

BUILDINGENERGY NYC

From Planning to Doing: Decarbonizing State-Owned Campuses & Facilities

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From Planning to Doing: Decarbonizing State-Owned Campuses & Facilities

Panelist Introductions



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Chief Sustainability Officer

Session Learning Objectives

- **Describe how New York State entities are decarbonizing State assets and campuses**
- **Explain how State entities approach balancing priorities from policy mandates, organizational needs, and economic realities**
- **Summarize the lessons learned from long-term planning for State-owned facilities and assets, particularly for older building stock**
- **Explore strategies to communicate long-term energy master plans to different audiences**

CEU Information

Approved for 1 credit hour toward AIA (LU|HSW), BOC, LEED (BD+C, ID+C, O+M), NARI, Phius, and RESNET certification

Session ID

NYC26-203

NY State Policy Context: Leading by Example

Policy and Regulatory Context – State Level

EO22 (2022): Leading by Example

Directed NY State entities to adopt a sustainability and decarbonization program, included SUNY and CUNY
Set a 2030 target of 100% energy for State entities to be provided by Clean Energy Standard (CES) Eligible Systems

Climate Action Council's Scoping Plan

Commitment to “Lead by Example in State Projects”:

- update regulations to adopt a high-efficiency State Energy Code for new construction
- building resilience features into State codes,
- prohibit building systems or equipment used for the combustion of fossil fuels in new construction

SUNY Construction Fund Directive 1B-2

Requires all new SUNY construction to be fossil-free, achieve Net Zero Carbon, and meet specific target annual energy use intensity (EUI) standards

SUNY Climate and Sustainability Action Plan

Requires all campuses to implement [Clean Energy Master Plans \(CEMP\)](#) to drive system-wide decarbonization and meet New York's climate mandates

UAlbany Institutional Goals

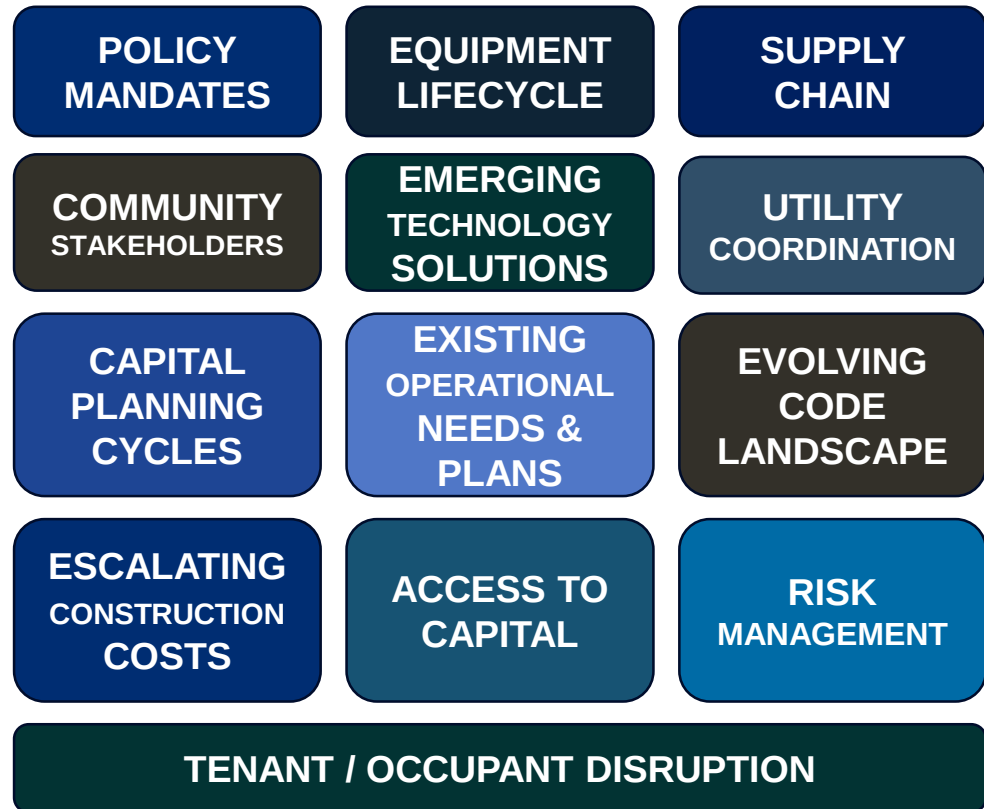
Net-zero emissions by 2044
Aligns with UN Sustainable Development Goals and includes six key elements: Ecological Literacy, Impactful Research, Equal Access, Community Leadership, Carbon Neutrality and Climate Resiliency, Culture of Sustainability

Why District Systems?

CONVENTIONAL APPROACH: BUILDING-BY-BUILDING

The conventional building-by-building approach to energy and decarbonization is fragmented and imposes an operational burden.

Each project must deal with the same key components:



(Etc. This is a partial list of development complexity)

THE CASE FOR ENERGY MASTERPLANNING:

Long term planning approaches involving district systems, energy networks, neighborhood scale solutions are more resource-efficient approaches to meeting the speed and scale necessary to achieve our energy efficiency and decarbonization goals.

Balancing Multiple Goals in Strategic Decarbonization Planning

ECONOMICS

Energy and maintenance projects can save money over time.

TECH READINESS

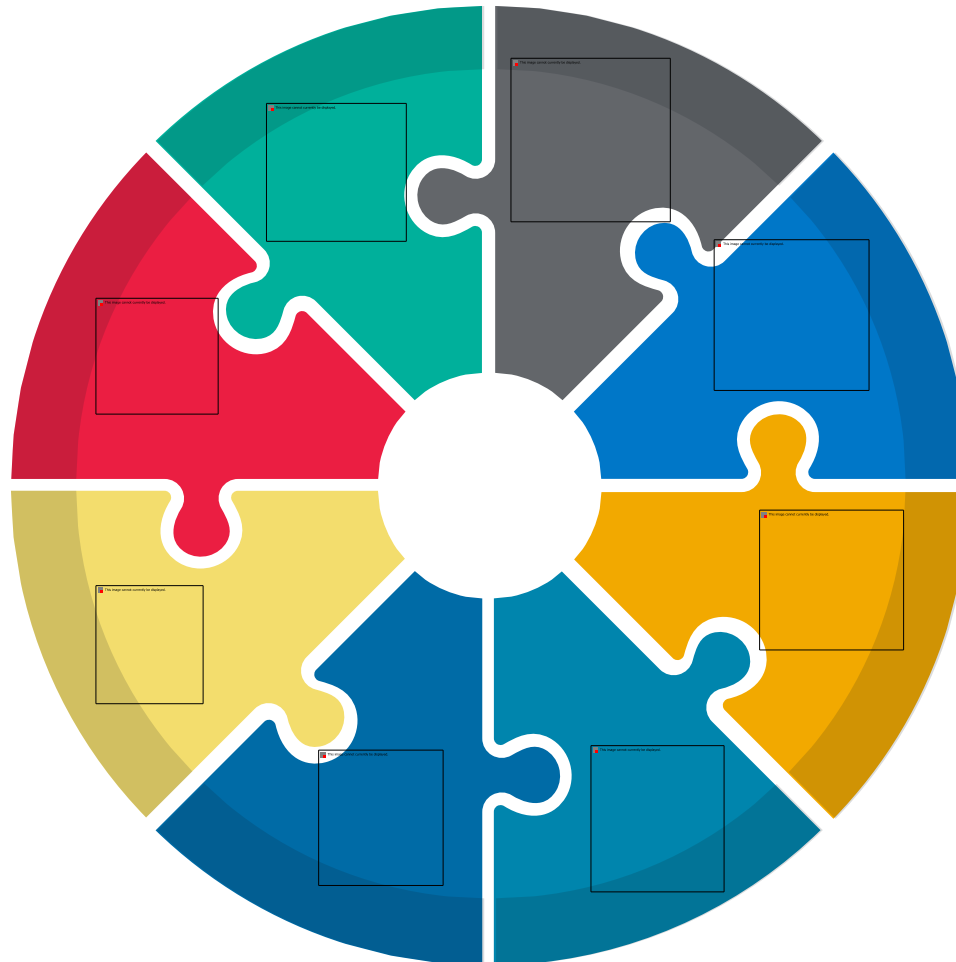
There is lots of work to do before replacing main equipment. Take enabling steps first.

