



# Efficient and Healthy Schools Recognition Program

## Emission Reductions + Resilience

January 24, 2023

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# Emission Reductions + Resilience Recognition Webinar 1: Making the Case for Carbon Reduction and Electrification Readiness for School Districts

# Today's Presenters

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**Reilly Loveland**

Senior Project Manager  
New Buildings Institute



**Paul Torcellini**

Principal Engineer  
National Renewable  
Energy Laboratory

# Today's Agenda

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- Introductions and Level Setting
- Overview of Recognition Process
- Making the Case for Emission Reductions and Resilience
- Planning for Carbon-Free and Resilient Schools
- Office hours

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Let us know who is here!

Introduce yourselves in the chat with your **name**, **title**,  
and **school district**

## What to Expect from this Series

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- Learn about tools for achieving carbon neutral and resilient schools
- Find peer to peer connections
- Access regional and national technical experts
- Real time guidance to develop climate-appropriate goals and plans
- Gain national recognition!



# Overview of the Recognition Process

The campaign will recognize exemplary implemented solutions and planning efforts by K-12 schools and districts in the following categories:



## Energy Efficiency Plus Health

To recognize schools and districts that have implemented retrofits improving energy efficiency and indoor environmental quality (IEQ: indoor air quality, lighting, thermal comfort, and/or acoustics), or have performed building assessments and planning in preparation for retrofits with the goal to provide an energy efficient and healthy learning environment.



## Emissions Reduction and Resilience

To recognize schools and districts that have implemented strategies to reduce carbon emissions and taken actions to improve resilience or have identified pathways and planned activities with the goal of reducing carbon emissions and improving resilience.

<https://efficienthealthyschools.lbl.gov/2022-2023-recognition>

# Planning Track – Webinar Series

	<b>Energy Efficiency Plus Health</b> 	<b>Emissions Reduction and Resilience</b> 
<b>Webinar 1</b> Jan 2023	Making the Case to Save Energy and Improve Indoor Environmental Quality in Schools Jan 10	Making the Case for Carbon Reduction and Electrification Readiness for School Districts Jan 24
<b>Webinar 2</b> Feb 2023	Understanding Your Building Stock: Energy Benchmarking and Ventilation Assessments for Schools Feb 14	Understanding Greenhouse Gas Tracking and Reporting in School Districts Feb 21 – updated date!
<b>Webinar 3</b> Mar 2023	Building Assessment Tools for School Energy Retrofits Mar 14	Take Action on Climate! Planning for Climate Vulnerability and Resiliency in Schools Mar 28

# Registration Links for the Planning Track Webinar Series!

## Energy Efficiency Plus Health



<https://bit.ly/EHScEEHealth>

## Emissions Reduction and Resilience



<https://bit.ly/EHScERR>

## Webinar Series

Interested schools and districts will participate in a webinar series between January and March 2023.

## Final Submission

Schools and districts will complete a final submission by **May 1, 2023** to summarize key learnings and describe how tools or approaches can be applied in their school facilities.



# Submitting for Planning Recognition

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Plans will be tailored to school district needs and may evolve over the course of this series.

**Goal: an actionable plan that is not extra busywork for your district.**

## Plans can be:

- Focused on a particular topic (emissions reduction, resilience, etc.)
- Focused on a particular action (ex. electrification)
- Be part of an existing plan or a larger plan focused on whole district sustainability
- In any format! PPT, word doc, one pager, infographic, etc.

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If you're applying for the Implementation Track too....

## Preparation

Interested schools and districts will fill out a recognition application and request assistance from the Campaign if needed.

Winter 2022-2023

March 2023

June 2023

## Announcement

Schools and districts receiving recognition will be invited to attend an in-person celebration in June 2023.

## Final Submission

Schools and districts will complete and send application together with supporting materials by March 1, 2023.

<https://efficienthealthyschools.lbl.gov/20222023-recognition>

# Questions?

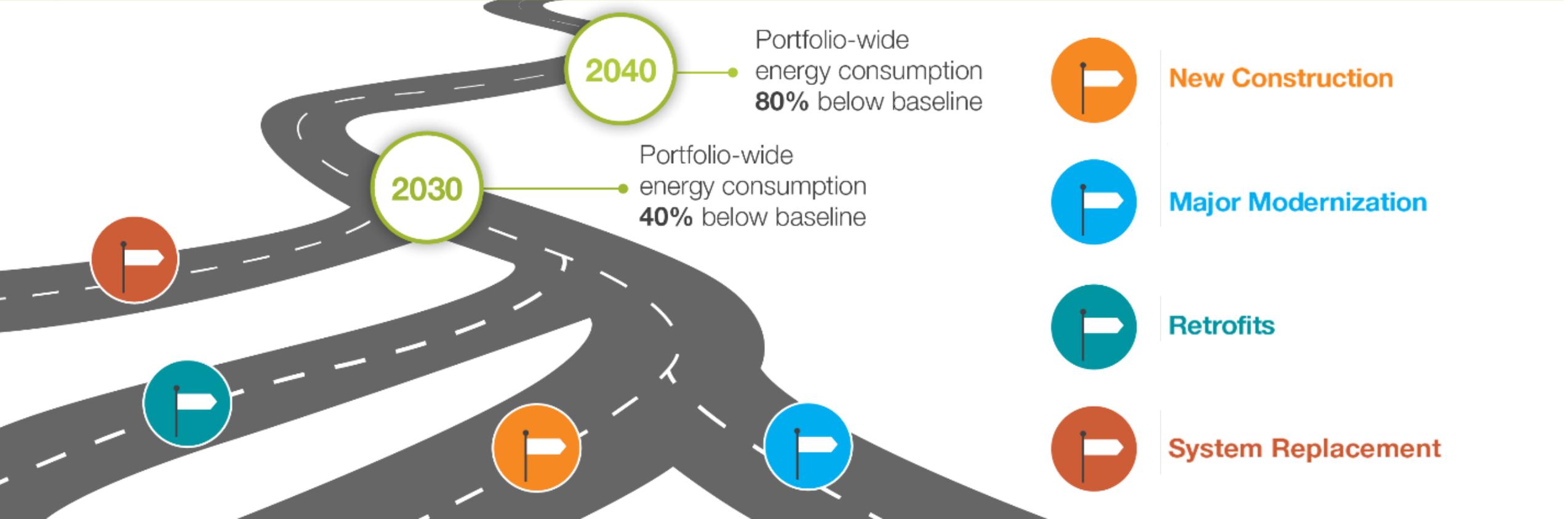
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# Planning for Emission Reductions and Resilience



# 2045 Carbon Neutral School Building Portfolio



# Key Approaches and Outcomes in Achieving Resilient and Decarbonized Schools



# What could my plan look like?

## Key pieces of a plan:

- Audience
- Team
- Assessment data
- Timelines
- Goals



## Table of Contents

**Executive Summary** ..... 08

**Cross Cutting Theme 1: CLIMATE** ..... 10

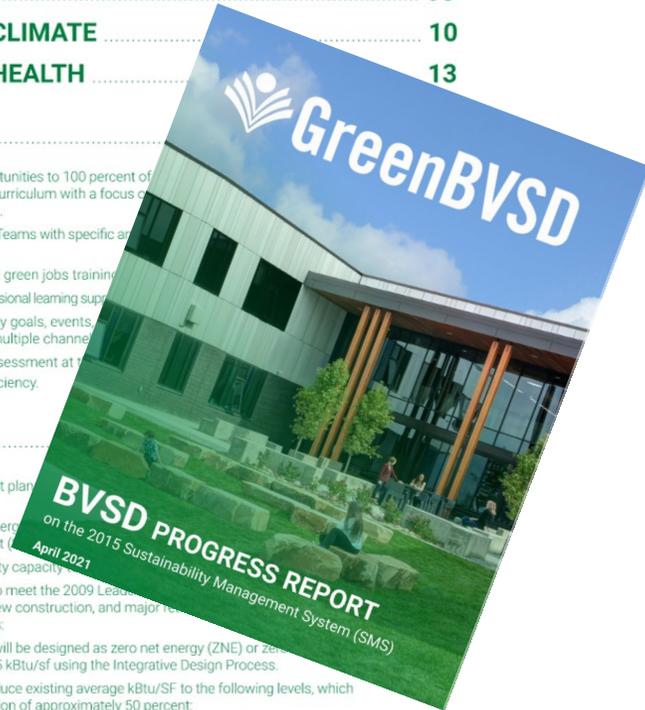
**Cross Cutting Theme 2: HEALTH** ..... 13

### Focus Area 1: Education

- GOAL 1** Provide professional learning opportunities to 100 percent of teachers and integrate sustainability across the curriculum with a focus on social studies and science teachers.
- GOAL 2** Create active and formalized Green Teams with specific and measurable goals at 100 percent of schools.
- GOAL 3** Develop an interdisciplinary, formal green jobs training program.
- GOAL 4** Provide orientation and ongoing professional learning support for all staff.
- GOAL 5** Leverage all of BVSD's sustainability goals, events, and programs internally and externally, that use multiple channels of communication.
- GOAL 6** Develop a sustainability literacy assessment at the student level to assess student sustainability proficiency.

### Focus Area 2: Buildings

- GOAL 1** With a balanced water management plan, reduce water consumption by 10 percent in existing buildings.
- GOAL 2** Reduce fiscal year 2008 baseline energy consumption by 10 percent (Thermal Units (kBtu)/per square foot (SF) per year).
- GOAL 3** Increase BVSD's renewable electricity capacity by 20 percent by April 2021.
- GOAL 4** Design new buildings or additions to meet the 2009 Leadership in Energy and Environmental Design (LEED) gold standard for schools, new construction, and major renovation projects. Major renovation waste performance goals as follows:
  - New buildings or additions will be designed as zero net energy (ZNE) or zero net energy capable (ZNEC), targeting 25 kBtu/sf using the Integrative Design Process.
  - Deep energy retrofits will reduce existing average kBtu/SF to the following levels, which represent an average reduction of approximately 50 percent.
    - High Schools: 40 kBtu/SF
    - Middle Schools: 35 kBtu/SF
    - Elementary Schools: 35 kBtu/SF
  - New buildings or additions will achieve a 75 percent construction waste material diversion rate.



### Guiding Standards for Lake Tahoe Unified School Construction Projects

SCOPE <i>See further details below</i>	MODERNIZATION	
	Mandatory	Case-by-case
<b>Envelope</b> air sealing, insulating walls and openings	✓	
<b>Roofs</b> insulation, rainwater collection		✓
<b>Glazing &amp; Shading</b> heat minimization, high performance windows		✓
<b>Lighting</b> LED lighting & controls	✓	
<b>Electrical</b> energy monitoring	✓	
<b>Metering</b> submetering		✓
<b>Kitchen</b> electrification & Energy Star energy-efficient equipment	✓	
<b>Heating</b> electrification & maintainability		✓
<b>Ventilation</b> heat recovery & filtration		✓
<b>Controls</b> set points & operating hours	✓	
<b>Domestic Hot Water</b> recirculation pumps & pipe insulation	✓	
<b>Plug Loads</b> are measured & controlled	✓	
<b>Water</b> backflow device & high-efficiency fixtures	✓	
<b>Schoolyard</b> green schoolyards, stormwater mgmt. & rainwater collection		✓
<b>Materials</b> CalGreen, CA Section 01350 & CA Buy Clean	✓	
<b>Renewables</b> Onsite solar PV, storage		✓
<b>Zero Net Energy Capable</b> roof solar readiness	✓	

