

- Building Orientation and Massing
- Open space – District-level goals and Project-level expectations
- Native and adaptive plants
- Urban forestry – District-level plan and Project-level expectations
- Wildlife corridors – Project-level study
- Stormwater management
- Stormwater as a teaching tool
- Light pollution
- Non-motorized transportation
- Heat island effect
- On-site food production
- School day use - physical activity; structured and unstructured play; and social connection
- Community use and neighborhood connectivity
- Local, low carbon, and recycled materials

## 3.0 Energy Systems

- Pre-construction systems modeling including source and site carbon emissions; renewable energy production; daylighting; and envelope performance
- Overall operating energy performance
- Overall operating energy performance – performance measurement (post-occupancy)
- Energy Management Systems
- Infiltration rates – Minimum performance spec
- Insulation values – Minimum performance requirements – walls, roofs, slab-edge, etc.
- Renewable energy – District-level goals and Project-level goals
- Refrigerant management
- Commissioning
- Planning for energy storage and resiliency and passive operations

## 4.0 Water Systems

- Indoor water use
- Irrigation water use
- Garden water source – Frost Protected from building
- Touchless fixture operation
- Water quality

## 5.0 Lighting and Daylighting

- Lighting levels
- Color temperature – indoor and outdoor
- Artificial Lighting Quality (CRI)
- Access to views
- Daylighting
- Lighting power density
- Occupant lighting controls

# Draft – AAPS SDG List, Sections 6-12

## 6.0 Thermal Comfort

- Temperature levels by season
- Humidity levels by season
- Occupant thermal controls

## 7.0 Air Quality

- Ventilation
- Filtration
- Particulates
- VOCs and other toxins
- Low emitting materials
- Environmental Health Hazards

## 8.0 Acoustics

- Acoustic performance – design modeling
- Acoustic performance – performance measurement

## 9.0 Material Systems

- Construction and demolition recycling
- Operating recycling provisions
- Biophilia
- Low carbon materials
- Local materials
- Sustainably sourced materials
- Life cycle cost and environmental impact
- Environmental Product Declarations

## 10.0 Carbon Footprint

- Whole Building Life Cycle Analysis (LCA) tool -
- Whole Building LCA targets:
  - Modeling/Tracking/Measurement of Retained Embodied Carbon (renovation)
  - Modeling/Tracking/Measurement of New Embodied Carbon (construction)
  - Modeling/Tracking/Measurement of Operating Carbon (occupancy)

## 11.0 Education

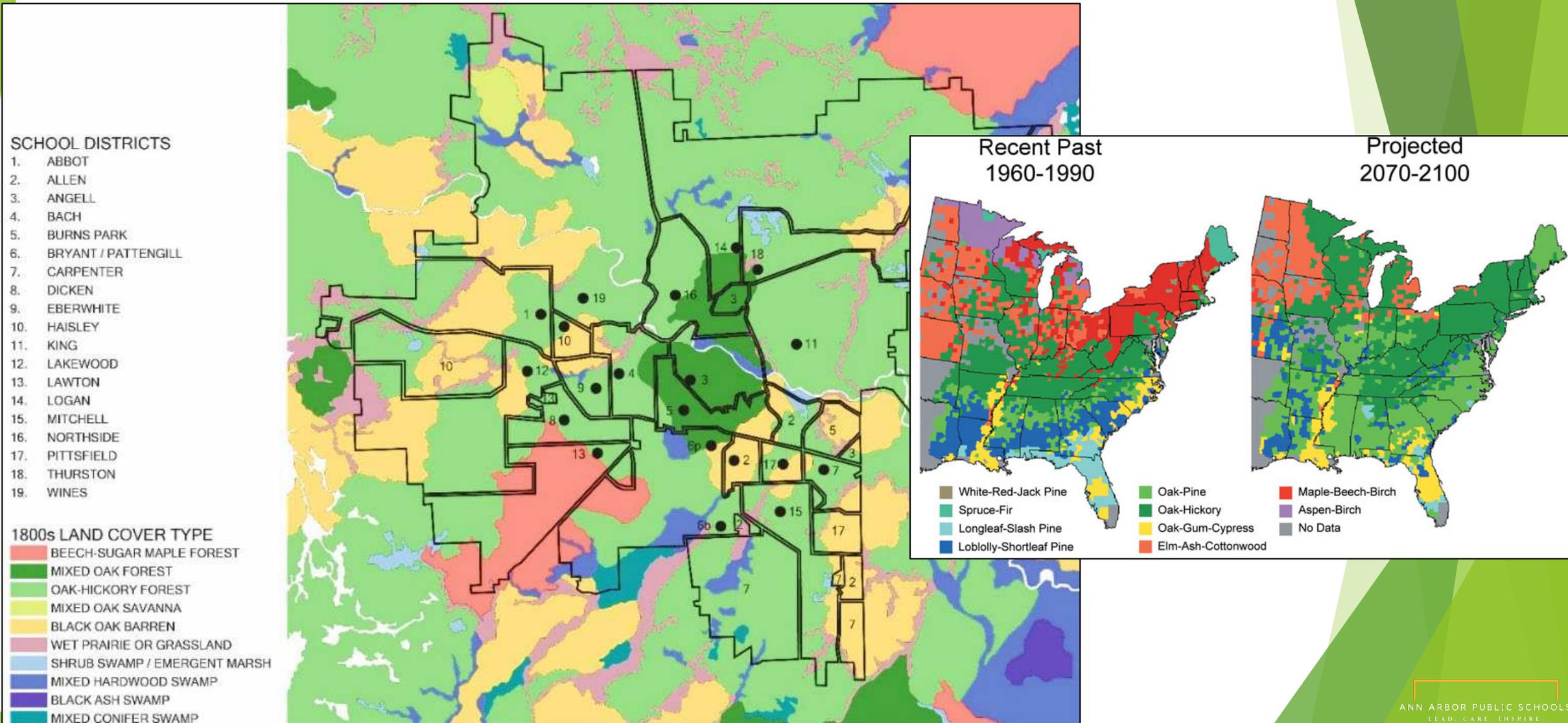
- Building as a teaching tool
- Educational display
- Performance metrics reporting
- Pre and post-occupancy evaluations