SIMPLE SOLUTIONS

What is the simplest way to design a solution?

MAINTAINABILITY

Find ways to reduce future maintenance costs by implementing decarbonization measures.



VALUES

How can decarbonization advance organizational values and goals?

RESILIENCY

Systems should be prepared for disruption and protect occupants from climate-related threats.

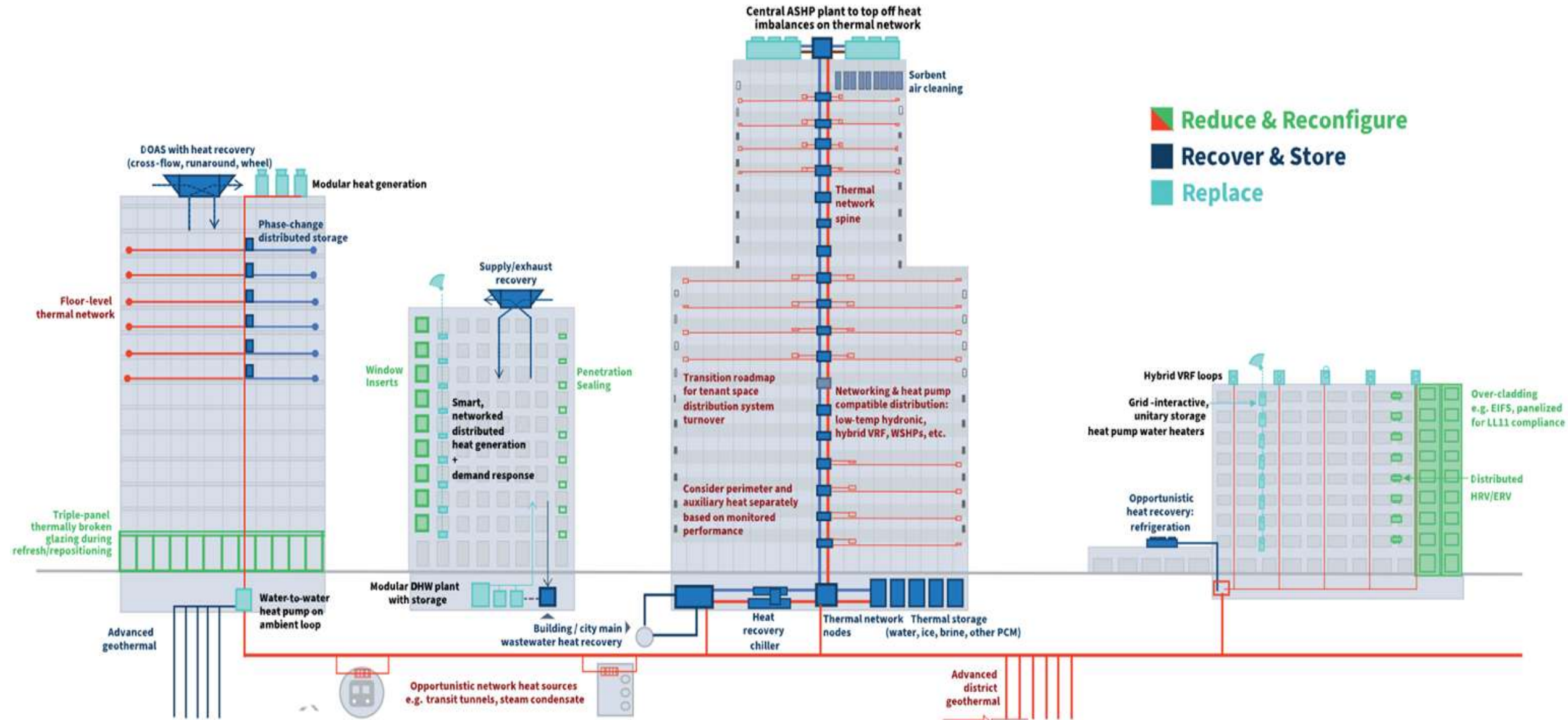
BUDGETS & PHASE-IN

Breaking decarbonization into incremental steps can help meet targets, within tight budgets.

EXISTING PLANS

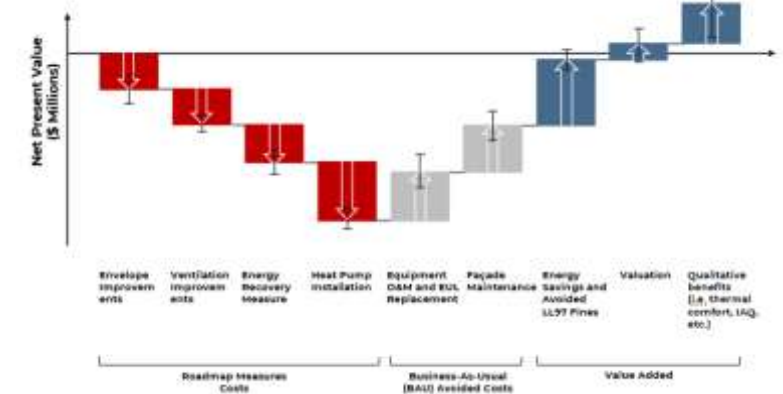
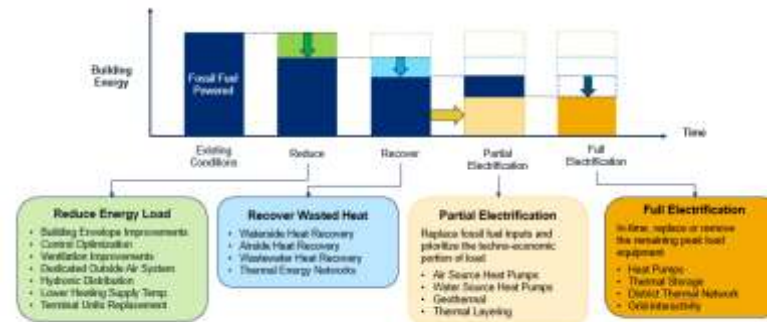
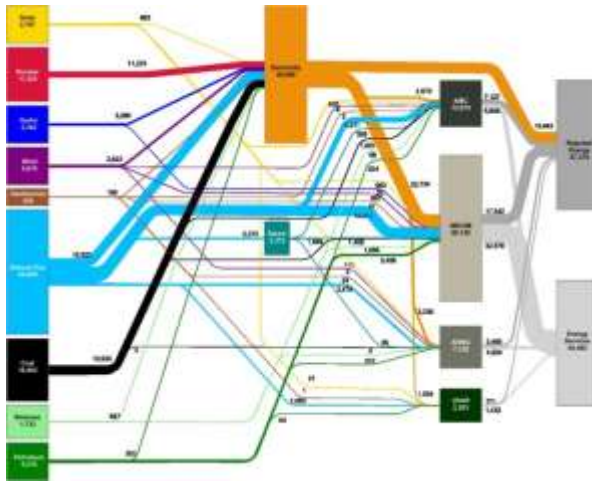
How can an existing plan be leveraged to shift gears and implement a new trajectory? Small changes can gradually yield large results.

District Systems Ramp Opportunity & Complexity



Strategic Decarbonization Planning

Strategic decarbonization goes beyond mere technology swaps. It involves understanding the lifecycle and operational strategy of buildings, identifying long-term, adaptable solutions that integrate seamlessly with financial and investment cycles.