# What could be in my plan?

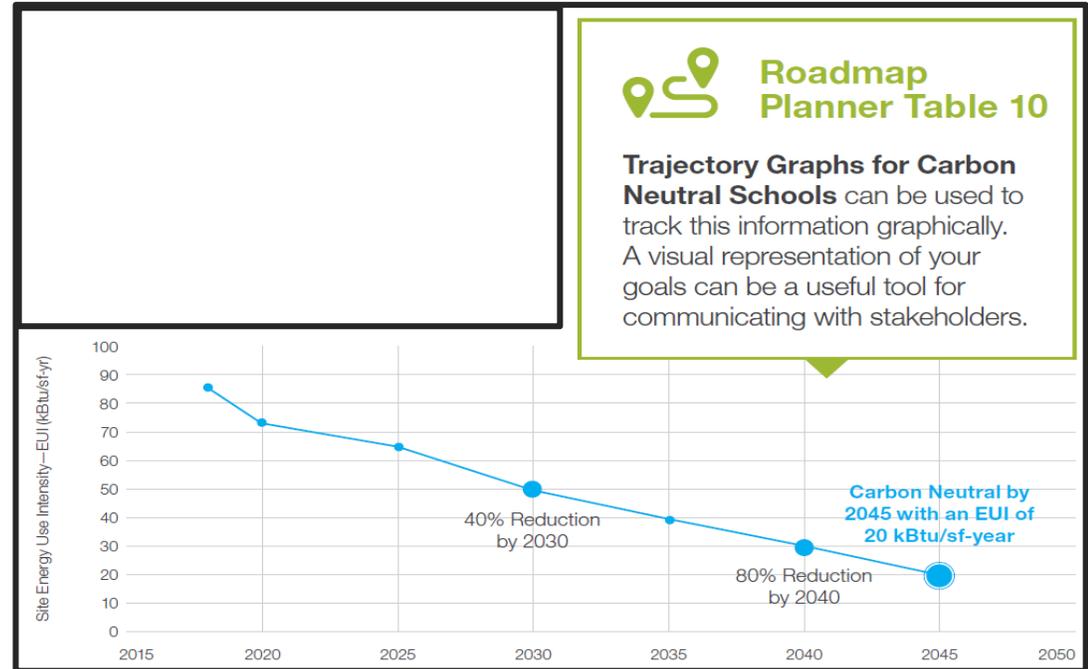
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## Plans might include:

- Key messaging and stakeholder documentation
- List of relevant goals and plans
- List of documents to be developed (resolutions, tech specs, etc.)
- Benchmarking and assessment data – energy, emissions, etc.
- Project and portfolio level goals
- Planning timelines and project list

# Templates in the toolbox

<https://newbuildings.org/resource/carbon-neutral-schools-templates/>



**Table 9: School District Portfolio Roadmap Goals**

Using your baseline benchmarking data, customize the table below to note the district's portfolio goals and how they change over time. Table 14 in this workbook also includes a template track this graphically as a useful tool for communicating with stakeholders. Additional rows are included in this table for additional portfolio goals as appropriate for your portfolio.

**GOAL:** All buildings in the district will be carbon neutral by [target year] and the average portfolio site EUI will adhere to the following targets over time:

	Baseline [YEAR]	2025	2030	2035	2040	2045
Average Portfolio Site EUI	[2019] EUI: 60	52	44	36	28	20
Average Portfolio Site EUI (kBtu/ft <sup>2</sup> /year)	80	68	56	44	32	20
Total Portfolio Greenhouse Gas Emissions (Metric Tons CO <sub>2</sub> e/year)						
Total Portfolio Greenhouse Gas Emissions (kgCO <sub>2</sub> e/ft <sup>2</sup> /year)						



# Making the Case for Emission Reductions and Resilience

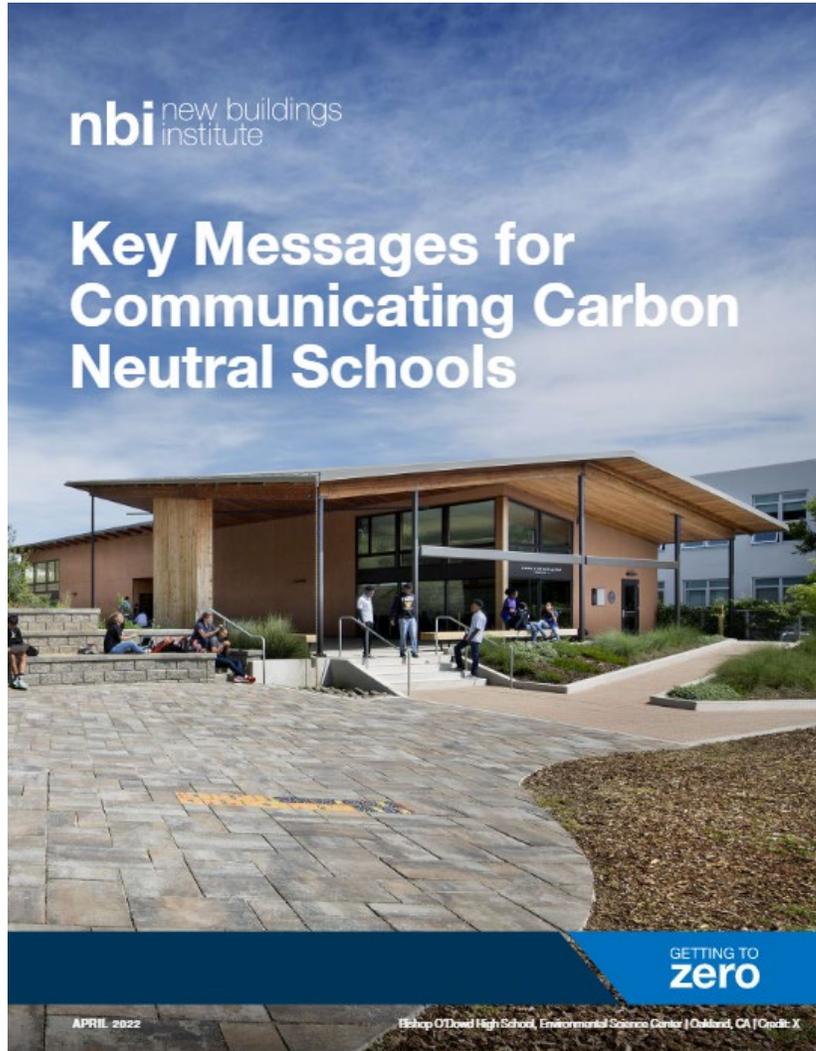
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# Benefits of Carbon Neutral and Resilient Schools

- Improved indoor and outdoor air quality
- Increased student and staff health and productivity
- Educational benefits
- Resilient communities
- Reduced energy use and greenhouse gas (GHG) emissions



# Data for supporting carbon neutral and resilience goals



## Carbon Neutral Schools Are Resilient

- Well before the pandemic, the climate crisis was already robbing students of class time. In just one semester in the fall of 2017, more than 9 million students missed at least some school because of extreme weather and natural disasters [\[source\]](#).
- Extreme heat in schools is responsible for an estimated 5 percent of the racial achievement gap in education [\[source\]](#).
- Last summer, schools in disparate geographical areas closed early because classrooms were too hot. Extending the school years into the summer may be difficult without air conditioning in school buildings (sources [\[1\]](#), [\[2\]](#)).
- Communities as a whole benefit from these climate-resilience measures since schools provide shelter, food, and medical services in times of crisis.
- The incidence and severity of extreme weather events are both increasing.
- A 2018 National Institute of Building Sciences (NBIS) study found that each \$1 spent on mitigation activities—such as strengthening buildings and improving drainage conditions—saves \$6 in response and recovery costs. Districts that do not invest in resilient infrastructure will have to spend more taxpayer resources to recover from damage and maintain continuity of operations [\[source\]](#).
- Resilient designs, technologies, materials, and methods can allow occupants to shelter-in-place by using durable materials, thoughtful site selection, rainwater collection, demand response, grid islanding, energy efficiency, onsite renewable generation and more.
- To support resilient buildings, ventilation systems should be prepared to address both outdoor hazards (such as wildfire smoke) and indoor hazards (for example, from COVID-19).
- Carbon neutral schools are carefully planned to utilize passive systems like daylighting and natural ventilation and have an overall reduced energy load. These systems can be islanded and remain functional continuing to provide light and space conditioning during an outage.

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# What has been done so far in your district?

- What goals do you have in place?
- What is in process?
- What is being planned?



# Stakeholder Engagement and Visioning



- Identify the champion
- Who are the decision makers?
- Who would be a great candidate for the team?
- What messaging do you need to communicate?
- What are the stakeholder(s) goals and drivers?

# Visioning and Goals

- Use storytelling to showcase success (tell yours and listen to others)
- Discuss carbon neutral, electrification and resiliency goals and desired actions with stakeholders
- Identify synergies and similar goals
- Visioning sessions: What does your “perfect” carbon neutral and resilient school or portfolio look like?



Cal Poly Collins College of Hospitality Goal Setting Meeting  
Credit: HMC Architects



# Reducing Emissions for Schools

Paul A. Torcellini, Ph.D., P.E., FASHRAE  
Efficient and Healthy Schools-Emission Reductions  
January 24, 2023

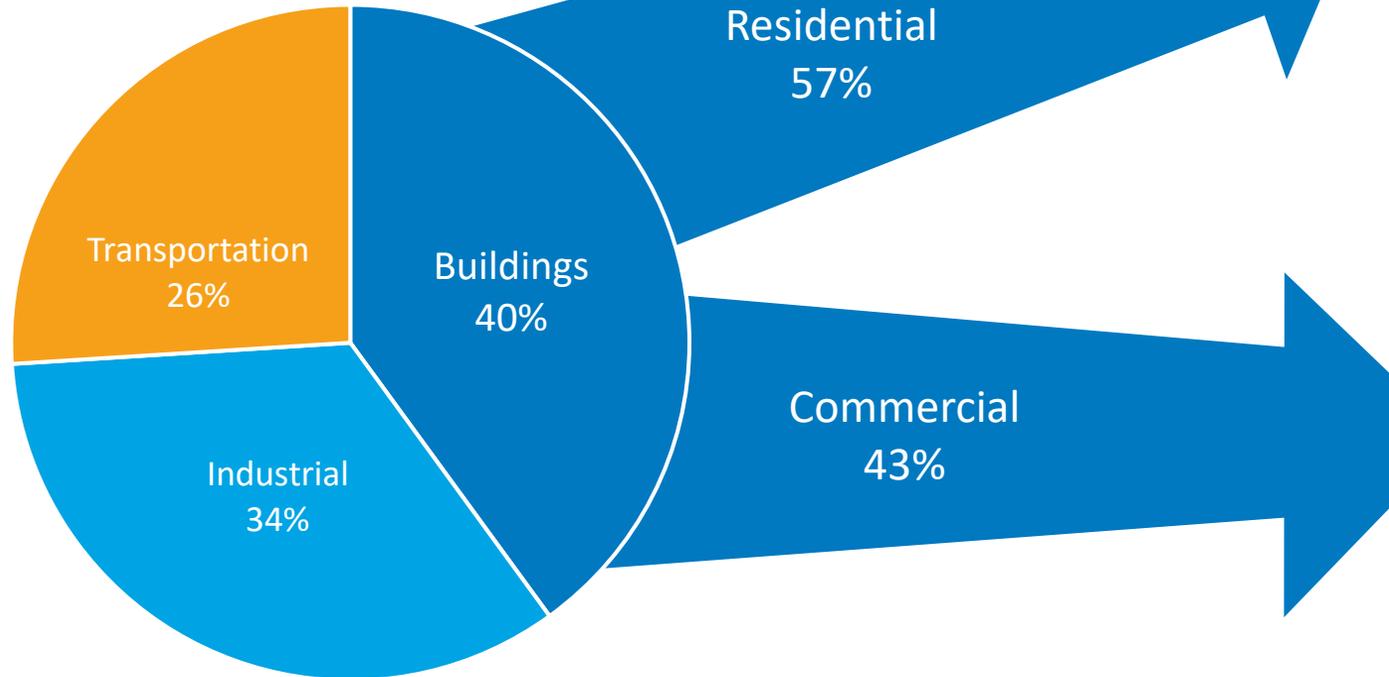
# Where are we going?

