YCBE mtg. 3-12-24
Item 8.4 #4

Powering Future Generations: The Yolo County Schools Resiliency and Sustainability Project

A climate-conscious and innovative approach to create resiliency in Yolo County Schools

Yolo County
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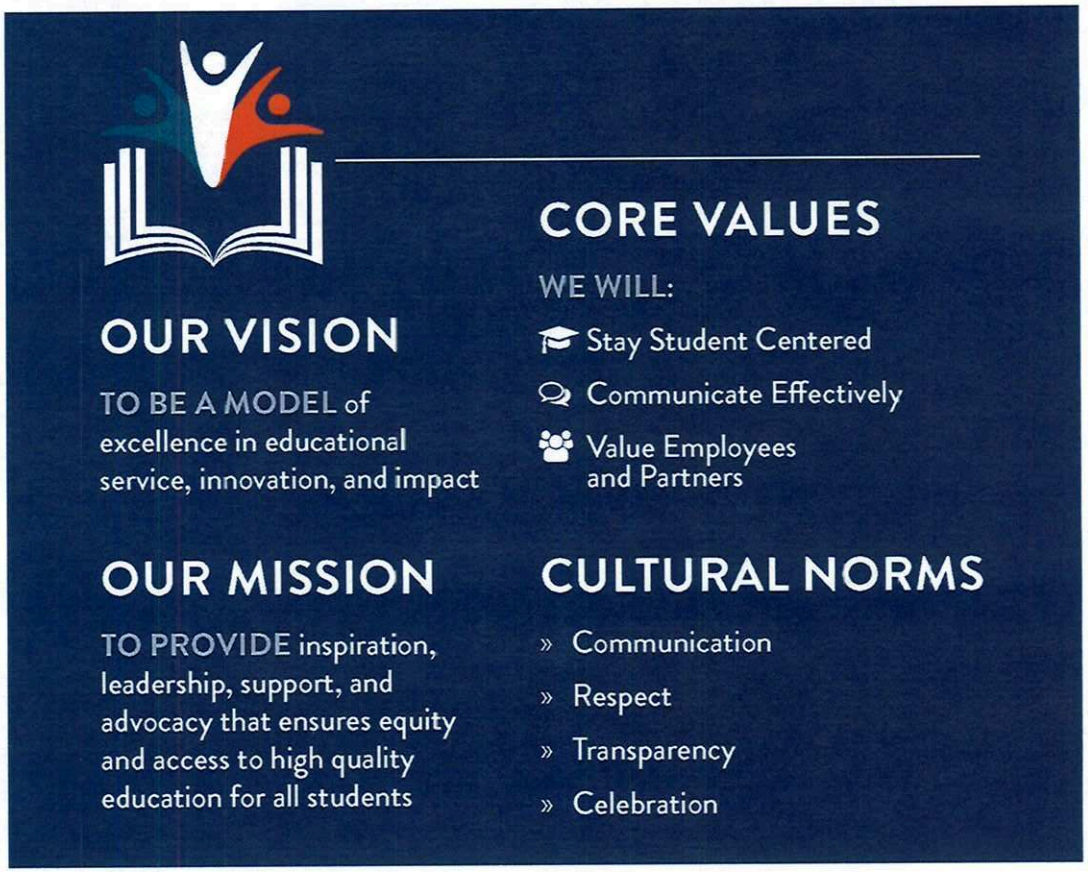
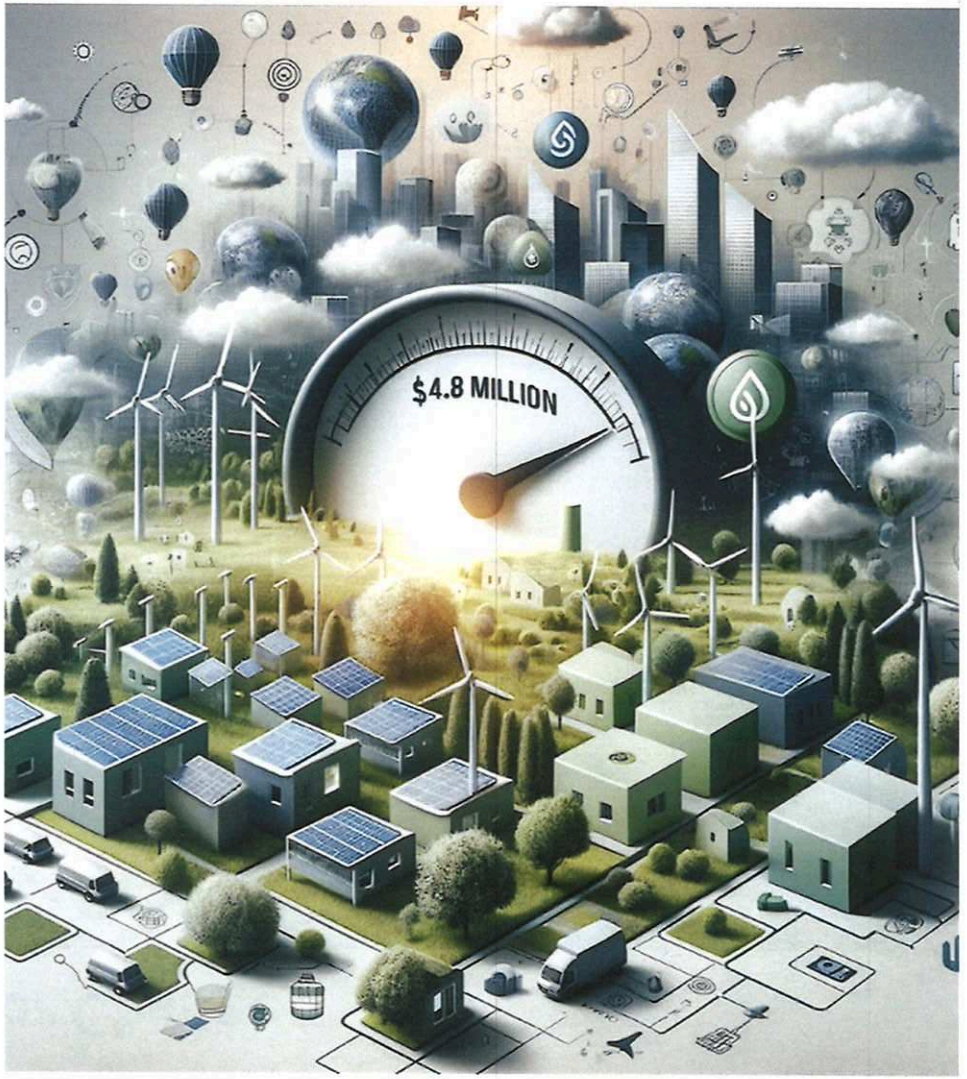
What are the driving factors of this project?