## 12.0 Operations

- Facilities staff training
- Occupant training
- High Performance Maintenance plan
- Monitoring and Measuring
- Organizational partnerships to support operations (gardening, PLTW, etc.)

# Example – DRAFT AAPS SDG:

## 2.03 Site Design: Native and Adaptive Plants

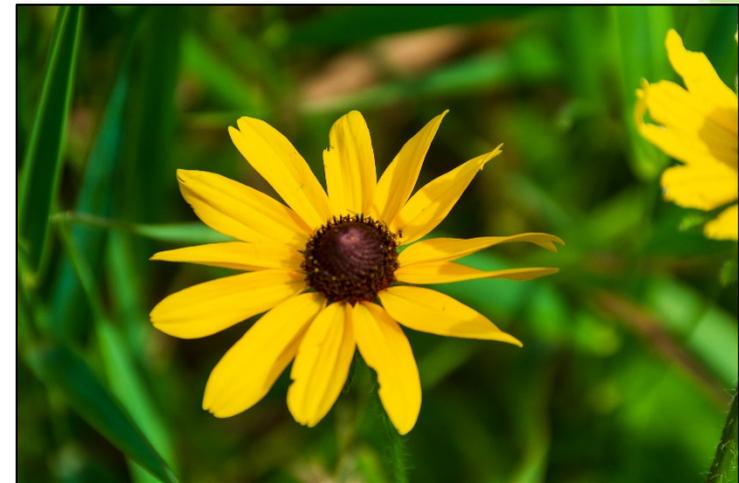


# Example – DRAFT AAPS SDG:

## 2.03 Site Design: Native and Adaptive Plants

- New plantings will include **100% native species** from the Ann Arbor / regional Eco-region
- Site designs will strive to **preserve native plants** where native vegetation exists.
- 75% of the native species selected shall be **adaptive to the 2100 projected climate** change plants (incorporating species that can withstand a warmer climate)

| REFERENCE STANDARD(S)  |  |
|--|--|
| <br> | <b>Site Design – Soil + Vegetation 4.6</b><br>Conserve and use native plants   |
|  | <b>Sustainable Sites: Protect or Restore Habitat</b><br>To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity |



# Example – DRAFT AAPS SDG: 10.02-A: Whole-Building LCA Targets

## Renovation

- ▶ Prior to renovation projects, design teams should perform a carbon accounting exercise to determine the embodied carbon implications of reuse vs new construction.
- ▶ Prioritize adaptive reuse where possible, provided programming and other owner project requirements can still be met.