- What do you think the future of buildings “should” look like?
  - **Feel free to put your answer into the chat!**

# Why is building energy use important?

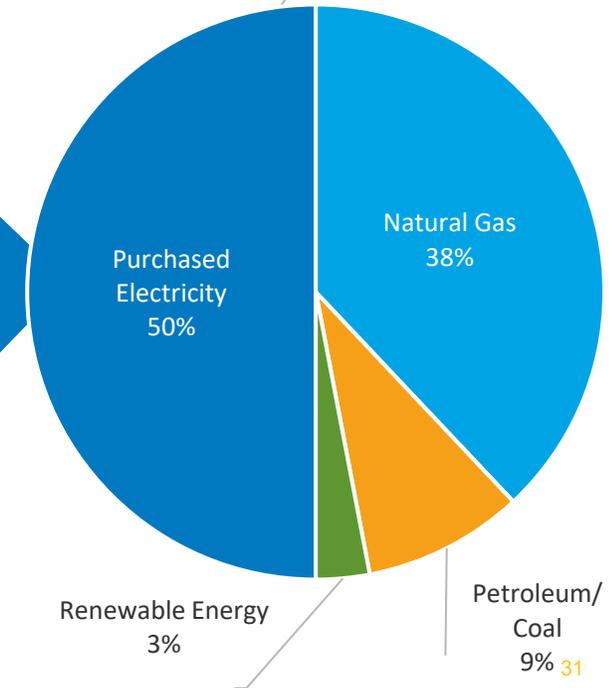
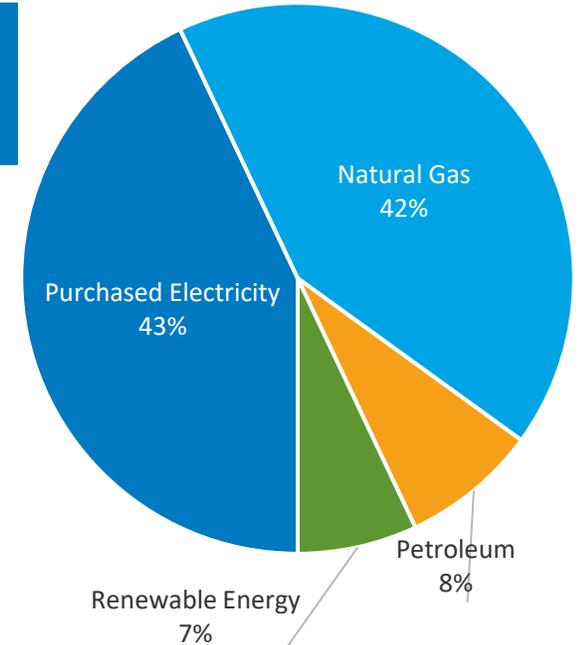
- 40% of total US energy consumption<sup>1</sup>
- 75% of US electricity<sup>1</sup>
- 25% of US natural gas<sup>1</sup>

2020 US Total Energy Consumption, by End-Use Sector<sup>1</sup>

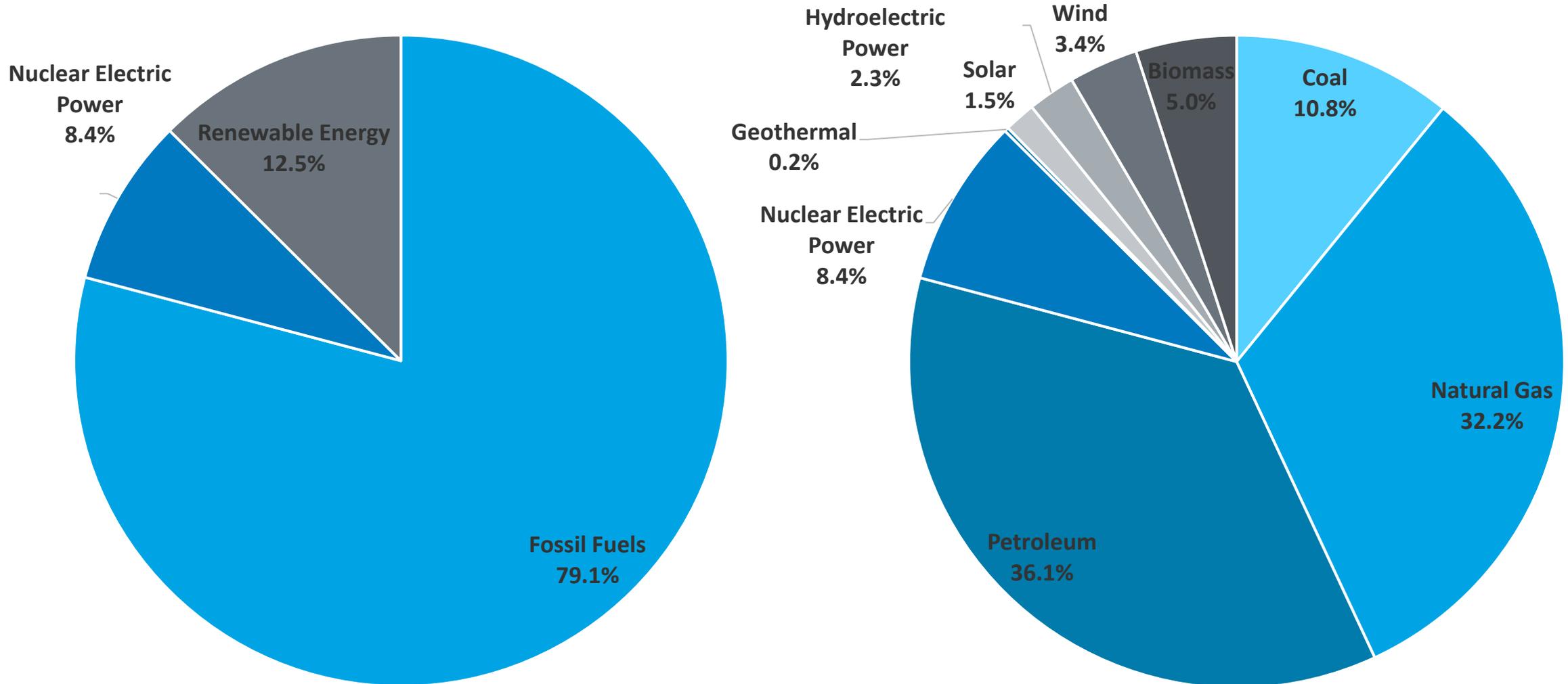


Residential  
57%

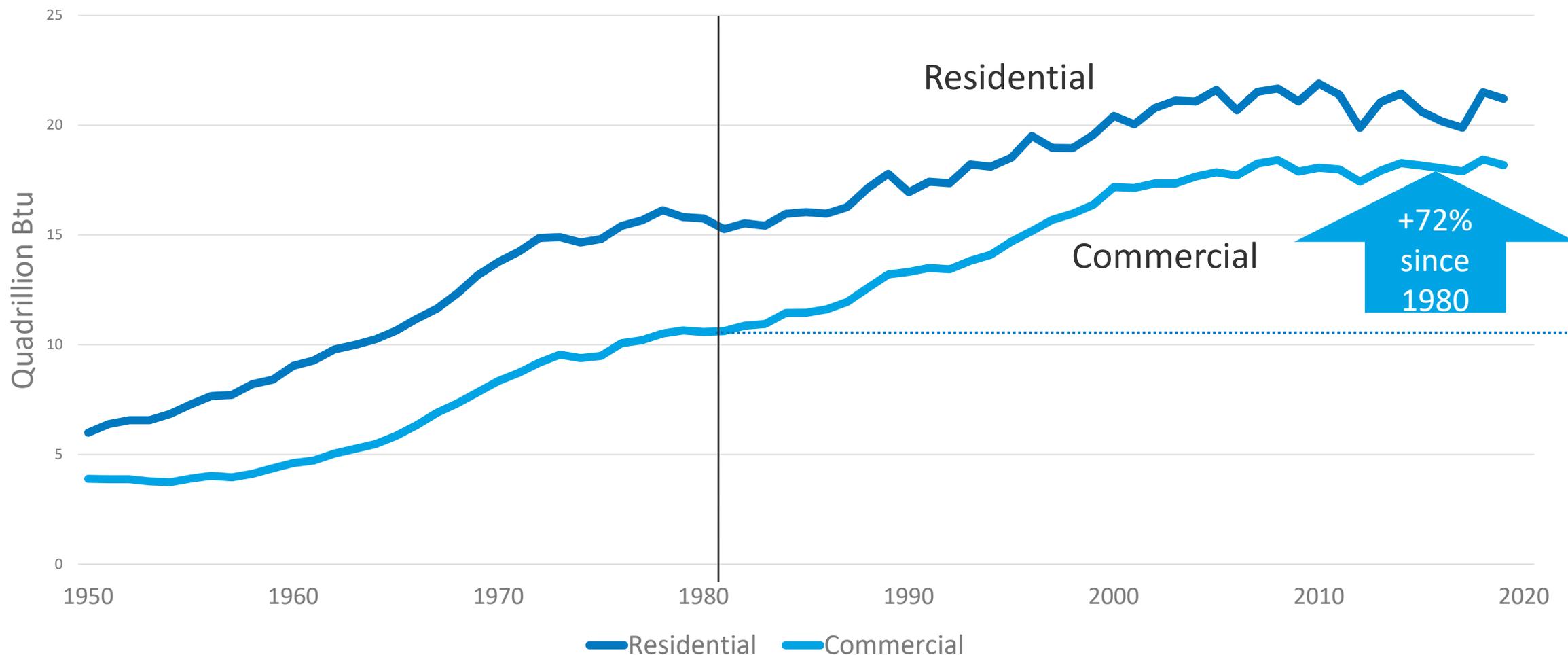
Commercial  
43%



# 2021 US Energy Consumption by Source (Total = 97 Quads)



# US Buildings Sector – Total Energy Consumption (Quads)



# Trends of Building Sector

- Growth is faster than energy efficiency measures
- Every decision has an energy and environmental impact
- Buildings (new and existing!) mortgage the energy futures of the world

# What are Zero [energy/carbon] Buildings?

- Conceptually, a building that has no adverse energy [or environmental] impact [because of its operation]
- Energy consumption has been a long-term surrogate for environmental impact
- Boundaries and metrics
- What energy flows to measure

# Buildings on a Diet

Goal 1:  
Reduce Consumption

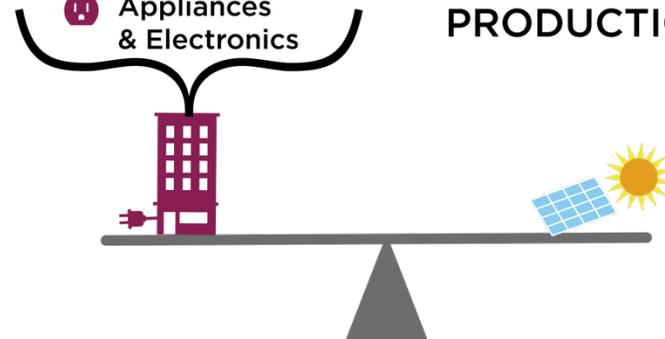
Goal 2:  
Apply On-site Renewable  
Energy

BALANCE!