- Resolution on Climate Change
  - On June 22, 2021, resolution #21/22-43 was adopted to address climate change
    - Approximately 93% of YCOE's electricity will be provided by clean solar energy and generated on-site.
    - This project will offset approximately 100% of YCOE's electricity usage.



Our Approach

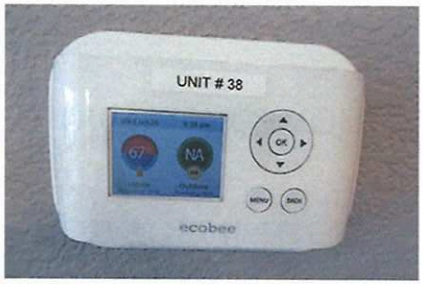
- 5 years in the making – the vision began on a whiteboard
- 6 Locations
- 12 Energy Conservation Measures
- Approximately $4.8 million project cost
- Partnering up to vet the vision



Scope of Work – The Blueprint for Change

Building	CalSHAPE (AB841)	BAS/ Controls	CO2 Sensors	PM 2.5 (Suite 190)	HVAC Rejuvenation	HVAC Replacement	Plug Load	Window Film	Building Envelope	Solar	Battery Storage	EV Chargers
Santa Anita		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Greengate	✓	✓	✓		✓	✓	✓	✓	✓	✓		
Chavez	✓	✓	✓		✓		✓	✓	✓	✓		
Plainfield		✓	✓						✓			
Esparto		✓	✓									
Lemen		✓	✓									

