



SACRAMENTO CITY UNIFIED SCHOOL DISTRICT BOARD OF EDUCATION

Agenda Item# 11.4

Meeting Date: September 21, 2023

Subject: Carbon Neutral Goals and Guidelines for SCUSD Buildings

- Information Item Only
- Approval on Consent Agenda
- Conference (for discussion only)
- Conference/First Reading (Action Anticipated: _____)
- Conference/Action
- Action
- Public Hearing

Division: Facility Support Services

Recommendation: Receive information on proposed carbon neutral goals and guidelines for SCUSD buildings. A Board resolution will be forthcoming at a subsequent meeting to approve the proposed carbon neutral goals and guidelines.

Background/Rationale: Sacramento City Unified School District (SCUSD) is embarking on a process to design, construct, and modernize school buildings and facilities to achieve carbon neutrality by 2045, which is set by California Executive Order B-55-18, 2018. As part of the ongoing work outlined by the Facilities Master Plan that was Board approved in October 21, 2021, the District partnered with the New Buildings Institute (NBI) and the Sacramento Municipal Utilities District (SMUD) to develop District guidelines for prioritizing efforts to achieve building portfolio carbon neutrality by 2045, if not sooner. This includes portfolio and project level energy targets and timelines, as well as project requirements for new construction, major modernizations, and facility upgrades. This was a major component of the Facilities Master Plan.

Financial Considerations: These targets and guidelines will be incorporated in capital project design moving forward, which will positively impact the District's General Fund over time.

LCAP Goal(s): College, Career and Life Ready Graduates; Safe, Emotionally Healthy and Engaged Students; Family and Community Engagement; Operational Excellence

Documents Attached:

1. Executive Summary
2. Energy & Carbon Goals
3. Energy & Carbon Project Requirements

Board of Education Executive Summary
Facilities Support Services

G.W. Carver School of Arts and Science	Secondary (H)	29	72
Genevieve F. Didion Elementary	Primary (K-6)	33	91
Golden Empire Elementary School	Primary (K-6)	31	94
H.W. Harkness Elementary School	Primary (K-6)	32	77
Hiram Johnson High School	Secondary (H)	63	122
Hollywood Park Elementary School	Primary (K-6)	40	106
Hubert H. Bancroft Elementary School	Primary (K-6)	35	86
Isador Cohen Elementary School	Primary (K-6)	29	75
James W. Marshall Elementary School	Primary (K-6)	28	78
John Bidwell Elementary	Primary (K-6)	27	72
John Cabrillo Elementary School	Primary (K-6)	33	89

School of Engineering and Science

Secondary (7-12)

With the low average EUI across the district, the lower end of this scale should be achievable by these future projects.

1. All new construction/addition projects will:

Achieve a site energy use intensity of **19-24 kBtu/square foot/year** before photovoltaic (PV), depending on building type,

Be all-electric and have no on-site gas combustion,

Be PV-ready for all projects (wherever on site appropriate),

Incorporate renewable energy sources to offset annual electricity use,

Reduce life cycle impacts associated with high embodied carbon materials,

Prioritize local products, manufacturers, and contractors to reduce carbon impacts in the supply chain,

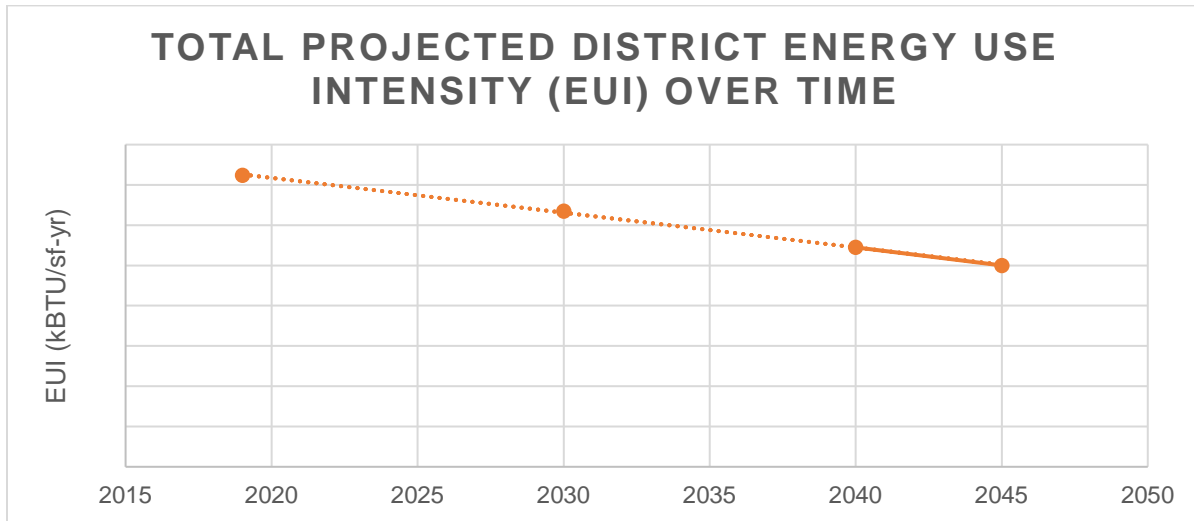
Utilize low global warming refrigerants,