## CONSUMPTION

- Lighting
- Space Cooling
- Space Heating
- Hot Water
- Fans & Pumps
- Appliances & Electronics

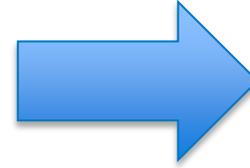
## PRODUCTION



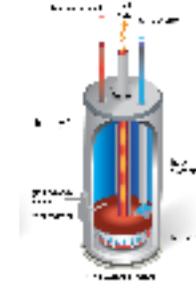
# Electrification

Gas Hot Water Heater

1.74 unit of gas in



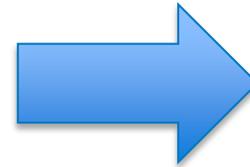
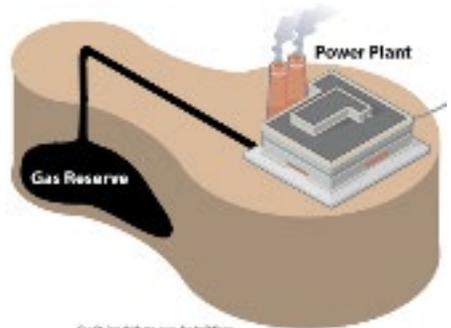
1.6 unit of gas in



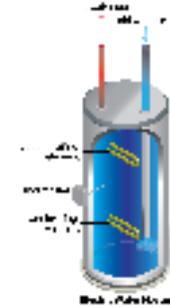
1 unit of hot water out

Electric (Resist) Hot Water Heater

1.87 unit of gas in



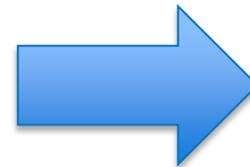
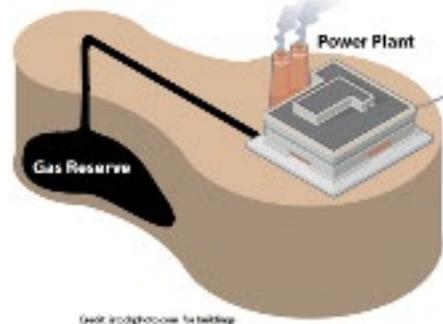
1.02 unit of electricity in



1 unit of hot water out

Heat Pump Hot Water Heater

0.61 unit of gas in



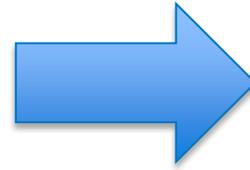
0.33 unit of electricity in



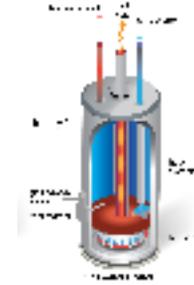
1 unit of hot water out

# Energy Flows—Moving towards renewable energy

Gas Hot Water Heater

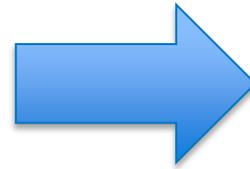
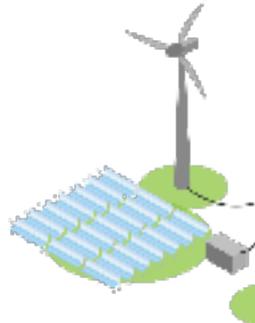


1.6 unit of gas in

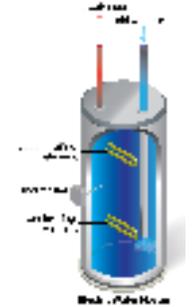


1 unit of hot water out

Electric (Resist) Hot Water Heater



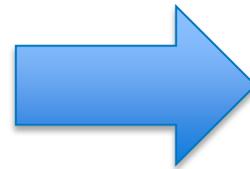
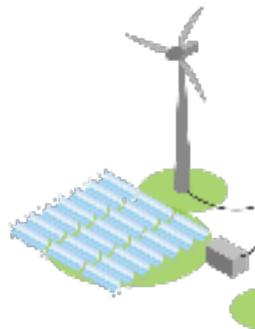
1.02 unit of electricity in



1 unit of hot water out

Heat Pump Hot Water Heater

PV Systems  
(1/3 the size)