Step 1 – Examine Current Conditions

- Building systems conditions
- Whole Asset + Campus Conditions
- Market Conditions

Step 2 – Design Resource Efficient Solutions

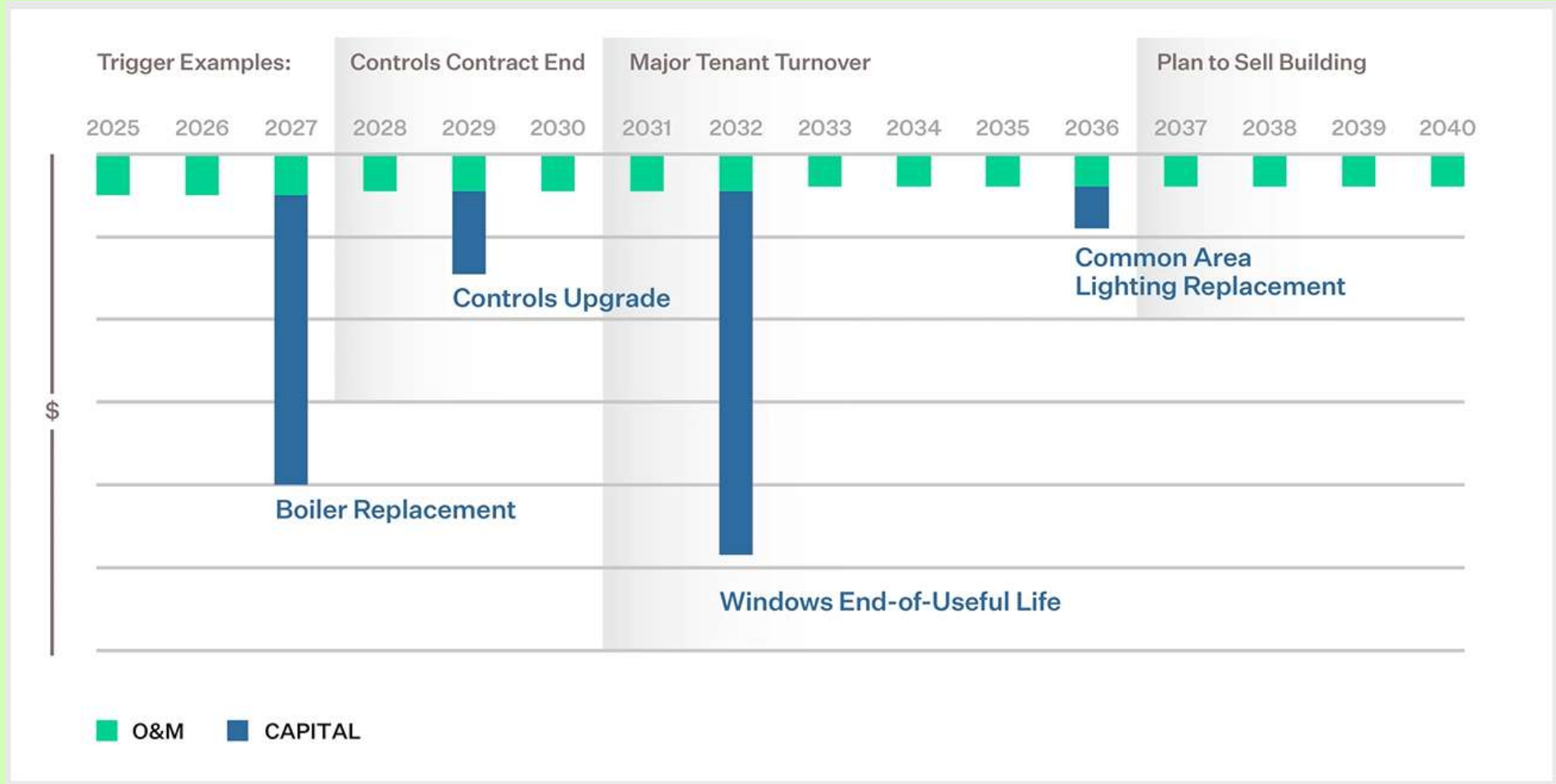
1. Reduce energy load
2. Recover waste heat
3. Partial Electrification
4. Full Electrification

Step 3 - Build the Business Case

Retrofit Costs
+ Avoided Costs
+ Avoided Risks / Fines
+ Added Value
= Net Present Value

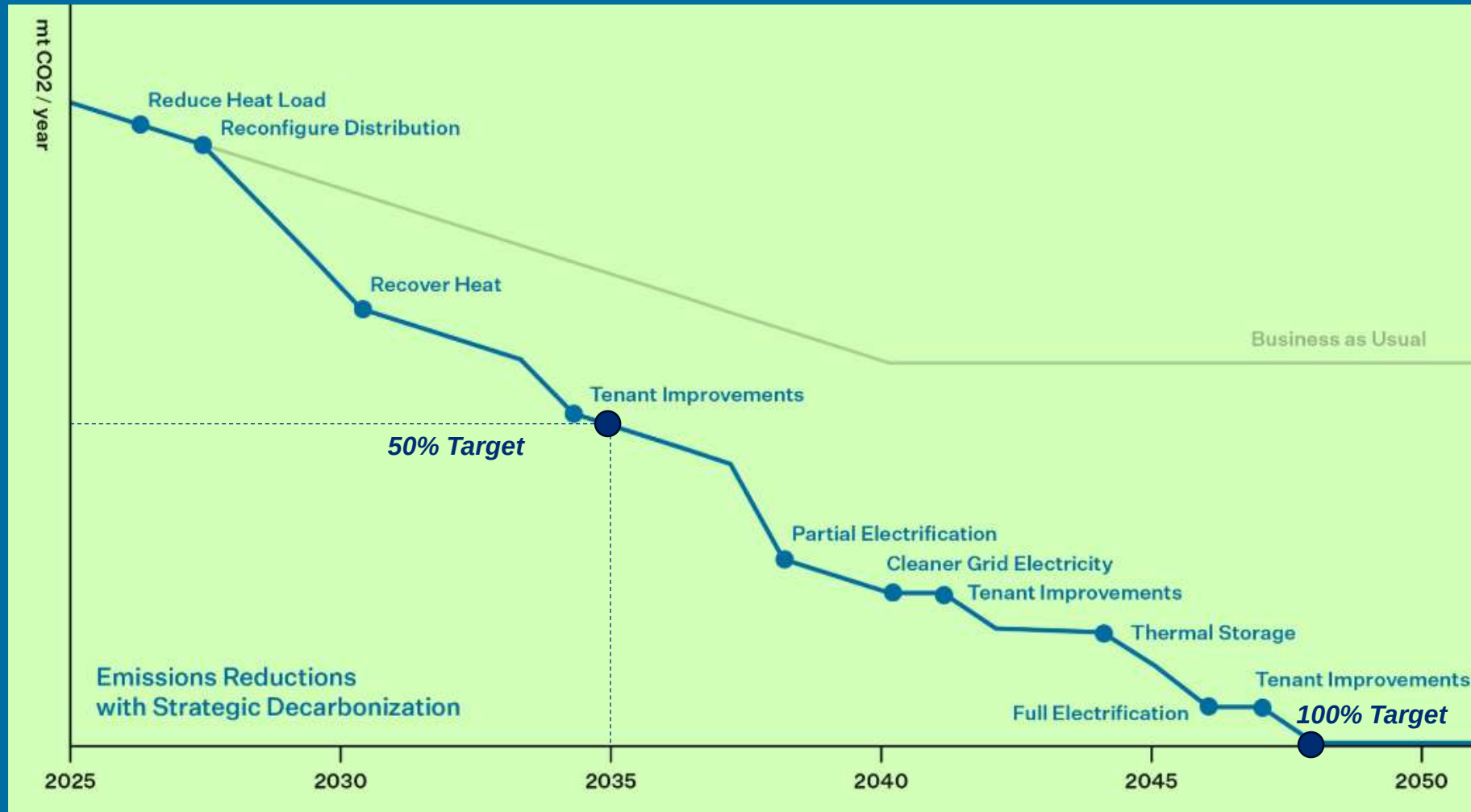
Trigger Events

SDP “*trigger events*” are pre-determined operational, financial, or building lifecycle milestones that signal the ideal time to implement carbon-reduction upgrades



Result – Strategic Decarbonization Action Plan

Completing these three steps results in a Strategic Decarbonization Action Plan that is response to a building's/campus's technical and financial circumstances.