Examples of Deferred Maintenance & Aged Energy Infrastructure



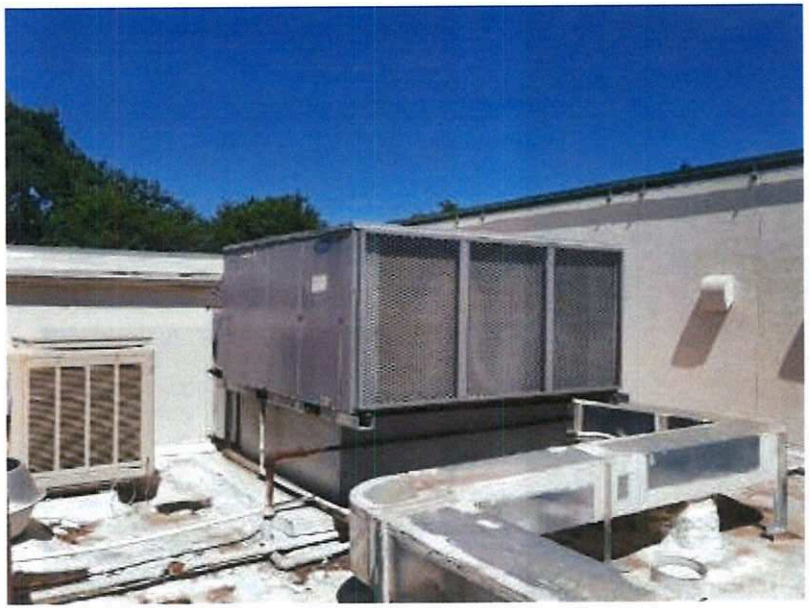
Controls are **NOT** Standardized

Building Envelope Gaps

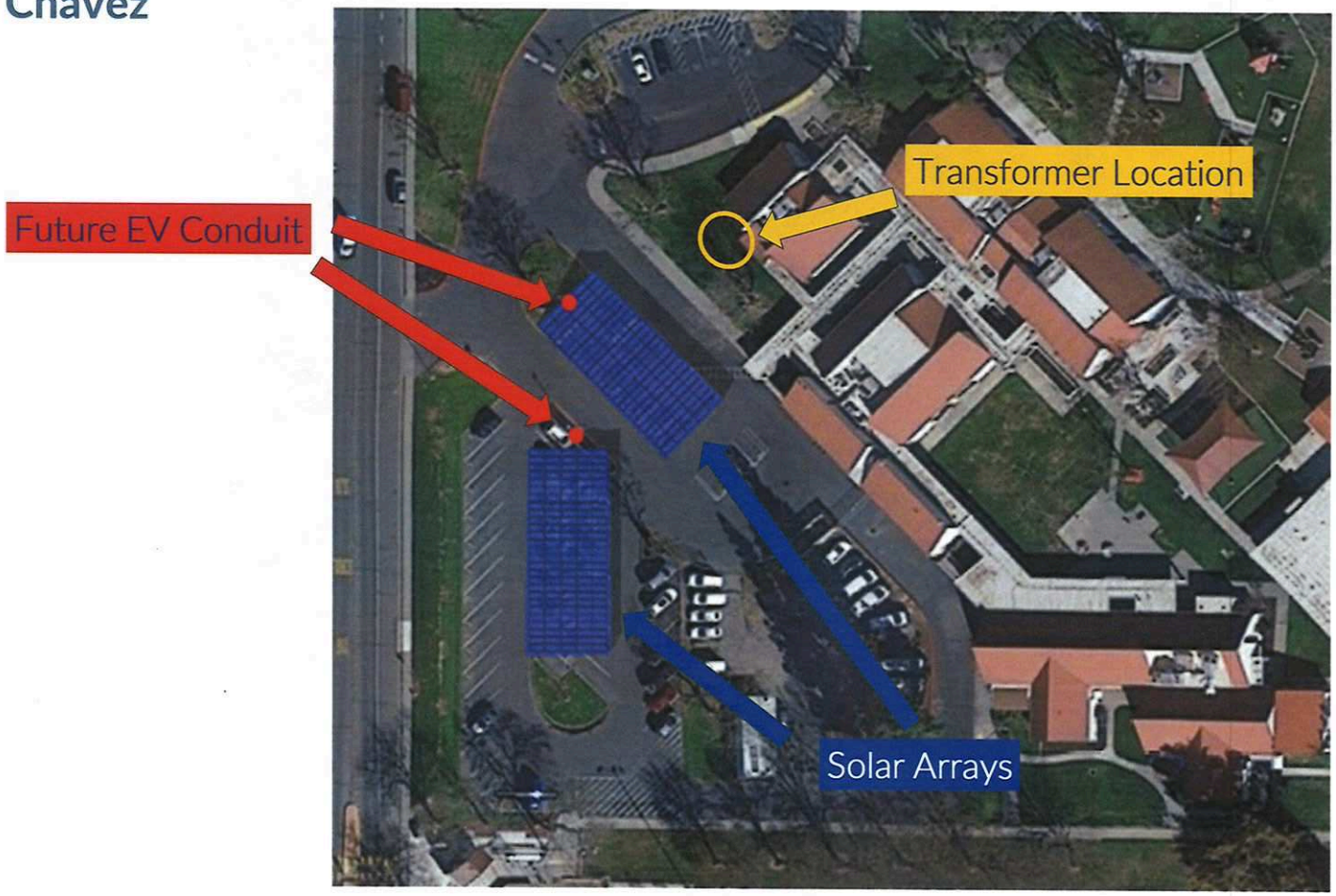