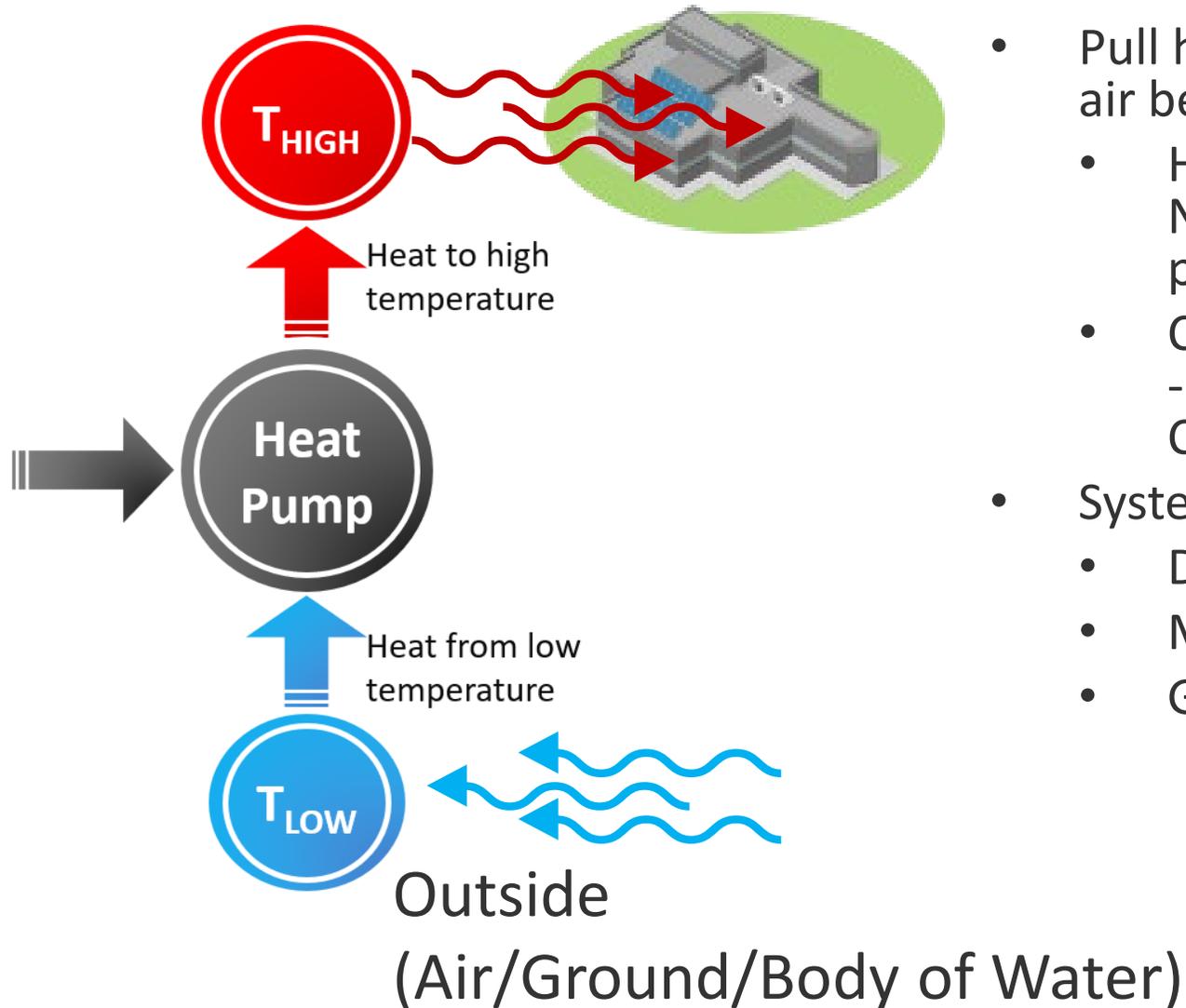


0.33 unit of electricity in



1 unit of hot water out

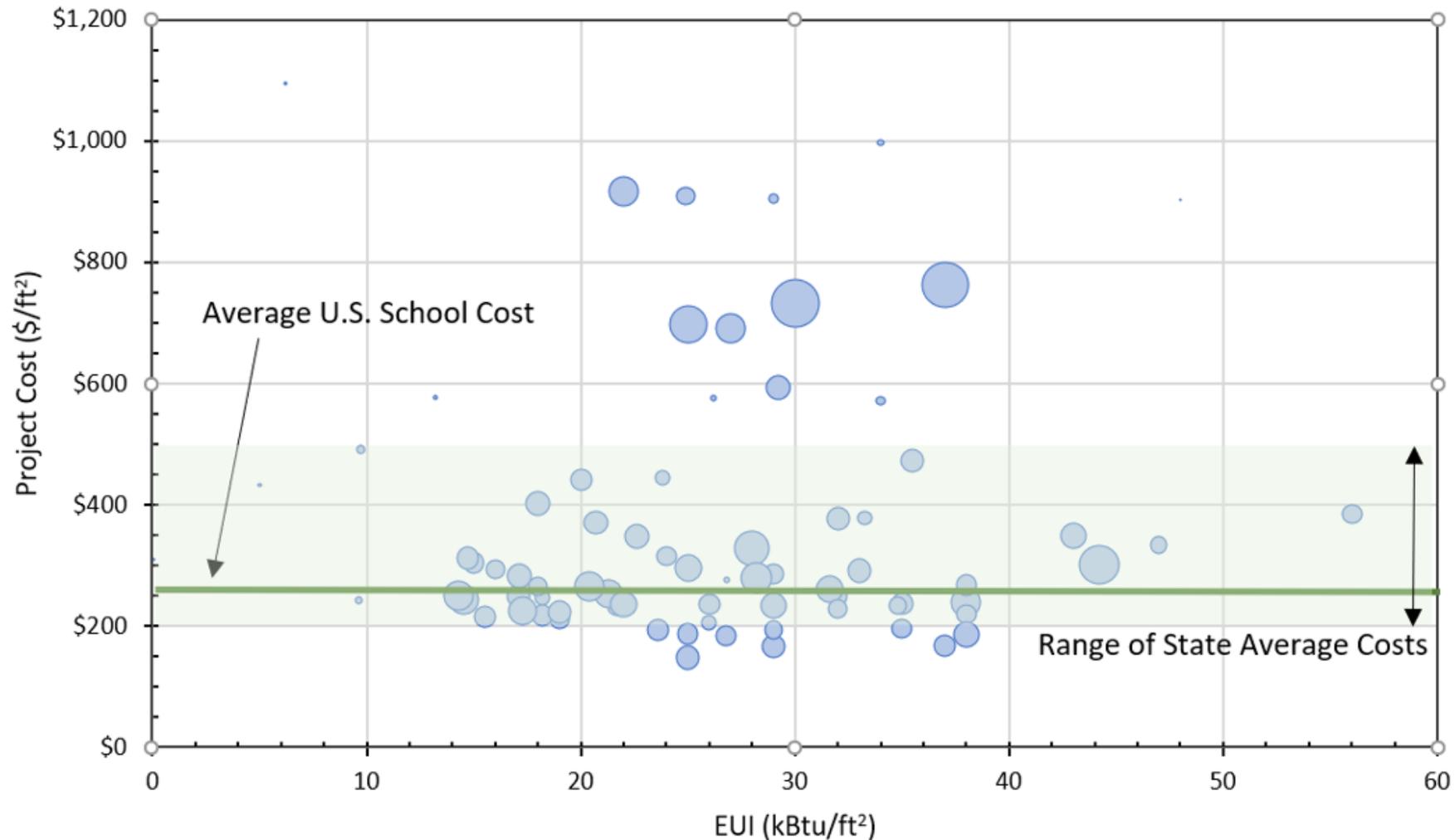
# Heat Pumps



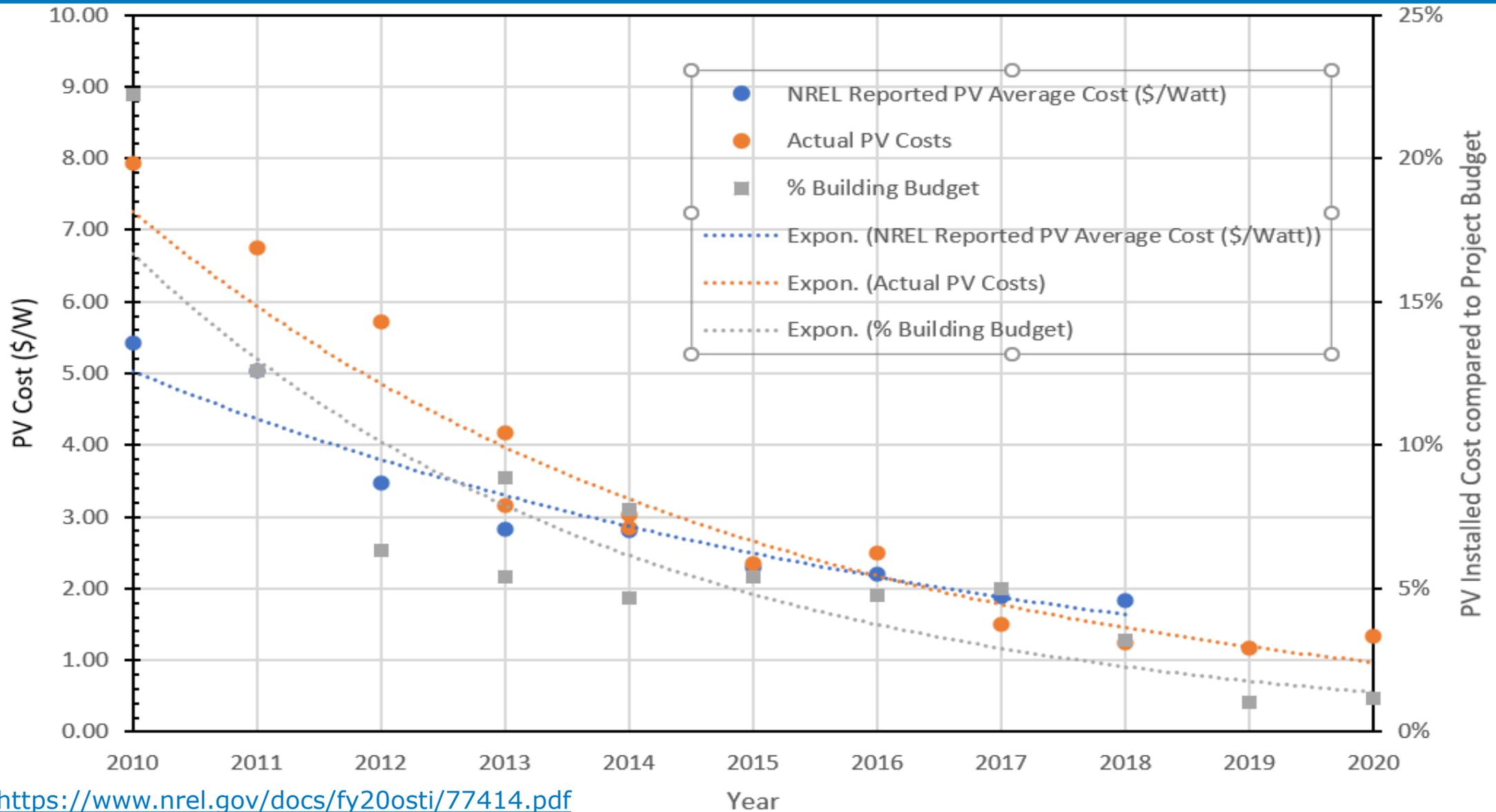
- Pull heat from the air—less efficient as the air becomes cooler
  - Heat pumps are rated down to 17°F. Need to ask how much colder a particular heat pump will operate
  - Cold climate heat pumps can work to -20°F which is sufficient for many US Climates
- System types:
  - Ducted Air-source heat pumps (ASHP)
  - Mini-splits (ductless or multi-head)
  - Ground Source Heat Pumps

# Zero Energy School Costs

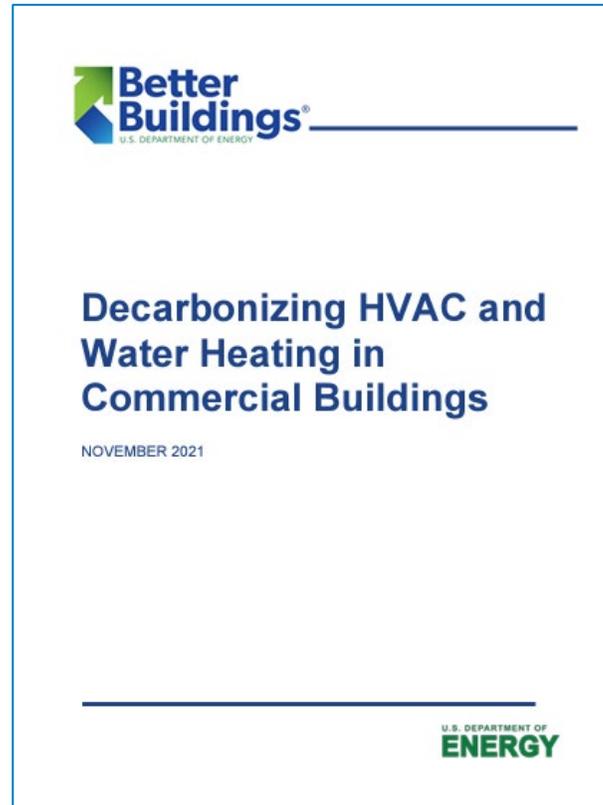
<https://www.nrel.gov/docs/fy20osti/77414.pdf>



# PV Costs Compared to Building Costs (K-12 Schools)



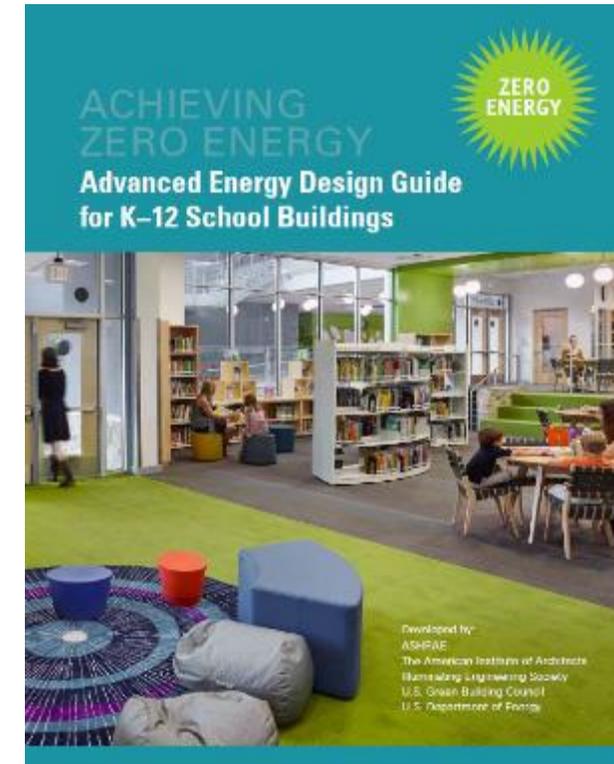
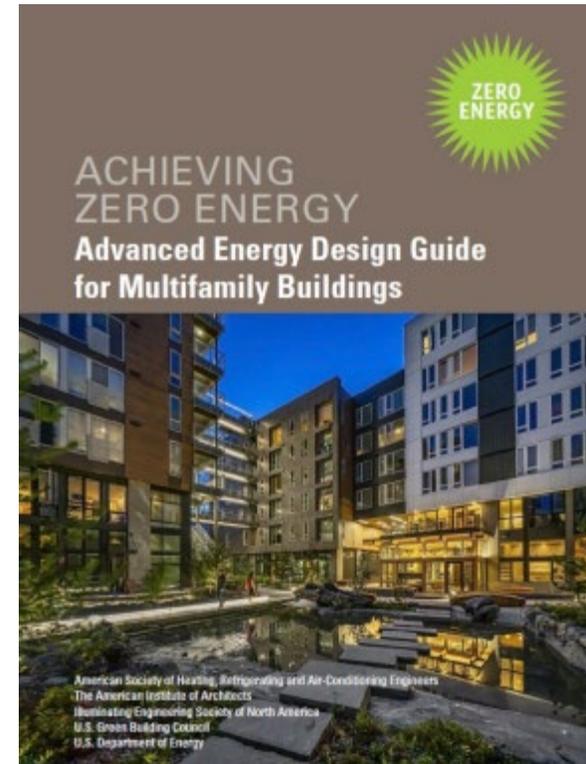
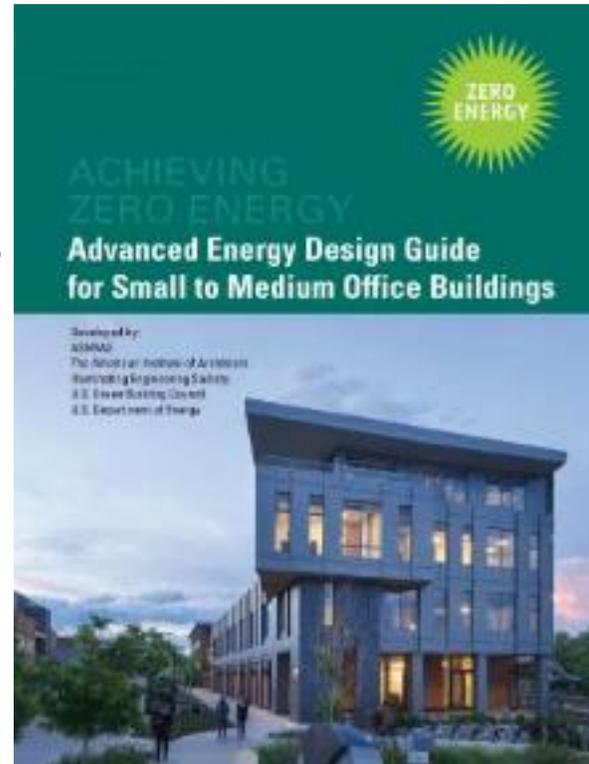
# Better Buildings Decarbonizing HVAC



<https://betterbuildingsolutioncenter.energy.gov/sites/default/files/attachments/Decarbonizing%20HVAC%20and%20Water%20Heating%20in%20Commercial%20Buildings%2011.21.pdf>

# Advanced Energy Design Guides for Zero Energy

- Design guidance by building type and climate zone
  - Supported by case studies and energy modeling
- Developed by leading industry experts
- Looked to for beyond energy code



More information: <https://www.ashrae.org/technical-resources/aedgs>

# Energy Use Intensity Targets for Schools

Climate Zone	SITE ENERGY		SOURCE ENERGY	
	Primary School EUI (kBtu/ft <sup>2</sup> -yr)	Secondary School EUI (kBtu/ft <sup>2</sup> -yr)	Primary School EUI (kBtu/ft <sup>2</sup> -yr)	Secondary School EUI (kBtu/ft <sup>2</sup> -yr)
0A	22.5	22.9	69.1	70.5
0B	23.1	23.2	71.4	71.6
1A	21.3	21.1	65.5	65.0
1B	21.7	21.6	66.6	66.6
2A	20.9	21.3	63.8	65.1
2B	19.6	19.9	59.7	60.8
3A	18.8	19.1	56.7	60.8
3B	19.0	19.4	57.3	58.8
3C	17.5	17.6	52.6	52.8
4A	18.8	18.9	56.3	56.7
4B	18.4	18.5	55.1	55.5
4C	17.5	17.6	51.9	52.3
5A	19.2	19.1	57.1	56.9
5B	18.7	19.0	55.6	56.6
5C	17.4	17.6	49.7	52.3
6A	21.1	20.6	62.8	61.2

# Setting Goals

- **Measurable goals are better**
- From vague to specific...
  - I want a green building
  - Design a LEED <rating> building
  - Design a building to use 30% less energy than ASHRAE 90.1-2019
  - Design a building to use less than 25,000 Btu/sqft
    - OR Design a building to have an EUI of 20 kBtu/sqft or less
  - Design a ZERO ENERGY building
  - Design a ZERO CARBON building
- Influencing purchasing decision—the owner

# Action Plans

What changes will you make to the building as part of normal business?

What problems does the building have?