| REFERENCE STANDARD(S)   |   |
|---|---|
|  <p>LEED</p> | <p><b><u>MR: Building Life-Cycle Impact Reduction, Option 3</u></b></p> <p>A minimum of 25% of new project surface area must come from reused or salvaged building materials from structural materials, enclosure materials, and permanently installed interior elements.</p> |

**Design teams should evaluate the use of additional modeling standards available at the time of design. (e.g., standard practices for whole-building life cycle analyses.)**

# Example – DRAFT AAPS SDG: 10.02-B: Whole-Building LCA Targets

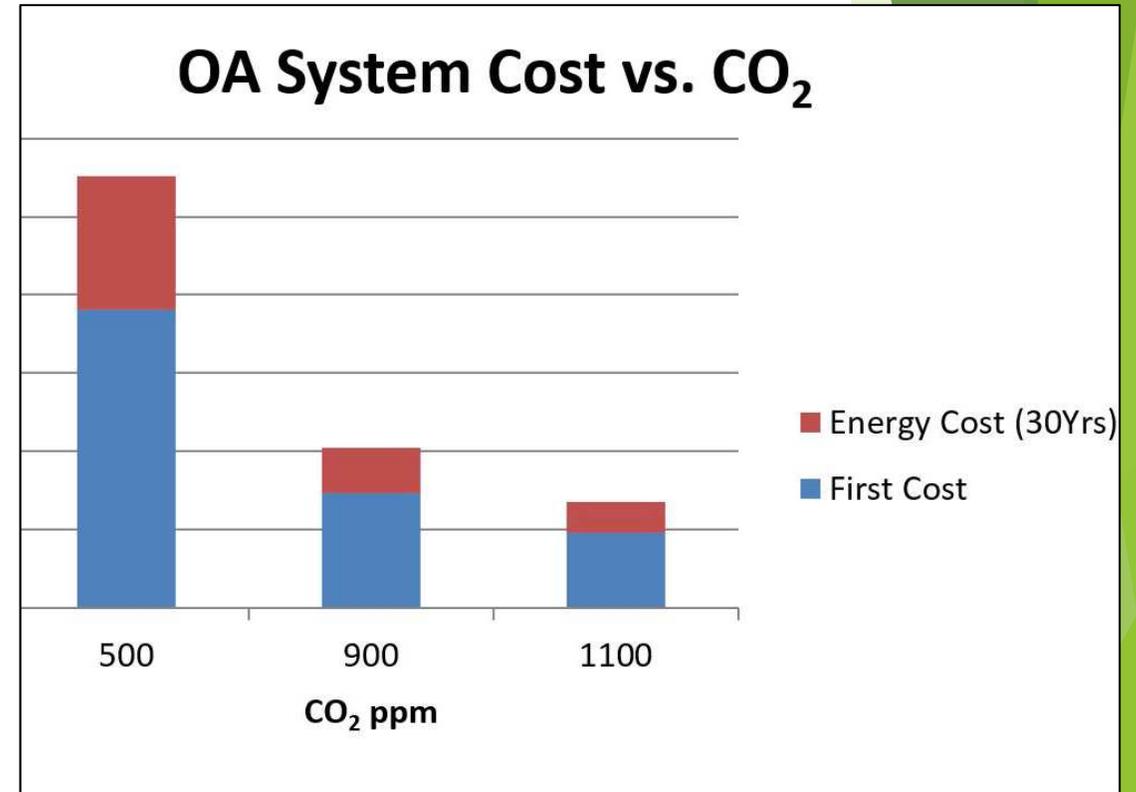
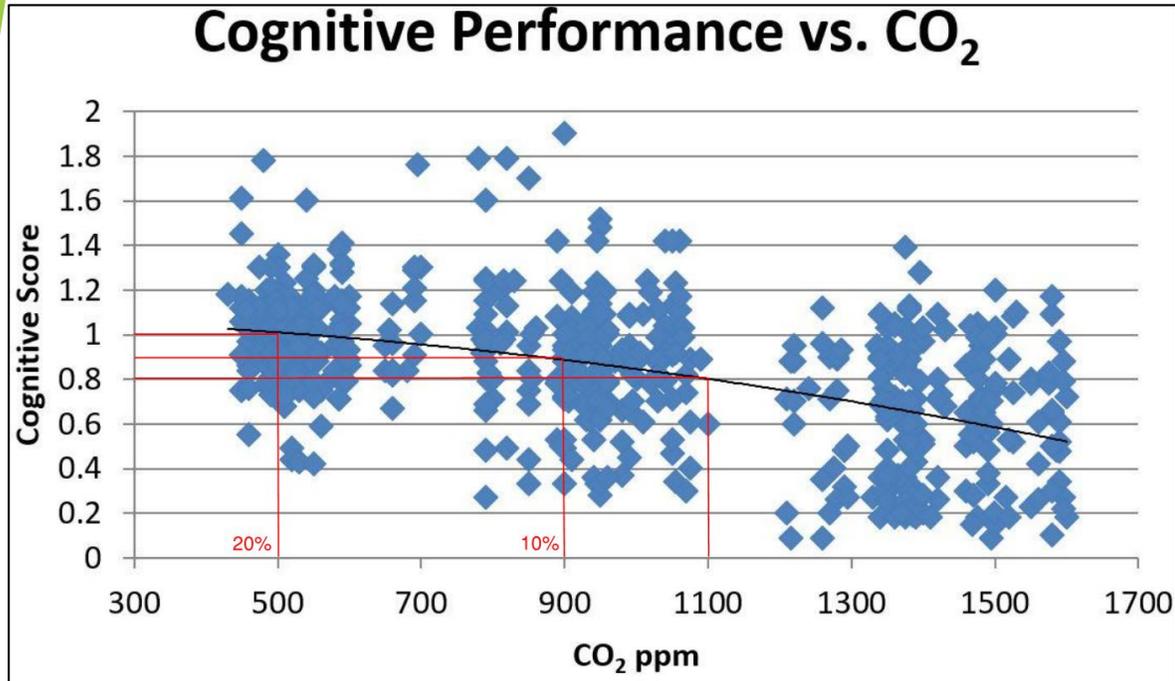
## New Construction