Plug Load

Aging Infrastructure and Electrification

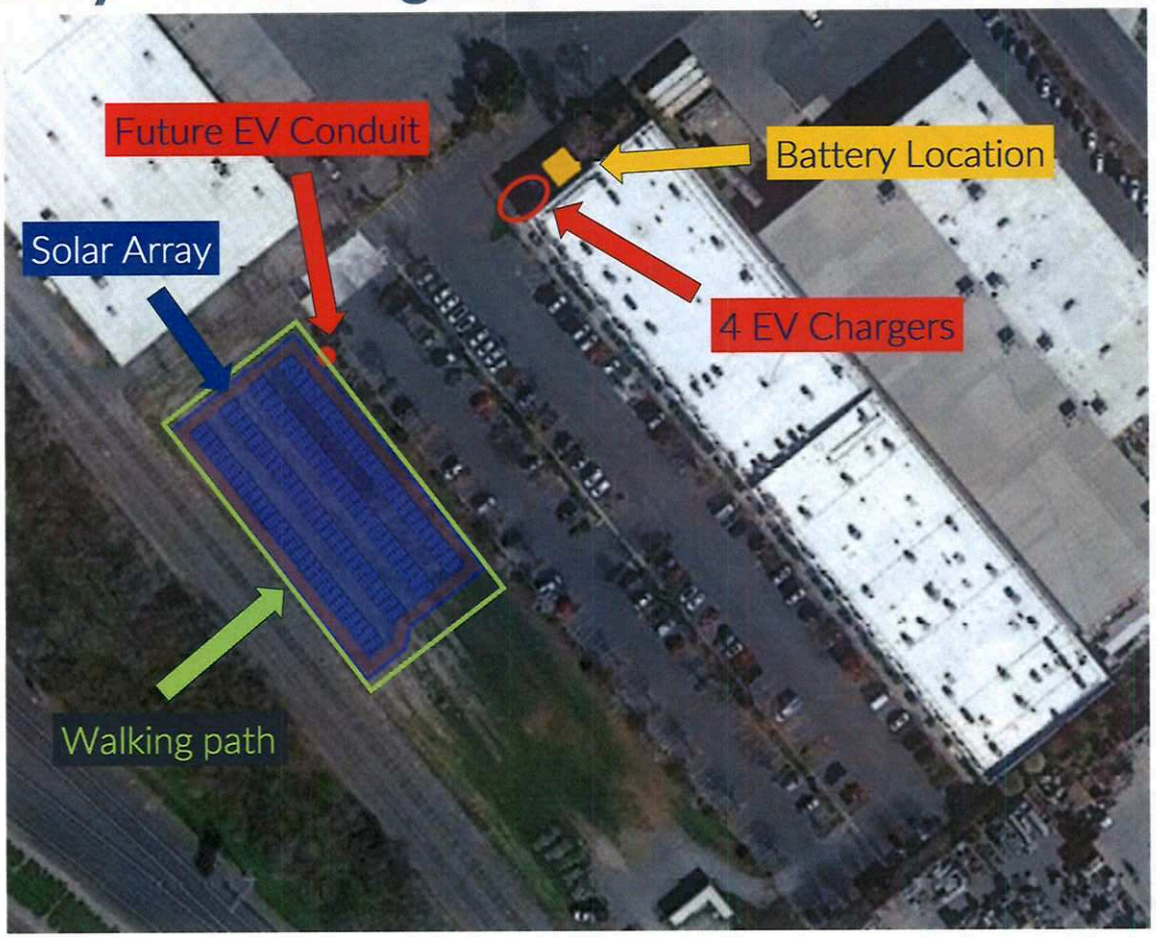
- Replacement of equipment beyond its useful life.
- Eliminating reliance on fossil fuels through electrification.