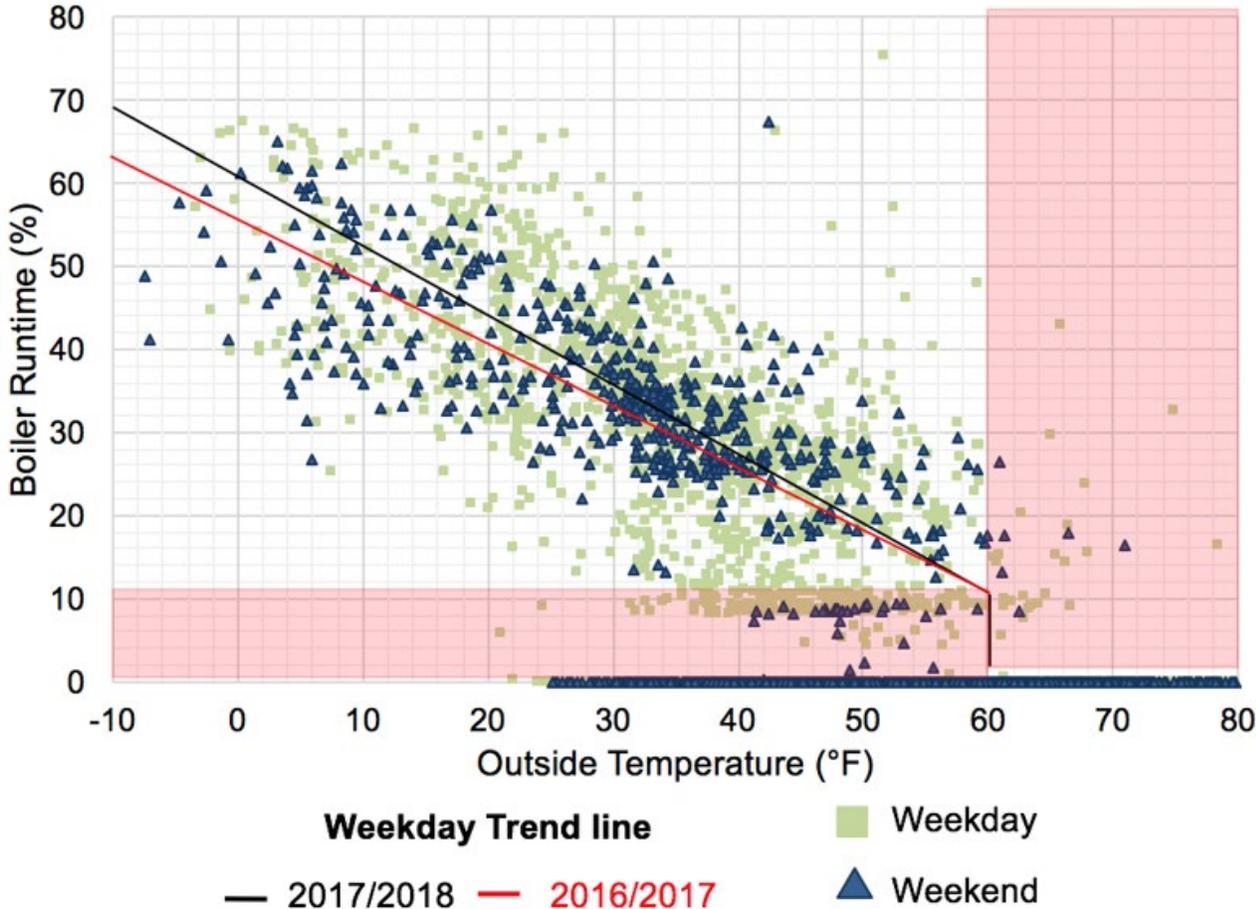
If something “dies,” what will you replace it with?

Do you know the actual capacity of equipment?

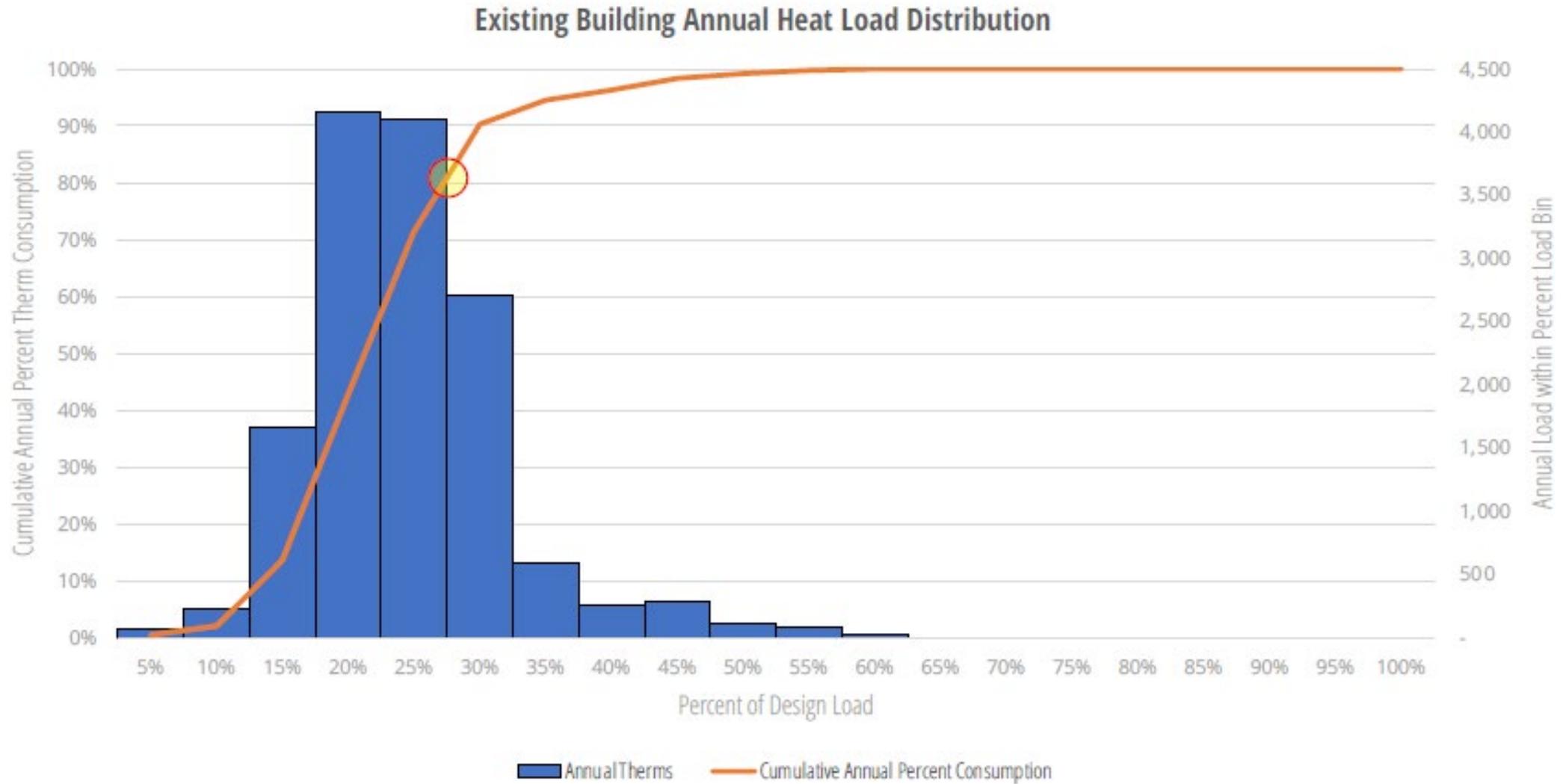


**ACTION  
PLAN**

# Boiler Runtimes



# Looking at existing load distribution



# Decarbonization Action Plan in Practice

Topic	Strategy to be Accomplished	Issues to Address	Potential Solution for Issue	Next Steps
Envelope	Improve thermal characteristics of windows	Existing window film is failing; thermal comfort issues from single pane windows	Install insulated glazing panels inside existing windows with permanent tinting	Investigate cost of insert panels and ability to solve overheating and energy savings (energy analysis)
HVAC	Electrify building	Do not know which systems and how many use natural gas and if there are electric replacement options	Start an inventory of all natural gas systems and appliances	Reach out to facilities/maintenance teams to create asset inventory
Renewables	Roof mounted PV	Can existing roof structure support ballasted PV system	Install PV on 10,000sqft of roof is roughly 50 kW	Investigate cost of system and determine if concrete roof structure will allow ballasted system installation

# Strategies

And how do these impact the resiliency of your building or portfolio?

- **Strive for 50% energy savings from ASHRAE 90.1-2019.**
  - Envelope – Reducing load will downsize equipment and electrical needs
    - Blower door test building and seal leaks. Target 0.10 cfm/ft<sup>2</sup> at 75 Pa
  - Lighting – use the AEDG recommendations. Lighting is often replaced in buildings
  - Plug Loads – Energy Star enabled equipment. Plug load inventories
  - HVAC (to match first three)
- **Maximize on-site renewable energy.**
- **Use as much energy as possible from 10 am to 2 pm ... and as little as possible from 5 pm to 9 pm.**
- **Hydronic loops** – how low can you go and still meet loads. Plan for lower loads
- **Thermal storage**
  - Building materials – Pre-cooling/heating when solar resources are available
  - Hot and cold water and/or ice. Buffer Tanks for HVAC
  - Batteries (but not for HVAC)
  - Ability to flex the building loads
- **Create an all-electric building** (but minimize electric resistance)

# Example School

Windows did not meet fire egress requirements.

70-year-old steam system was failing

30-year-old hot water system for gym

Wanted to put PV on gym roof (but could not support the weight)

## Solution Pathway

- New low-e windows (now steam system was way over capacity)
- Replaced Gym roof with EDPM and tripled insulation amount (now that boiler was over capacity)
- Reduced roof weight allowed for PV for 60% of electrical load at 70% electrical cost savings – no money up-front
- Started replacing radiators with low temperature fin tube on return from gym boiler
- Retired steam boiler (1.5 MMBtu/hr) and now running entire school on 0.6 MMBtu/hr boiler. Added provisions for adding heat pumps

# Next Steps...

- Create your action plan
  - Track energy performance
  - Focus on energy efficiency. Makes the pathway to electrification easier.
  - Identify on-site fossil equipment. Develop pathways to electrify
  - Avoid electric resistance



# Discussion

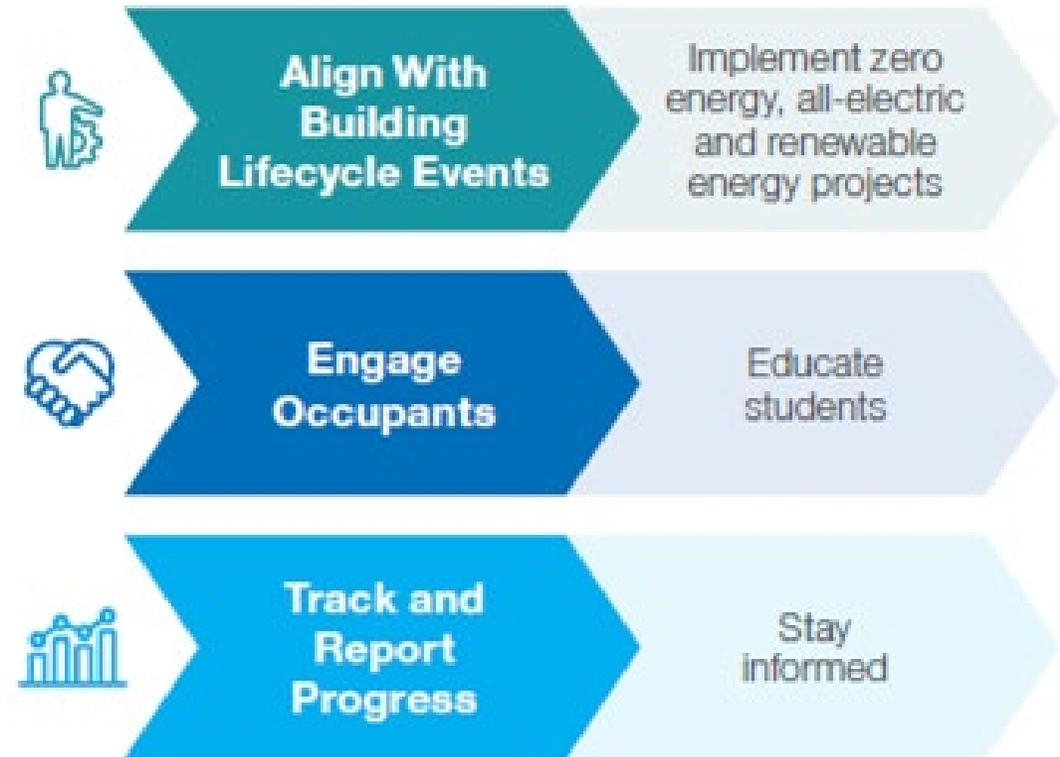
# 1. What topic(s) do you think your plan will focus on? What kind of plan is realistic for your district?