NYSERDA's Bento Box of Support

OPEN ENROLLMENT

Flex Tech (PON 3701)

50% Cost share for energy feasibility studies

250 Technical Assistance Projects for Higher Ed
50 Energy Master Plans | \$24M in NYSERDA funding

OPEN ENROLLMENT

On-site Energy Manager (PON 4192)

Funds part time or full-time OsEMs for owners that don't have facility-dedicated in-house support

Decarbonization Leadership Program

- Partnership w NYPA
- Conditions assessments and decarbonization action plans for 15 high emitting State facilities (including 7 SUNY campuses, 3 CUNY colleges, and 5 State facilities)

Building Cleaner Communities Competition

Binghamton University (SUNY) awarded \$5M to develop a comprehensive clean energy master plan across the 6 million square foot campus

Find a NYSERDA program:



Community Heat Pump Systems

60 Thermal Energy Network awards:

- 48 Feasibility Studies
- 12 Design Phase awards
- 6 Construction demonstrations

University of Albany (SUNY) \$2M for Campus Masterplan

- Phased strategies considering energy efficiency, geothermal, heat recovery, low temperature hot water distribution, and renewables
- Cost-effective pathway to decarbonize approximately 70% of the campus
- Master plan positioned UAlbany for \$30M in state appropriated funding to implement projects focused on geothermal, heat recovery, and low-temperature hot water distribution.

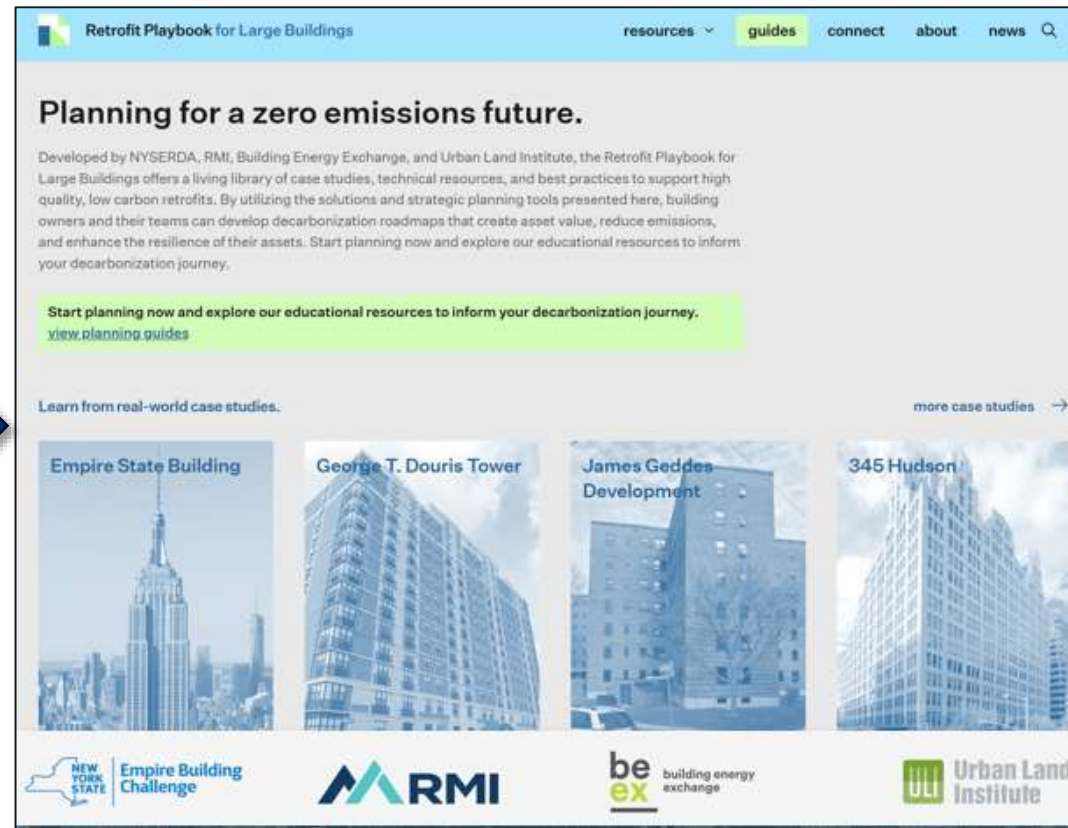
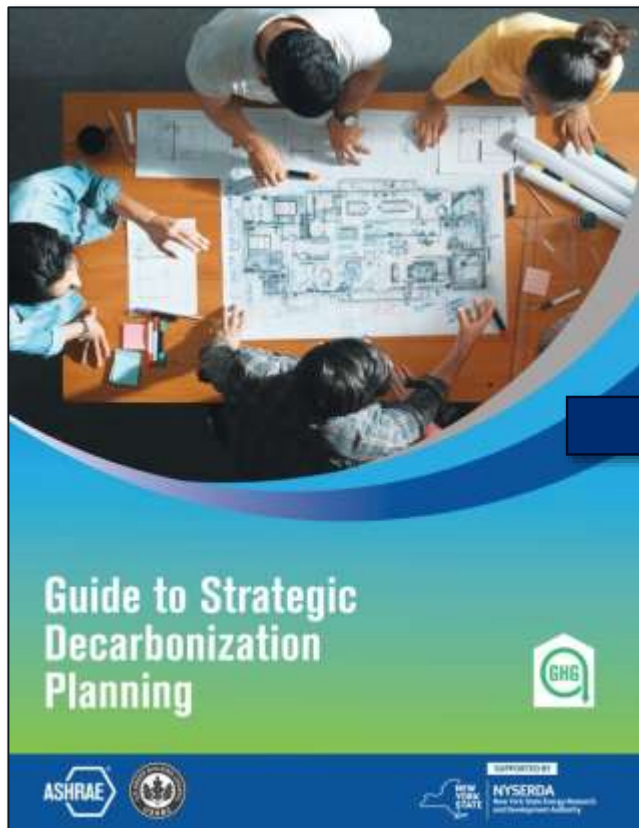
If you are interested in a particular market sector or program, please get in touch!

Contact info: Josh Plourde joshua.plourde@nyserda.ny.gov

Strategic Decarbonization Planning > Retrofit Playbook

Retrofit Playbook is a living library with case studies, key performance networks, and how-to guides for Strategic Decarbonization Planning (SDP) and Resource Efficient Decarbonization.

Content developed in coordination with: Empire Building Challenge partners, ASHRAE, RMI, ULI and Building Energy Exchange