Consider the integration of electric vehicles and fleet infrastructure.

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PROPOSED POLICY OR PORTFOLIO LEVEL GOALS

1. In line with [California Executive Order B-55-18](#), SCUSD's building portfolio will achieve carbon neutrality by 2045⁴.
2. This district will have an average portfolio site energy use intensity of **25 kBtu/square foot/year** (without PV).
3. Reduce energy consumption by 40% by 2030 and 80% by 2040.
EUI in 2030: 31.10 kBtu/sf/yr
EUI in 2040: 27.10 kBtu/sf/yr
4. Onsite gas combustion of zero by 2045.



Sacramento City

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DISTRICT ENERGY AND CARBON EMISSIONS GOALS

The District is committed to leveraging each opportunity to further progress toward achieving these goals. This includes bond-funded new construction and modernization projects, facilities retrofit projects funded with non-bond funds, as well as routine maintenance and operations practices. Energy and carbon emissions reduction opportunities should be considered any time the building envelope or energy using systems are addressed.

Portfolio Level Goals:

- Achieve building portfolio carbon neutrality by 2045, as required by California Executive Order B-55-18.
- Have an average portfolio site Energy Use Intensity (EUI) of **25 kBtu/sq ft/yr** (without PV). For comparison, the District’s current average EUI is 35.1 kBtu/sq ft/yr without PV.
- Reduce energy consumption by 40% by 2030 and 80% by 2040. These goals are expressed as follows:
 - EUI in 2030: 31.10 kBtu/sf/yr
 - EUI in 2040: 27.10 kBtu/sf/yr
- Reduce onsite gas combustion to zero by 2045, as required by California Executive Order B-55-18.

Project Level Goals:

(1) All new construction projects will:

- Achieve a site energy use intensity of **19-24 kBtu/sqft/yr** without photovoltaic (PV), depending on building type,
- Have no on-site gas combustion (and will be all electric),
- Be PV-ready (where site appropriate),
- Incorporate renewable energy sources to offset annual electricity use, including, but not limited to, solar and geothermal,
- Reduce life cycle impacts associated with high embodied carbon materials wherever possible,
- Prioritize local products, manufacturers, and contractors to reduce carbon impacts in the supply chain,
- Utilize low Global Warming Potential (GWP) refrigerants that minimize (if not eliminate) global warming impacts that are non-toxic to the environment,
- Consider the addition of charging infrastructure for staff electric vehicles (including protected electric bicycle parking) and the District fleet (including buses and other heavy duty service vehicles),
- Consider battery storage (including parked school buses at the campus) and/or microgrid solutions supporting the PV system, for District and school resiliency, where practicable.

(2) All major modernization projects will:

- Achieve a site energy use intensity of 25-35 kBtu/square foot/year before PV, depending on the building type,
- Eliminate on-site gas combustion completely or include a designed plan to eliminate gas by 2045. The plan will come in the form of a board approved resolution and/or document signed by the Department Director, Project Sponsor, or Superintendent)

(3) All school facility retrofits will improve the site Energy Use Intensity (EUI) by 20-50% from a 2018-2019 baseline:

- Retrofitted systems should prioritize a shift to all-electric.
- All retrofitted systems must be the most efficient equipment available whether gas or electric.

CAPITAL PROJECTS - NEW CONSTRUCTION

The design team will incorporate the following elements into the construction process.

Processes

ENGAGE THE LOCAL COMMUNITY: The design team must seek authentic input and feedback from the local school community during the design phase.

DESIGNATE AN ENERGY CHAMPION: All projects must nominate an “energy champion” (EC) who will ensure that energy and carbon reduction are considered during the design process. The EC will sponsor an “eco-charrette,” participate in stakeholder meetings, and will review the drawing set at the end of each design phase, and twice during the construction documentation phase (conceptual design, schematic design, design development and construction document

the interrelationships between the building orientation and building systems, surroundings, and occupants. The District's goal is to include as many passive energy design strategies as possible, such as natural daylighting and beneficial electrification that includes heat recovery.