- a. Energy efficiency/energy reduction
- b. IAQ or IEQ
- c. Emissions reduction
- d. Resiliency
- e. Other (let us know in chat)

## 2. What is your next step towards emission reduction in your school or district?

### 3. What does resiliency look like in your district or school?

# Next Session in Emissions Reduction and Resilience





## Resources

For more information, please email [EHSC@lbl.gov](mailto:EHSC@lbl.gov)



# Thank You

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*Photo from iStock-627281636*



# Overview of Federal Funding Mechanisms

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## Elementary and Secondary School Emergency Relief Fund (ESSER)

ESSER I – Coronavirus Aid Relief, and Economic Security (CARES Act) – \$13.2B

ESSER II – Coronavirus Response and Relief Supplemental Appropriations Act (CRRSA) – \$54.3B

ESSER III – American Rescue Plan Act (ARP) – \$122.7B

**ARP State and Local Recovery Funds** – allocated through other state agencies (not SEA's) but can support school construction efforts - \$350B

## Infrastructure, Investment, and Jobs Act (IIJA) – \$1.2 trillion

**Funding Breakdown:** \$550M for school building efficiency, \$5B for electric school buses, \$550M for energy efficiency block grants, \$200M for lead in school drinking water, \$1B for FEMA Building Resilient Infrastructure & Communities (BRIC) grants, \$216M for Tribal Climate Resilience.

## Inflation Reduction Act (IRA) – \$369 billion

**Funding Breakdown:** \$37.5M for monitoring and reduction of air pollution and greenhouse gases, \$12.5M to address school environmental quality.

# Overview of Federal Funding Mechanisms

## State Energy Program through Department of Energy (DOE) – FY22 \$56.5M

- Grants provided to State Energy Offices for use in efficiency, renewable, and alternative energy demonstration activities.
- *Note: not all of the \$56.5M went to schools.*

## Secure Rural Schools Act (SRS) – FY21 payments totaled \$213.4M

A portion of Forest Service funds generated through multi-use activities, such as grazing, timber production, etc. are distributed from the USDA Forest Service to eligible rural counties to help maintain local roads and schools.

## FEMA Hazard Mitigation & Disaster Relief Programs

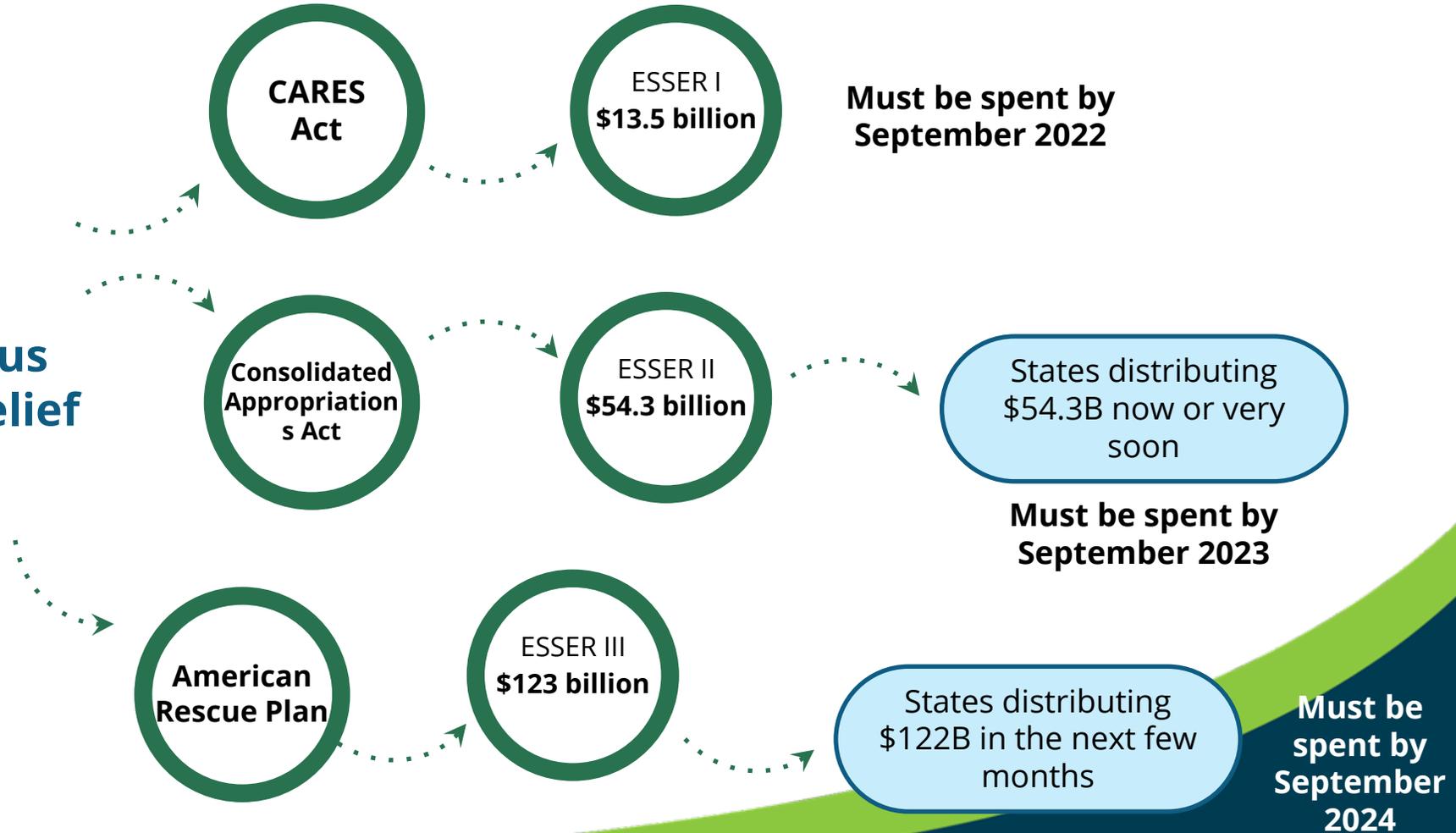
- Eligible projects are cost shared between FEMA (75%) and non-federal sources (25%)
- **Public Assistance Grant Program:** emergency or permanent work to support protective measures and/or replacement of damaged facilities.
- **Hazard Mitigation Grant Program:** implement long-term hazard mitigation measures after a major disaster declaration.

# Elementary and Secondary School Emergency Relief (ESSER I, II, III)

K-12 School Districts, aka Local Education Agencies (LEAs)

**PLANNING TO  
LEVERAGE EVERY  
OPPORTUNITY!**

**Current  
Coronavirus  
Stimulus Relief  
Efforts**

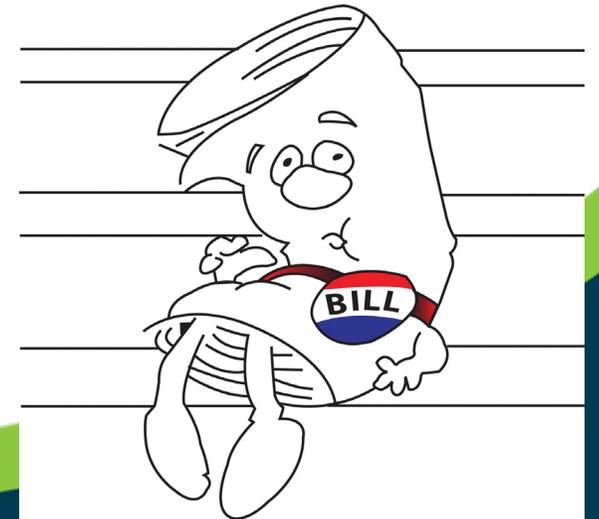


\$800M set aside for Homeless Education (drops the ESSER III Funding to SEAs down to \$122 Billion)

# Meet our Funding Friends – BIL and IRA!

**BIL:** Bipartisan Infrastructure Law  
(Infrastructure Investment and Jobs Act – IIJA)

**IRA:** Inflation Reduction Act



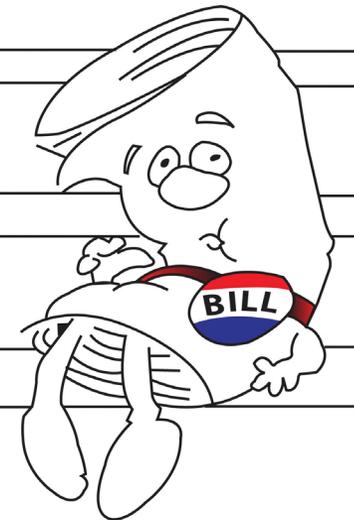
# Renew America's Schools - BIL

**Invest in More Efficient, Energy-Saving School Buildings:** The Department of Energy (DOE) is launching a \$500 million grant program spread across FY22-26 through President Biden's Bipartisan Infrastructure Law (BIL) to make public schools more energy efficient.

The U.S. Department of Energy recently announced more than **\$80M**, the first tranche of funding in a \$500M investment, to make clean energy improvements in K-12 public schools. Funds will empower school districts to make upgrades that will lower facilities' energy costs and improve student learning environments.

## Application released!

Sign-up for updates for about the Grants for Energy Improvements at Public School Facilities Program: <https://www.energy.gov/bil/grants-energy-improvements-public-school-facilities>



# Renew America's Schools

**Invest in More Efficient, Energy-Saving School Buildings:** The Department of Energy (DOE) is launching a \$500 million grant program spread across FY22-26 through President Biden's Bipartisan Infrastructure Law (BIL) to make public schools more energy efficient.



<https://eere-exchange.energy.gov/>

# Renew America's Schools – Grants Overview



## Funding

\$500M (over FY22-26),  
competitive grant



## Qualifying Energy

- Improvements, repairs, or renovations that:
- reduce energy costs or lead to improved teacher and student health and achieve energy savings;
  - installation of renewable energy;
  - installation of alternative fueled vehicle (AFV) infrastructure; and
  - purchases or leases of AFV.



## Eligible Entities

Consortium of (a) one LEA and (b) one or more schools; nonprofit organizations that have the knowledge and capacity to partner and assist with energy improvements; for-profit organizations that have the knowledge and capacity to partner and assist with energy improvements; or community partners that have the knowledge and capacity to partner and assist with energy improvements.



## Prioritization

- Schools that:
- Demonstrate funding needs;
  - Serve a high percentage of students who are eligible for a free or reduced-price lunch;
  - Located in a locale code of 41, 42, or 43 as determined by NCES; and
  - Proposal leverages private sector investment through energy-related performance contracting.

# Renew America's Schools – Goals



Facilitate  
substantial  
additional  
investment

Prioritize  
schools with  
high needs

Minimize  
administrative  
burden

Build operating  
capacity in  
LEAs to  
maximize  
impact

# Renew America's Schools – Topic Areas



Topic  
Area  
1

High-Impact  
Energy  
Efficiency  
and Health  
Improvements

Topic  
Area  
2

Innovative  
Energy  
Technology  
Packages



The graphic features a blue background with a white border. At the top left is the 'AMERICAN MADE U.S. DEPARTMENT OF ENERGY' logo. To its right is the title 'Energy CLASS Prize TIMELINE'. On the top right, it states '\$2.5 Million in Awards'. The timeline is divided into two phases. Phase 1, 'Application', is marked with a large '1' in a green circle and includes details about the submission period (November 2022 to February 2023) and prizes. Phase 2, 'Skills Development and Coaching', is marked with a large '2' in a green circle and includes details about the duration (May 2023 to May 2024) and support. At the bottom, there is an illustration of a school building with solar panels, trees, and people walking and riding bicycles.