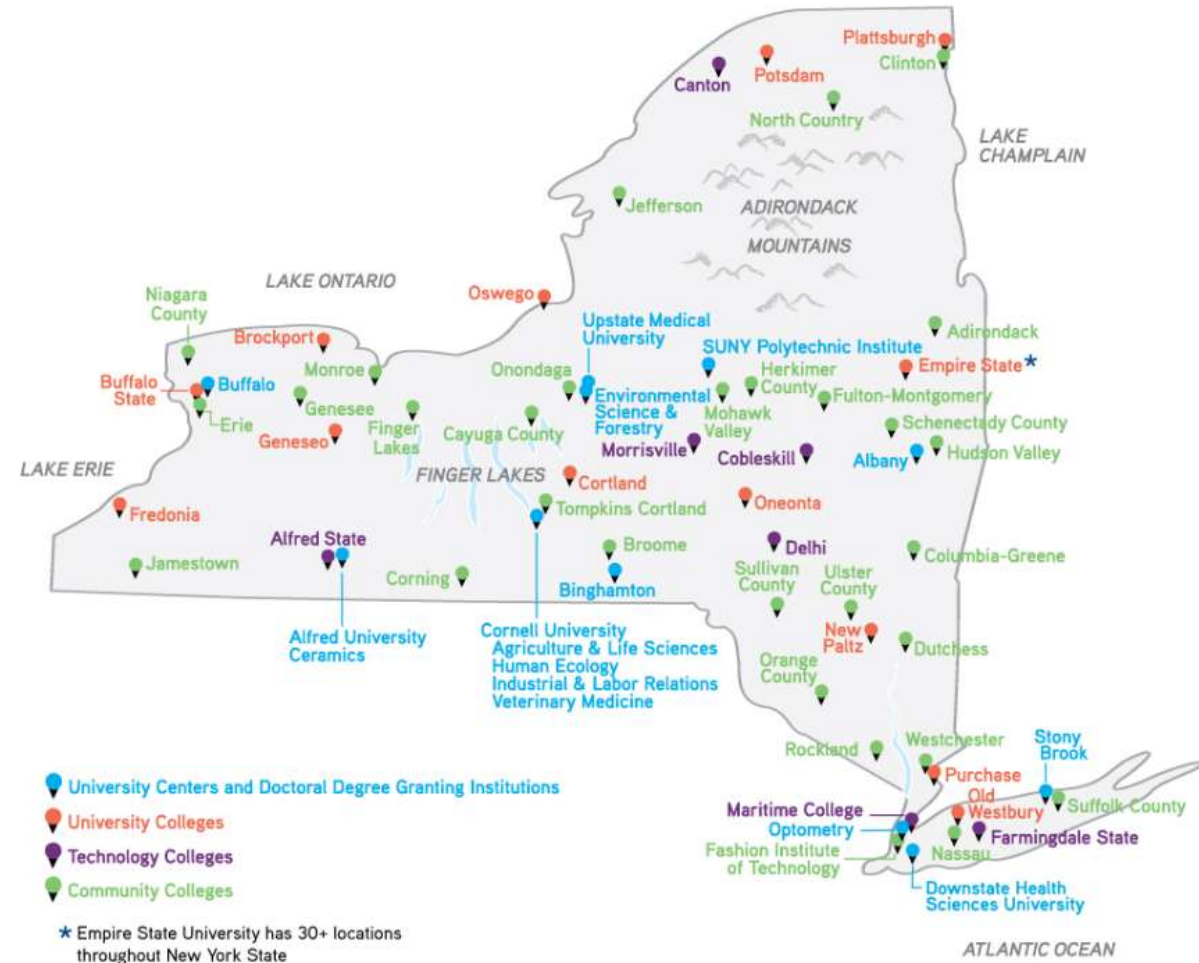
Project Examples from SUNY, UAlbany & OGS

SUNY



Energy at SUNY

- 64 colleges and universities with 111 M sq ft. in 2,800+ buildings; 50+ yrs old (avg)
- EUI minimums, electrification, stretch energy code, plus 950+ energy efficiency projects has yielded 13% reduction in energy use over last decade (33% EUI reduction)
- 55 LEED certified buildings
- 56 renewable energy projects generate 33,000 MWh
- 23 campuses use geothermal heating and cooling
- 44% reduction in Scope 1 & 2 GHG since 1990





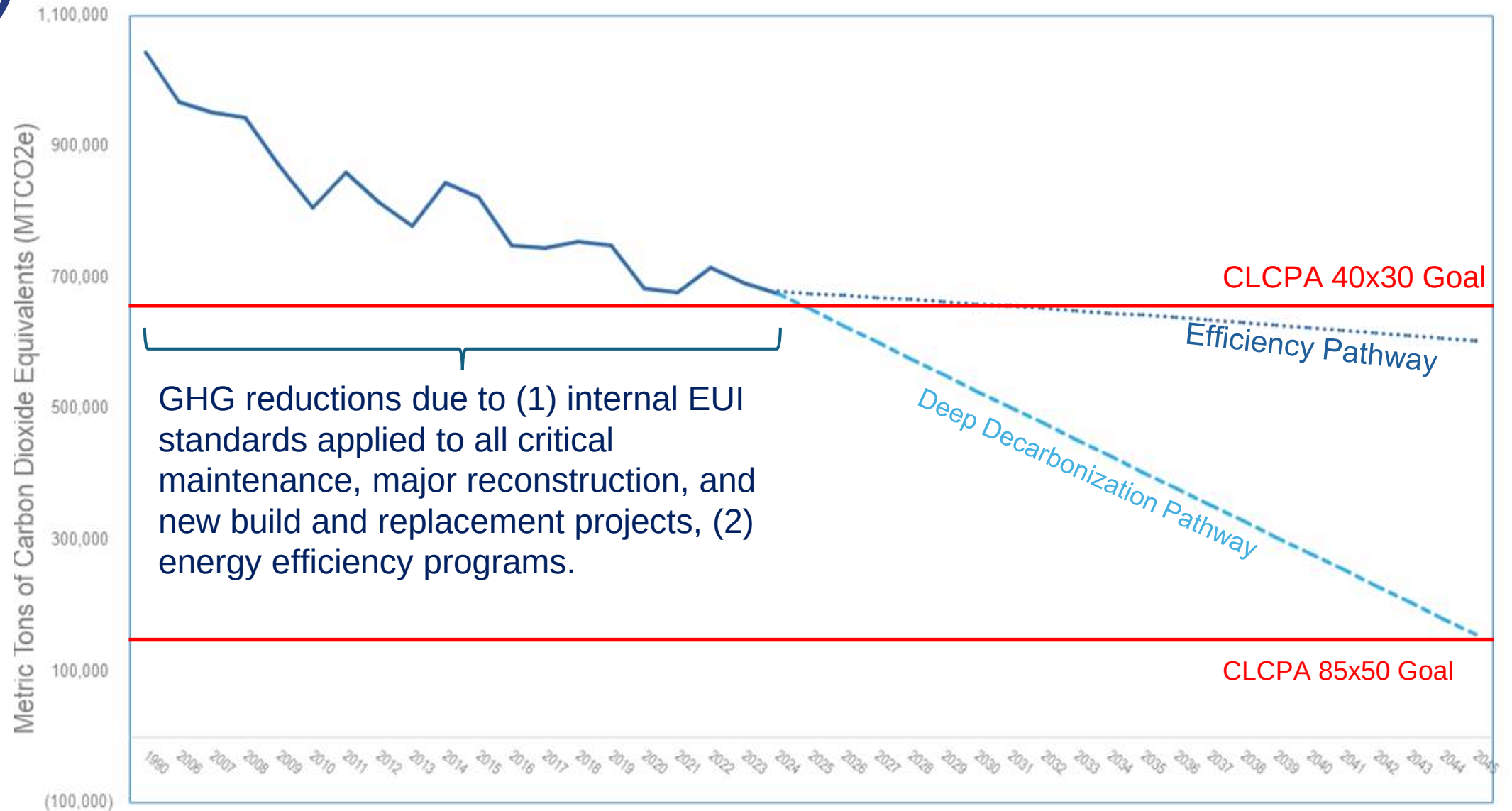
Clean Energy Transition



Buffalo State



Decarbonization Pathways





System-Level Decarbonization

Planning

- > 32 Clean Energy Master Plans
- > 7 Decarbonization Leadership Plans
- > Ongoing Facility Master Plans

Funding

- > \$550M+ CAPEX / year to address \$10B critical maintenance backlog
- > \$240M CAPEX for TENS and solar funding since 2023
- > Energy spend of \$180M yr. (\$2B over 10 yrs)

Implementation Partners

- > SUCF
- > NYPA
- > DASNY
- > Public-Private Partnerships (PPAs, EPCs, ESCOs, etc.)



Integrating Facilities, Academics, Recruitment



<https://www.oswego.edu/news/story/geothermal-wells-powering-renewed-hewitt-hall-position-suny-oswego-leader-alternative-energy>

Geothermal wells powering renewed Hewitt Hall position SUNY Oswego as leader in alternative energy projects (November 4, 2025)

* * *

This project and commitment “enhances SUNY Oswego’s appeal to environmentally conscious students who seek a campus that mirrors their values and supports their aspirations,” [AVP for Facilities J. Mitchell] Fields said. “It also fosters a culture of engagement and pride among students, faculty and staff. Operationally, the university’s investment in energy efficiency and geothermal systems reduces long-term costs, allowing SUNY Oswego to redirect savings toward academic excellence, student services and campus improvements.”