- Achieve at least a 20% reduction in global warming potential in embodied carbon.
- Achieve a 10% reduction or higher in at least two other environmental impact categories cited in ISO 21930:
  - Depletion of stratospheric ozone
  - Acidification
  - Eutrophication
  - Formation of tropospheric ozone
  - Depletion of non-renewable resources
- At a minimum, include building structures, enclosures, and interiors within LCA scope.

| REFERENCE STANDARD(S)  |  |
|--|--|
| <b>LEED</b><br> | <b><u>MR: Building Life-Cycle Impact Reduction, Option 4</u></b> <ul style="list-style-type: none"><li>- Achieve at least a 10% reduction in 3 impact categories, one of which being GWP, compared to a representative baseline.</li><li>- Includes new structure and enclosure elements only.</li></ul> |

Design teams should evaluate the expansion of LCA scope at the time of design. (e.g, MEP systems, furnishings, etc.)

# Example – DRAFT AAPS SDG: 7.01: Ventilation



Professional consultants optimization analysis (under typical operating conditions)

# Example – DRAFT AAPS SDG: 7.01: Ventilation

- **Maintain CO2 levels of 900 PPM or less in occupied areas**
  - Reduced indoor air contaminants
  - Improved cognitive function
  - Pandemic resilience

| REFERENCE STANDARD(S)  |  |
|--|--|
| <b>LEED</b><br> | <b><u>EQ: Enhanced Indoor Air Quality</u></b><br>Increase ventilation by 30% above minimum ventilation rates in ASHRAE 62.1 2010 |
| <b>WELL</b><br> | <b><u>V2 A06: Enhanced Ventilation</u></b><br>Achieve 1 point for designing for ventilation rates 30% above ASHRAE 62.1 2010.    |

# Example – DRAFT AAPS SDG: 7.02: Filtration

- Use MERV-13 filters or better for all HVAC terminal units
  - Reduced indoor air contaminants
  - Pandemic resilience



| REFERENCE STANDARD(S)  |   |
|--|---|
|   | <b><u>ASHRAE Reopening Guide For Schools</u></b><br>Provide MERV-13 filters or better as part of recommended Covid-19 response. |
|  | <b><u>IEQ: Enhanced Indoor Air Quality</u></b><br>MERV-13 requirement   |

# AAPS Bond Plan 2020-2030



## Community Engagement

# Community Engagement

**Community stakeholders will have opportunities to learn about the Phase 1 Bond Plan 2020-2030 and to provide feedback, including:**

- Community organization presentations
- Public presentations
- Topical presentations
- **Thought Exchange (TODAY)**
- Bond Advisory Committee
- Bond Working Groups
- School Design Committees for major projects
- Dedicated web page: *A2SchoolsBond.org*
- Board of Education meetings