**AMERICAN MADE**  
U.S. DEPARTMENT OF ENERGY

Energy CLASS Prize  
**TIMELINE**

**\$2.5 Million**  
in Awards

**PHASE 1**

## Application

Opens in November 2022, submissions due by February 2023

- Up to 25 local educational agencies (LEAs) selected
- \$100,000 in cash prizes to each selected LEA to support energy management professionals-in-training in Phase 2

**PHASE 2**

## Skills Development and Coaching

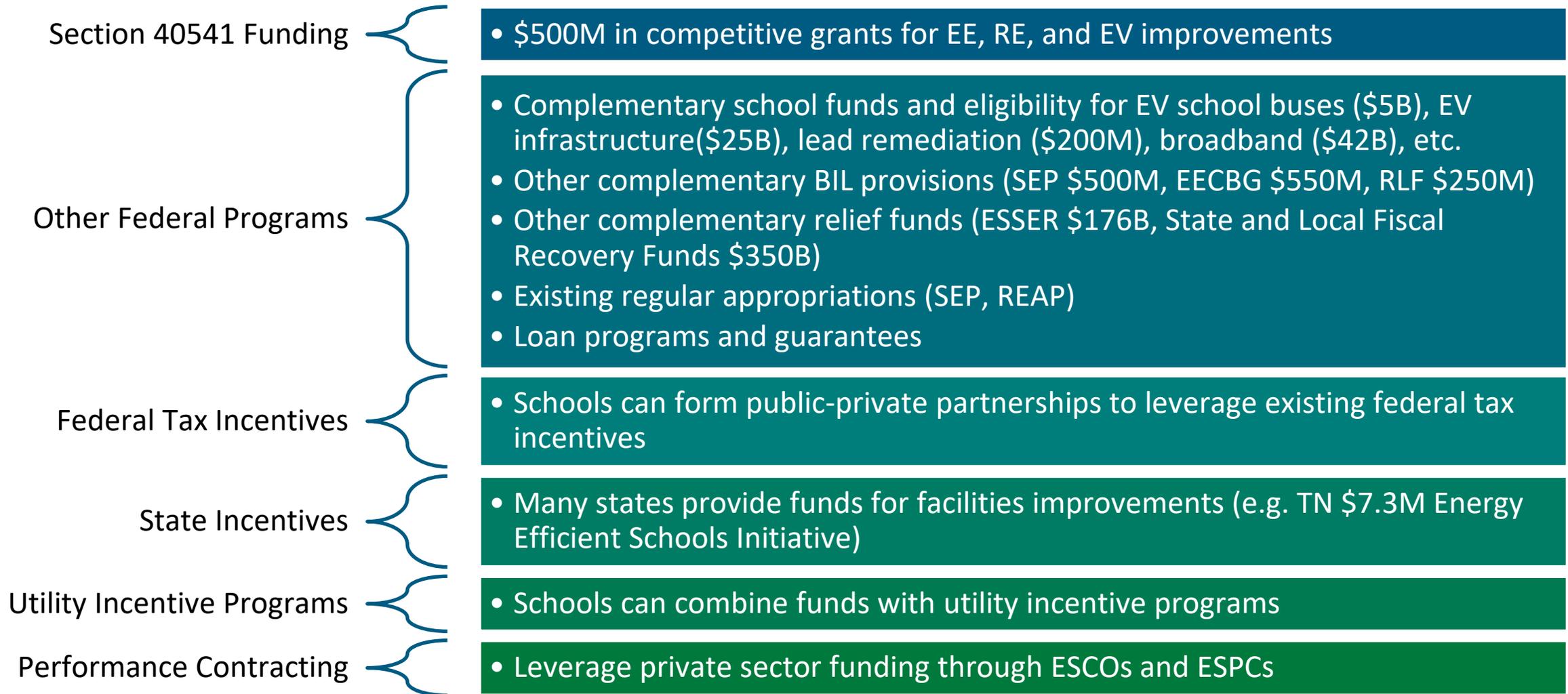
May 2023 – May 2024

- Courses and 1:1 support over a 12-month period
- Chance to win a \$50,000 bonus prize upon completion

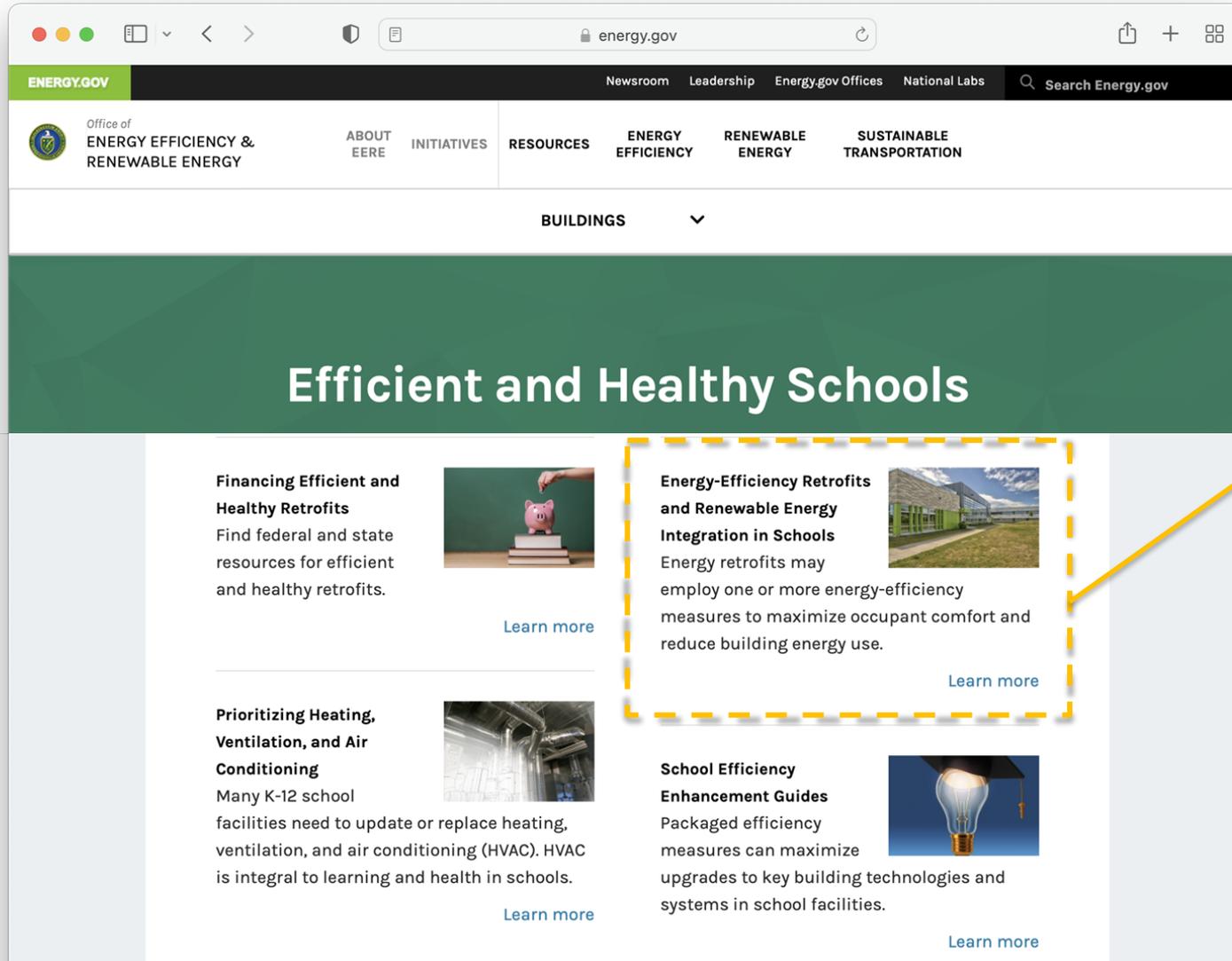
SCHOOL

[www.herox.com/energy-class](http://www.herox.com/energy-class)

# Renew America's Schools – Maximizing Impact



*Applicants should thoroughly review cost share types and allowability if an applicant plans to combine federal funding from multiple programs and agencies.*



The screenshot shows the Energy.gov website with the following navigation and content:

- Header: ENERGY.GOV, Newsroom, Leadership, Energy.gov Offices, National Labs, Search Energy.gov
- Secondary Navigation: ABOUT EERE, INITIATIVES, RESOURCES, ENERGY EFFICIENCY, RENEWABLE ENERGY, SUSTAINABLE TRANSPORTATION
- Section: BUILDINGS
- Section Header: Efficient and Healthy Schools
- Card 1: **Financing Efficient and Healthy Retrofits**. Find federal and state resources for efficient and healthy retrofits.  [Learn more](#)
- Card 2: **Prioritizing Heating, Ventilation, and Air Conditioning**. Many K-12 school facilities need to update or replace heating, ventilation, and air conditioning (HVAC). HVAC is integral to learning and health in schools.  [Learn more](#)
- Card 3: **Energy-Efficiency Retrofits and Renewable Energy Integration in Schools**. Energy retrofits may employ one or more energy-efficiency measures to maximize occupant comfort and reduce building energy use.  [Learn more](#)
- Card 4: **School Efficiency Enhancement Guides**. Packaged efficiency measures can maximize upgrades to key building technologies and systems in school facilities.  [Learn more](#)

## Energy-Efficiency Retrofits and Renewable Energy Integration in Schools

Buildings

Buildings » Energy-Efficiency Retrofits and Renewable Energy Integration in Schools

### Energy Efficiency

Energy retrofits may employ one or more energy-efficiency measures (EEMs) to maximize occupant comfort and reduce building energy use. EEMs that are frequently implemented in schools include: improving insulation; upgrading heating, ventilation, air conditioning, and water heating systems; reducing air leakage through air-sealing; installing energy-efficient windows (e.g., insulated glazing units); upgrading to energy-efficient lighting; adding occupancy- or daylight-sensing lighting controls; installing advanced controls and fault diagnostic systems; or changing building operation protocols (e.g., coordinating the use of HVAC systems for maximum comfort only during occupied hours). Below are links to helpful Better Buildings Resources on EEMs.

- [Energy Efficiency and Renewable Energy Resources for Rural K-12 School Energy Managers and Educators](#)
- [Better Buildings K-12 Lighting Tool Kit](#)
- [Better Buildings K-12 Solutions for Buildings Energy Excellence](#)
- [Better Buildings Decision Guides for Plug and Process Load Controls](#)
- [Better Buildings Webinar: Back to School: Including Energy Efficiency in K-12 Classrooms](#)
- [Better Buildings Webinar on Fault Detection and Diagnostics in the Age of COVID-19](#)
- [Better Buildings Toolkit on Incentivizing Advanced RTU Control Retrofits](#)
- [Energy Case Study: Henderson County Public Schools](#)
- [Low Carbon Technology Strategies for Primary Schools](#)
- [Low Carbon Technology Strategies for Secondary Schools](#)

<https://www.energy.gov/eere/buildings/efficient-and-healthy-schools>

# Getting to Zero Resources HUB

## SCHOOLS RESOURCES

Here you can find resources for those interested in getting on the path to zero in schools. These resources include technical strategies, district approaches, state policies, and national programs that aim for getting to zero energy and zero carbon over time. Case studies highlight successful projects from across the country. Technical tools include assessment strategies for school retrofits and technical best practices in both new construction and existing buildings. You will also find policy guidance documents, examples of district goals, and strategies to achieve them.



### DESIGN & PROCESS

PATHS TO SUCCESSFUL SCHOOLS



### EXISTING BUILDINGS

TOOLS AND ANALYSIS FOR RETROFITS



### SCHOOLS & DISTRICTS

LEADERSHIP AND LESSONS LEARNED FROM  
IMPLEMENTATION



### STATE & NATIONAL

PROGRAMS MAKING THE CASE FOR HEALTHY AND  
SUSTAINABLE SCHOOLS

<https://gettingtozeroforum.org/zero-energy-schools-resources/>