Harnessing the Power of the Sun– Greengate and Chavez



Solar & Battery – Creating a Micro-Grid - Santa Anita



Project timeline

- Timeline pressures
  - Interconnection requirements – Must have PTO by April 15, 2026
  - Administrative updates due April 22, 2024 for Greengate and May 7, 2024 for Santa Anita
  - General timeline of construction
    - Approval at April 9, 2024 board date will meet administrative update deadlines and provide a two-year construction timeline to meet the NEM (Net Energy Metering) 2.0 deadline
      - Geotech/Alta/GPRS/Engineering
      - DSA
      - Procurement
      - Construction
      - PGE Permission To Operate (PTO) – due to heavy PTO requests, expect timelines to be longer than usual near the April 15, 2026 NEM2.0 deadline

Project Outcomes: Operational Resiliency at the Forefront

- Resilient operations at Santa Anita
  - Provide one click shut off of all HVAC units except data center to prepare for extended power outages
  - Flexibility to run Santa Anita Suite 100 facility for 6 hours at max capacity during any power outage or 12 hours if the power outage is during the day. Or, run the data center (~9kW) for 48 hour+ pending weather.
  - Creating network resiliency for Yolo County Schools and physical plant resiliency

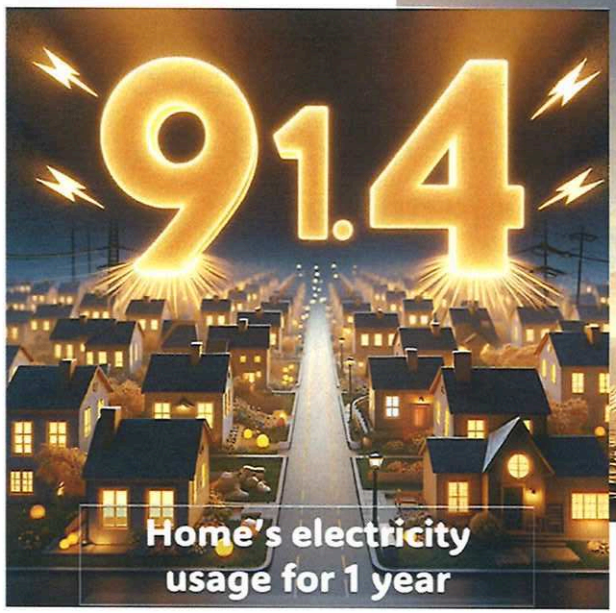
Project Outcomes: A Commitment to Operational Excellence

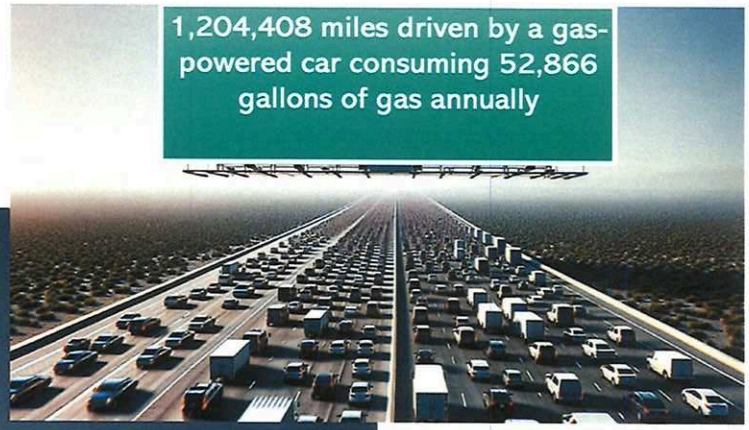
- Operational benefits:
  - Extend life of HVAC equipment at Santa Anita, Greengate, and Chavez
  - Help meet and prepare for future mandated electric vehicle (EV) requirements
    - 4 chargers at Santa Anita
    - Conduit at Santa Anita and Greengate for future electric vehicle chargers
    - Electric vehicle fleet requirements
  - Avoiding costly emergency replacements
  - Electrification of 1 HVAC unit at Greengate