# Bond Advisory Committee and Working Groups

***The purpose of the AAPS Bond Advisory Committee, Working Groups, and School Design Committees is to engage community members and organizations in a process to help inform recommendations of the AAPS professional team, communicate bond updates to the community, and establish or enhance partnerships.***

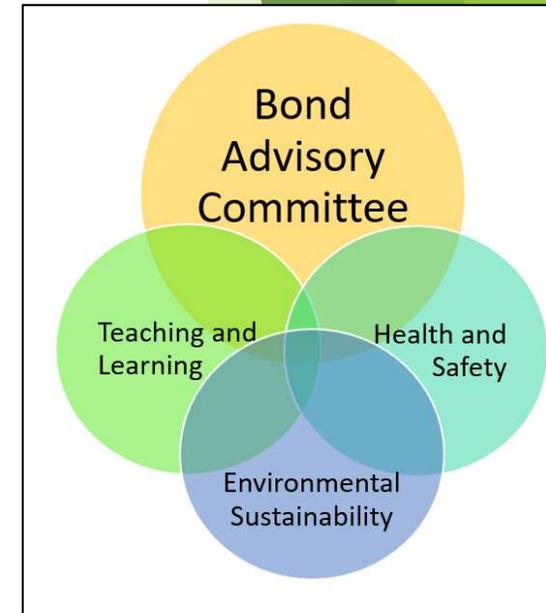


# Bond Advisory Committee and Working Groups

**The AAPS 2019 Bond Advisory Committee** will be formed in 2021. In addition to Board of Education and AAPS staff, members will be recruited to represent stakeholder organizations in the Ann Arbor community. Organizational representatives will be joined by key community communicators and will provide feedback on the recommendations of the AAPS professional team, serve as disseminators of bond program updates to their organizations, and explore opportunities for partnership and collaboration.

**Working Groups** will be formed through an application process and be selected to include key internal and external stakeholders, subject matter experts, and a Board of Education representative. Initial working groups will include: Teaching and Learning, Environmental Sustainability, and Health and Safety. Two representatives from each Working Group will also sit on the Bond Advisory Committee.

**School Design Committees** will also be formed at each school prior to each school's major project over the course of the 20-year bond program. These committees will include school administration, faculty, students, and parents interested in helping inform the work of the AAPS professional team.



# Bond Advisory Committee and Working Groups

## Calendar year 2021

During 2021 the primary role of the Bond Advisory Committee and Working Groups will be to **review and inform Design Standards** developed and presented by the AAPS professional team. The Design Standards will provide direction to design teams working on AAPS major projects. They will include both prescriptive and performance-based standards and be developed based on leading trends in K12 school design and construction.

## 2022 and Beyond

Beginning in 2022, role of the Bond Advisory Committee and Working Groups will **transition to monitoring the application of Design Standards, receiving progress updates on major projects, review pre and post-occupancy surveys, and serving as liaisons to school-based School Design Committees.** It is anticipated that some Working Group and Advisory Committee meetings will be combined, while other meetings will remain independent.



# Progress and Next Steps

## ✓ 2018/2019

- Independent Facilities Condition Assessment completed for all AAPS schools

## ✓ Jan-Dec 2020

- Preliminary work reviewed and informed by the Trustees and Board Bond Committee
- Selected Bond Program Management firm
- AAPS staff and professional team developed and refined preliminary plan based on bond campaign commitments and independent Facilities Condition Assessment

## ✓ June 2020

- Series 1 Bond Sale - \$151M

## ✓ December 2020

- Board Study Session
- Board 1st and 2nd Briefing
- Board Approval of Phase 1 AAPS 2020 Bond Plan

## January - April 2021

- Update AAPS Community
- Community Feed Back via Thought Exchange
- Form Bond Advisory Groups

## April 2021

- Community Feedback Report to the Board

## Spring/Summer 2021

- Bond Advisory Groups Begin Meetings





ThoughtExchange is a cloud based community feedback and engagement tool. Participants are encouraged to add their Thoughts in response to some leading questions and to rate the Thoughts that others post using a 5-star rating system.

Our questions for this exchange are:

- *What most excites you about the AAPS Bond Plan?*
- *What new information did you learn from the presentation?*
- *What thoughts do you have about the environmental sustainability aspects of the plan?*

***Please visit this link to participate!***

<https://my.thoughtexchange.com/282911065>



2019 BOND



**Our Kids**



**Our Schools**



**Our Future**

ANN ARBOR PUBLIC SCHOOLS

**Thank  
you**