REDUCE ENERGY LOAD FIRST

[Building Council LEED](#) process) may be provided by the same organization whose representatives include design team members.

ENVELOPE COMMISSIONING: Envelope commissioning will be prioritized in all capital projects, this process begins with a blower door assessment and thermal imaging of the current building shell, where it will be retained, to identify leakage areas of concern. Existing envelope improvements should be prioritized based on the building testing results to ensure updates are maximizing performance improvement. Design teams should refer to the technical specifications of the AEDG for further details on building and building envelope commissioning.

TRAINING & STEWARDSHIP:

- All Facilities Service staff shall be trained by vendors and contractors, per written agreement, for any given construction project. Local utility service companies should be looped in to provide additional trainings in their area of expertise.
- It is critical that building occupants such as staff and students are properly engaged to operate a building efficiently, maximize savings, and obtain feedback about building operation. Occupants must feel ownership over their buildings carbon neutral performance and understand their individual and collective roles in sustaining carbon neutral performance for the long term. Example training materials include videos, manuals, and captivating signage. Examples of feedback include working with the Commissioning Agent to undergo post-occupancy commissioning.

FINANCIAL INCENTIVES: All projects will seek out local incentives and grants from utilities, Community Choice Aggregators (CCAs), Regional Energy Networks (RENs), and other local entities to help support District energy, carbon, and financial incentives.

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Sacramento City Unified Energy and Carbon Requirements

The chart below summarizes which elements will be incorporated into each modernization and

FACILITIES PROJECTS

The Facilities Department is an integral part of the District's efforts to care for and improve its building stock, tackle deferred maintenance, and achieve energy and carbon goals. Typical work includes lighting retrofits, control upgrades, window retrofits, roofing replacement, installation of information technology, security or fire alarm systems, and replacement of boilers or other aging equipment.

Facilities projects shall adhere to the following overarching decision-making processes in order for those projects to align with the District's goals and project processes:

- The energy champion shall be consulted and provide guidance on incorporating energy efficiency and carbon emission reduction into the design of retrofits and replacements.
- Specifications for new equipment will match those for new construction unless prohibited by Division of State Architect's [Interpretation of Regulations \(IR\) A-22](#) or this change requires significant and costly expansion of electricity infrastructure. This will avoid like for like replacements and ensure that replacement equipment will be more energy efficient.
- New fossil fuel burning equipment will not be installed.

DISTRICT ENERGY AND CARBON GUIDELINES

PLUG LOADS

Plug loads consist of the many and varied devices that are plugged into receptacle outlets in buildings. Plug loads can be controlled either with a management plan requiring human action or with a passive system where plug load devices are controlled by an automation system that removes human action from the equation (preferred). Staff refrigerators and microwaves should be provided to discourage individual units. Outlets wired for receptacle control (as per Title 24) shall be clearly labeled. HVAC systems should be designed to ensure appropriate thermal comfort with adjustability, and then thoroughly commissioned to ensure proper installation, to reduce the use of fans and portable heaters.

KITCHEN EQUIPMENT

Efficient kitchen equipment is required and must be all electric by 2045. The CA Energy Wise website provides [equipment recommendations](#) for kitchen appliances, walk-ins, and cooking hoods. Include commercial induction ranges for making school meals wherever possible. The [Food Service Technology Center](#) provides best practices on all-electric kitchens.

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ACTIVE COMMUTE

Walking and biking routes on the school campus shall be planned to improve safety and encourage active commutes. Design teams will provide one bike rack (4-loops) for schools on hills and two bike racks or enough to meet demand (whichever is greater) at all other locations. Design teams will engage with external partners, including the city, to ensure active transportation friendly crosswalks and sidewalks are either maintained or included in the design.

SCHOOLYARD

Incorporate drought tolerant and biophilic landscaping wherever possible. Ensure the design is student and maintenance friendly.

- Shade tree plantings will cover at least 30% of each school property in the areas used by children and youth during the school day.
- Per Title 24, shade tree plantings will be required over at least 20% of the landscape area and 20% of the hardscape area within 15 years, with landscape irrigation necessary to establish and maintain tree health.
- Interactive gardens and outdoor classrooms should be considered at all elementary schools. The design should be student and maintenance friendly.
- Design schoolyards to protect students from extreme heat while also nurturing their development and grow tu80yu k.Buc 0 Tw 5o6e6.6 (rnw 1.174 0as)-2 (t)(t)-6.6 0 g11.04 0 0 11.04 5ele