Project Outcomes: Healthy Students and Staff

- Healthier indoor environments:
  - Improve classroom air quality using CO2 sensors.
  - Full control to close air dampeners in case of external contaminant (smoke, or other)
  - Ability to fully open dampeners and purge spaces in case of internal contaminant
  - Give PM2.5 readings in suite 190
- Mental and physical well being of staff:
  - Walking track around the solar array at Santa Anita
- Solar digital display board in conference center at Santa Anita

Project annual equivalency to reduced (GHG) greenhouse gas offset statistics





Worldwide industry leaders in resilience of existing public-school buildings

- 1st County Office of Education in the United States to operate a microgrid
- 5th LEA in the state of CA to operate a micro grid
- 19th PreK-12 school-centric location in the continental United States to operate a microgrid

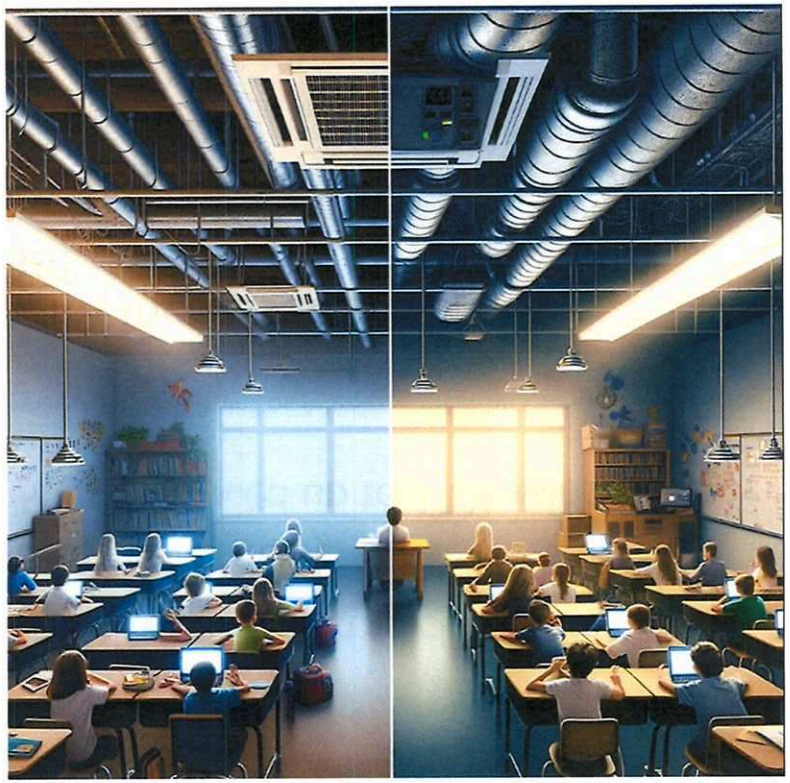
- Source (as of 3/2/2024): U.S. Department of Energy Combined Heat and Power and Microgrid Installation Databases | Search (icfwebservices.com)

How does this effect student achievement?

- Avoided cost of increasing utilities
  - This projects effectively avoids passing on increased utility costs to the classroom
- Upgrading school facilities facilitates student achievement
  - In Los Angeles, for example, upgrading school facilities produced up to 10% gains in student achievement.
    - Source: The Impact of School Facility Investments on Students and Homeowners: Evidence from Los Angeles - American Economic Association (aeaweb.org)
- "Both children and teachers perform better with increased fresh air ventilation" (Myhrvold, Olsen, & Lauridsen, 1996)
  - Source: How crumbling school facilities perpetuate inequality - kappanonline.org

Key Takeaways

- If this approach is not approved
  - Electricity increases will impact costs to program budget
  - California Public Utilities Commission unanimously approved another PG&E rate increase (NOT included in the upcoming presentation)
  - We will still be required to meet electric vehicle requirements and develop alternate plans to achieve this
  - Major facility needs will remain unaddressed
    - The HVAC controls portion of this project is roughly $600,000 in needs.
    - The County office does not qualify for G-O bonds and cannot received state assistance for our administration office
- It is essential for YCOE to prioritize investment in the development of its facility infrastructure for the benefit of staff and students for years to come.



The Broader Impact

Cultivating a culture of sustainability and innovation within our educational community

Yolo County OFFICE OF EDUCATION