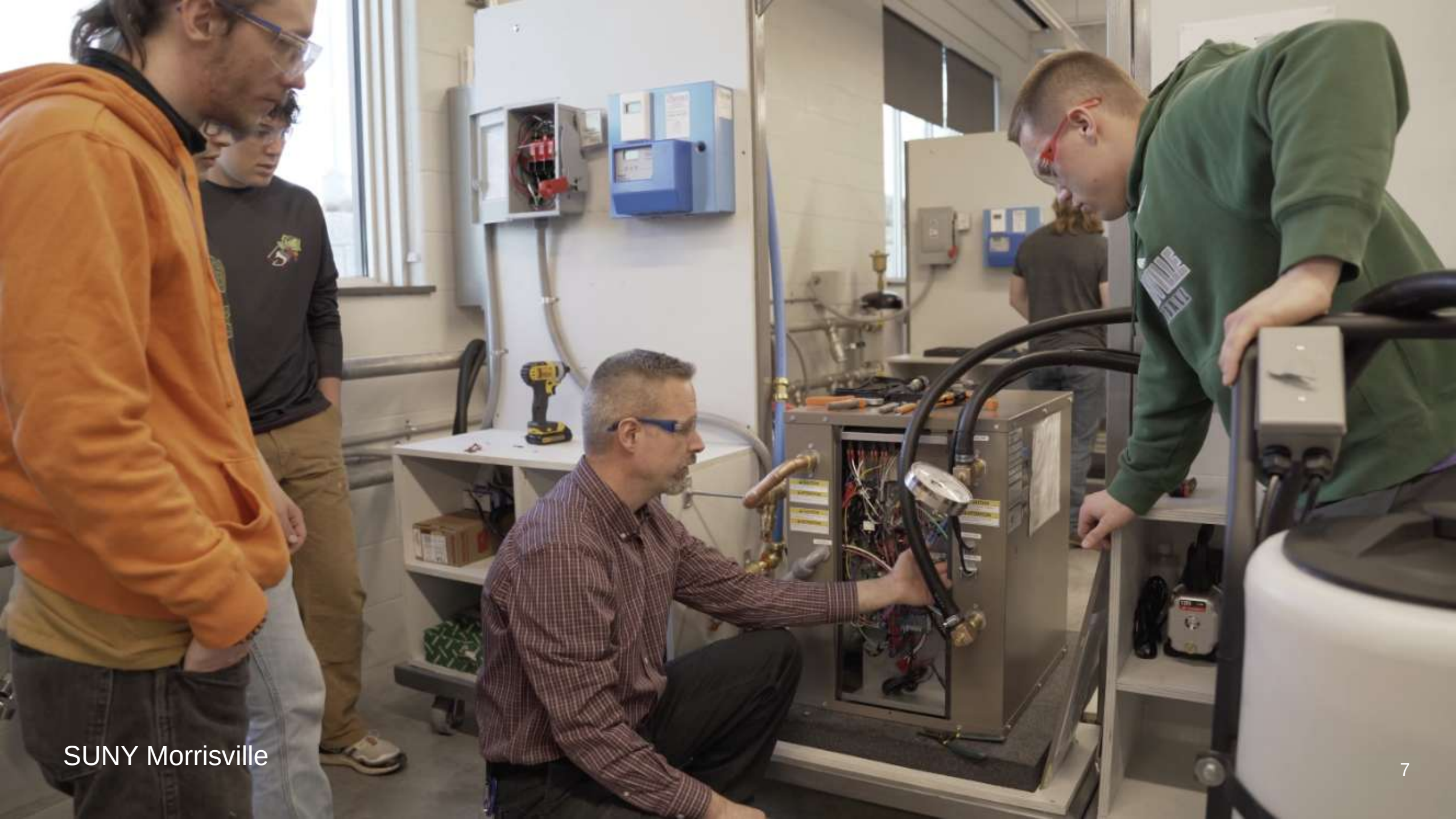
Campus and state investments in the geothermal field and other initiatives reinforce Oswego’s reputation while enhancing competitiveness in areas including student recruitment, donor engagement and creating public-private partnerships, Fields added. These actions also open the door to additional state and federal funding for a university that is a proven and responsible steward of public resources.

“Perhaps most importantly, SUNY Oswego is preparing the next generation of sustainability leaders by offering students meaningful, hands-on learning opportunities in renewable energy, environmental science and climate-conscious design,” Fields said. “In doing so, the university is not just responding to the climate crisis — it’s shaping the solution.”





SUNY Maritime



A Sustainable SUNY Campus

Clean Energy Buildings

- 1 Daylighting
- 2 Efficient/bird safe windows
- 3 Insulation
- 4 Low carbon concrete
- 5 Passive solar design
- 6 Natural light
- 7 PV panels
- 8 Parking lot with EV chargers/
geothermal systems
- 9 Heat pump/thermal energy network

Food Services

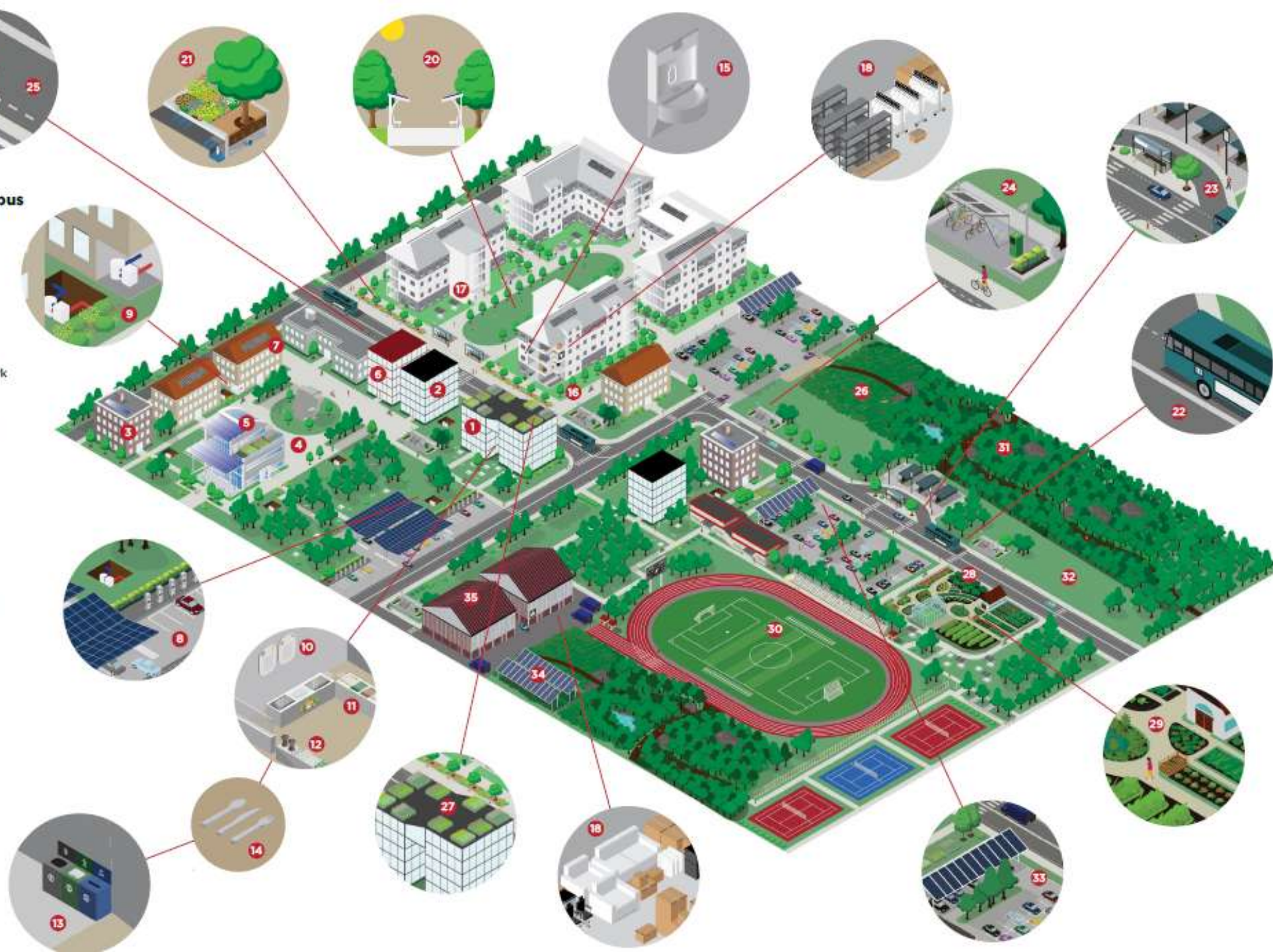
- 10 Plant forward menu
- 11 Locally sourced sustainable food
- 12 Reusable food containers
- 13 Recycling bins/compost
- 14 Compostable/reusable utensils

Residence Halls

- 15 Refillable water station
- 16 Interior/exterior bicycle storage
- 17 Recycling bins
- 18 Clothing swap room
- 19 Move out/furniture swap room
- 20 Cool corridors with permeable
pavement and shade trees
- 21 Green stormwater infrastructure/
Pollinator gardens

Outdoors & Transportation

- 22 Electric bus
- 23 Multi-modal hub
- 24 Bike share station
- 25 Bike path
- 26 Unmowed field green space
- 27 Green roof
- 28 Community garden
- 29 Composter
- 30 Sports field with stormwater
infiltration/storage below
- 31 Forest with walking trails
- 32 Organically managed landscape
- 33 Lot with solar PV canopies
- 34 Solar panels
- 35 Surplus storage warehouse



UAlabany

UAlbany Net Zero Carbon Roadmap

Thoughtful Roadmap Planning

Process used to develop an implementable roadmap

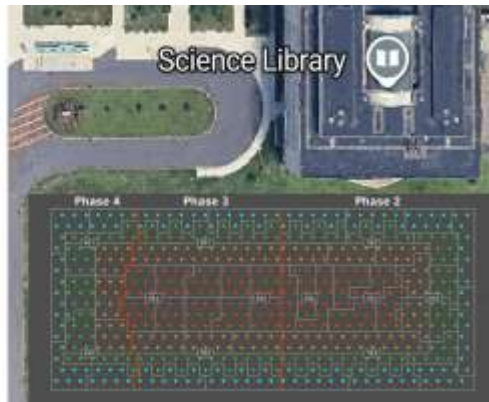


- Practical, not perfect – Recommended State captured most modeled savings at much lower cost
- Baseload/peaking
 - Baseload – 50% of peak covers 90% of annual load
 - Peaking – covers remaining 10% of annual load
- Phased Implementation – sequence projects around building readiness and planning cycles

BTES

Borehole Thermal Energy Storage

- Long duration thermal storage
- Compact design
- 12.5' spacing
- Concentric rings to limit far-field loss
- Reduced borehole count compared to conventional
 - 564 boreholes w/ double U-bend (35% reduction)
 - 1.75 acres (1/4th the size)
 - \$50.5M borefield cost (47% reduction)
- Reduces required footprint and constructability burden

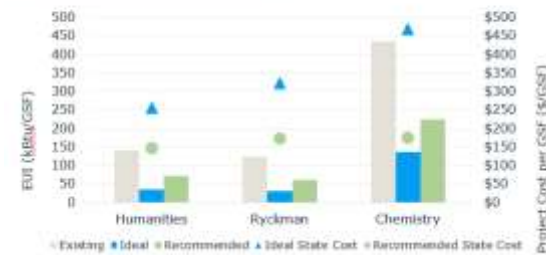


- ✓ Iterative
- ✓ Dynamic
- ✓ Strategic yet Opportunistic
- ✓ Practical, not perfect

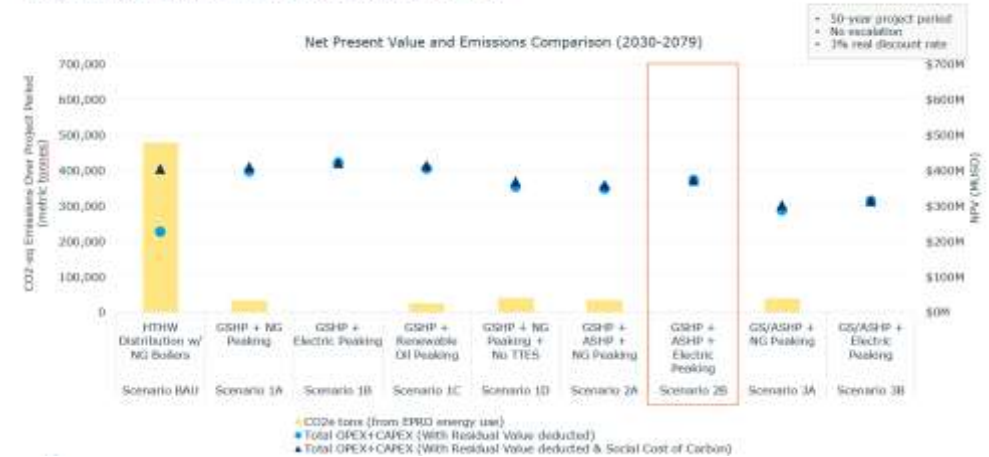
Phase 1 Renovations

Ideal State	Recommended State
• Lowest energy/carbon use	• 65-75% energy/carbon reduction at 37-57% of ideal state cost
• Best-in-class, no cost limits	• Limited building shutdown required
• Major building shutdown required	• Retrofit solutions
• Applicable to gut rehabs	

EUI and CAPEX Comparison



Techno-Economic Analysis: NPV



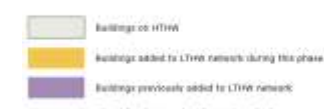
Phase 1: Now-2030

Phase 1	
SQF added (GSF)	234,125 (8%)
Number of buildings connected	2
Load added (MMBTU/h)	4.2
Total network load (MMBTU/h)	4.2 (6%)
Capital Cost (USD)	\$157M
GHG Reduction (MTCO2)	4,068 (22%)



Phase 5: 2046-2050

Phase 5	
SQF added (GSF)	123,593 (100%)
Number of buildings connected	66
Load added (MMBTU/h)	0.6
Total network load (MMBTU/h)	73.4 (100%)
Capital Cost (USD)	\$276M
GHG Reduction (MTCO2)	18,371 (100%)



OGS

Empire State Plaza (ESP) Overview

EMPIRE STATE PLAZA UTILITY SYSTEM

Five chillers—four steam-driven and one electric—cool the nearly 12M square feet of the ESP.

Six, 80,000 pound-per-hour, high pressure boilers at the Sheridan Ave Steam Plant generate up to 4M pounds of steam a day to power the steam-driven chillers and heating network.

Proposed decarbonization would reduce emissions by more than 50% upon completion of Phase 1 (chill plant electrification) and Phase 2 (conversion of Wadsworth Labs to modern, energy-efficient office space).



THE EMPIRE STATE PLAZA

The Empire State Plaza (ESP) consists of 11 primary and 7 ancillary buildings, covering 11.8M sq. ft. The Plaza is cooled by 950,000 gallons of cooling water that continuously circulates in a closed loop. Steam generated by the Steam Plant heats the Plaza in cooler months through a similar closed loop heating system.

THE CENTRAL AIR CONDITIONING PLANT (CACP)

The Central Air Conditioning Plant (CACP) houses four steam-driven chillers and one electric chiller. The chillers cool the ESP and surrounding buildings by removing heat from the Plaza's cooling water, which circulates in a closed loop within the Plaza.

RIVER WATER DISCHARGE

The river water is discharged out of the Plaza, along with the extra heat that was removed from the Plaza's cooling water, slightly warmer than when it was extracted at the Pump Station.

THE SHERIDAN AVE STEAM PLANT

The Sheridan Ave Steam Plant generates steam to power the CACP's steam-driven chillers and warm the Plaza's heating network. Its six, 80,000 pound per hour (PPH) high pressure boilers primarily fire on natural gas and generate up to 4M pounds of steam a day.

THE RIVERFRONT PUMP STATION

The Riverfront Pump Station screens and pumps water from the Hudson River up to the CACP, where it absorbs the heat rejected by the Plaza's cooling water loop.

~12M SF

commercial + office campus across 14 core buildings

~98 ACRES

integrated campus footprint

78,000 MT CO₂e

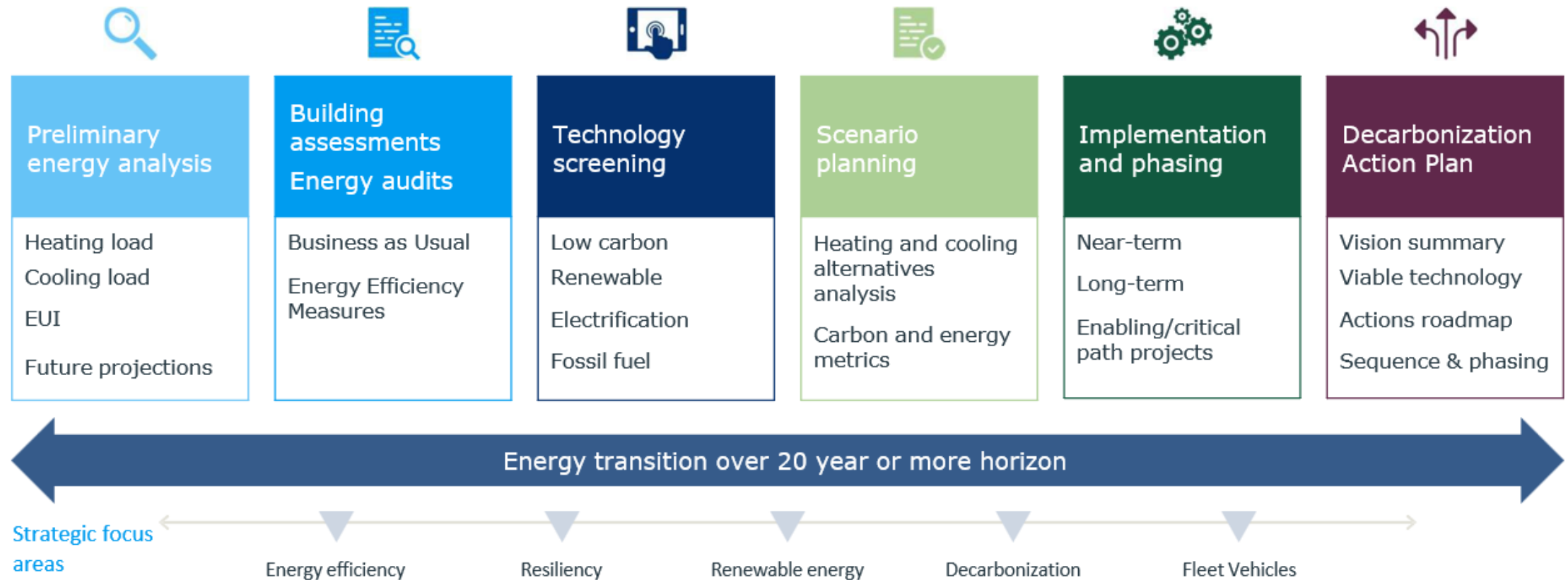
annual Scope 1 emissions based on a 2018-2019 baseline

CENTRAL UTILITIES

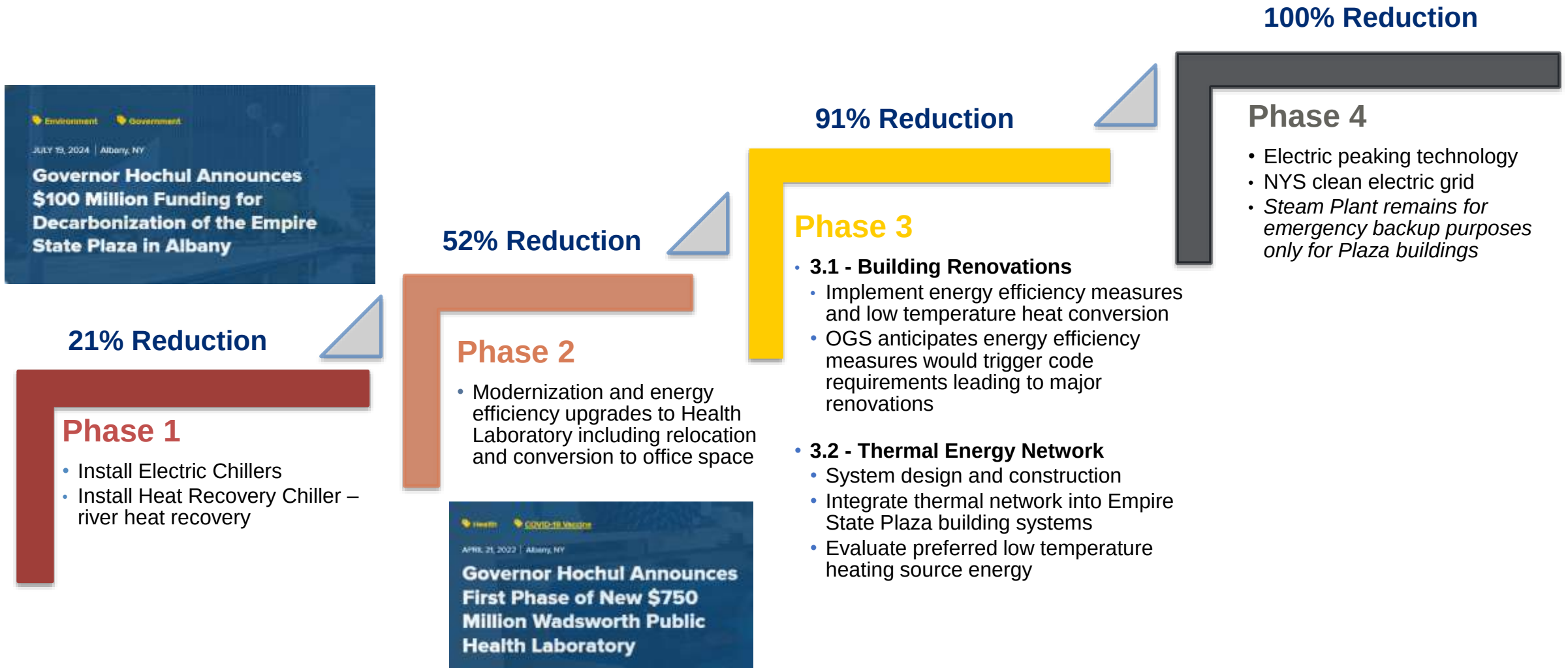
Sheridan Avenue Steam Plant • Central Air Conditioning Plant • Riverfront Pump Station

Decarbonization Planning Strategies

- OGS and NYPA partnered to develop The ESP Energy Infrastructure Master Plan study, released in 2024
- EIMP study was commissioned before the DL15 program, and it laid the groundwork for it.



A Four-Phase Path to Decarbonization





Common Approaches

Alignment of campus energy efficiency and electrification plans with operational equipment replacements and capital planning cycles.

Start "enabling measures" early, even before full masterplan funding.

Involve procurement and capital planning stakeholders as part of the strategy.
Name champions and clear owners at each phase.

Tailor communication by audience: budget offices, facilities staff, leadership, occupants. Lead with reliability, cost, safety and comfort rather than energy or carbon alone.



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