

Navigating Legislative Changes in Educational Design

A framework for architects and educators

A4LE LearningSCAPES 2024

October 18, 2024



Educational Designers



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Agenda

01 Global perspectives from COP28 – a sense of urgency

02 Understanding legislative changes

03 Case studies

04 Key takeaways

05 Questions and discussion



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Global perspectives from COP28 – a sense of urgency





Reframing perspectives



Design thinking beyond buildings.

Built environment intersects with all economic sectors offering new opportunities.

Explore all climate solutions, simultaneously.

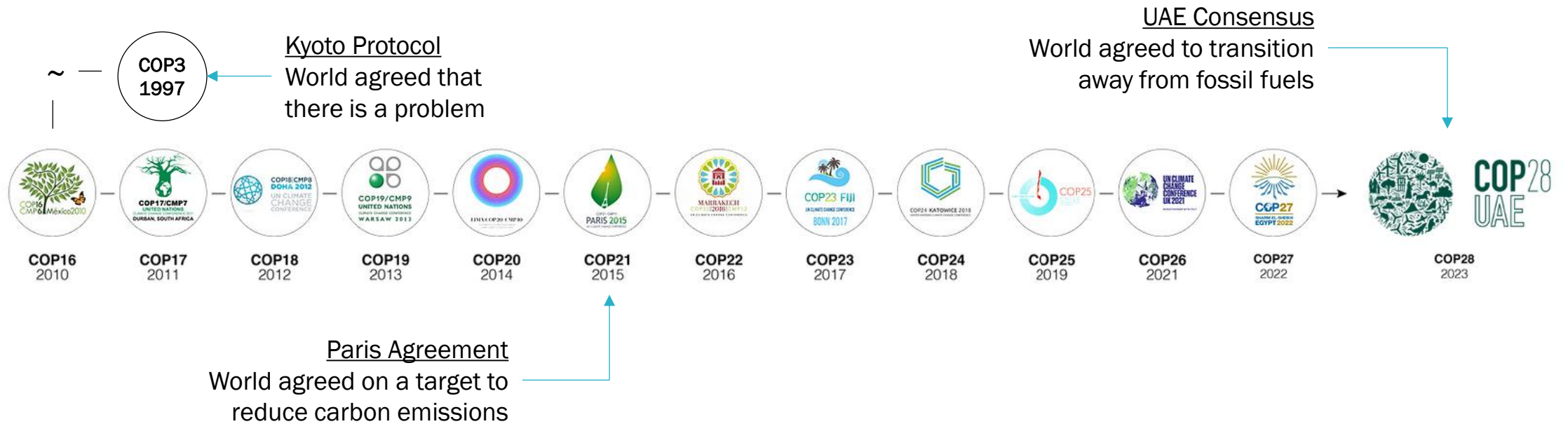
Urgency to climate crisis drives innovation.

Climate finance is real.

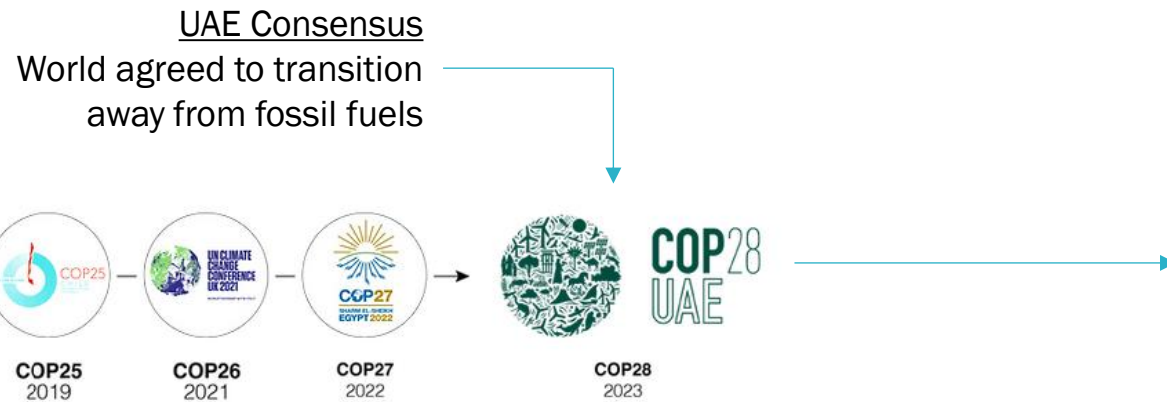
Shifting perspectives from managing risk to pursuing growth.



Why are COP negotiations important?



Why do such agreements matter?



Provide an opportunity for Governments to **prioritize policies** around decarbonization and adaptation.

Bolster a **growing shift** from businesses across sectors toward decarbonization and decarbonization monetization (risk vs growth).

Direct **global investments** toward climate change mitigation and adaptation.

Buildings Breakthrough

*Near-zero emission
and resilient buildings
are the new normal
by 2030*





Buildings Breakthrough



GlobalABC – Workshop on Buildings Breakthrough Implementation

By 2030

- The built environment should halve its emissions
- 100% of new buildings must be net-zero carbon in operation
- With widespread energy efficient retrofits well underway
- And embodied carbon must be reduced by 40%
- With leading projects achieving at least 50% embodied carbon reductions.

By 2050

- At the latest, all new and existing assets must be net-zero across the whole life cycle, including operational and embodied emissions.



It's happening!



Paris, France

Paris, 8 March 2024

The first ever Buildings and Climate Global Forum, organized by the French Government and the UN Environment Programme (UNEP), concluded with the adoption by representatives of **70 countries** of the **Declaration de Chaillot**, a foundational document for international cooperation that will enable progress towards a rapid, fair, and effective transition of the built environment.

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Understanding Legislative Changes



Landscape of legislation

Supply and demand

Supply-side policies target extraction of fossil fuels.

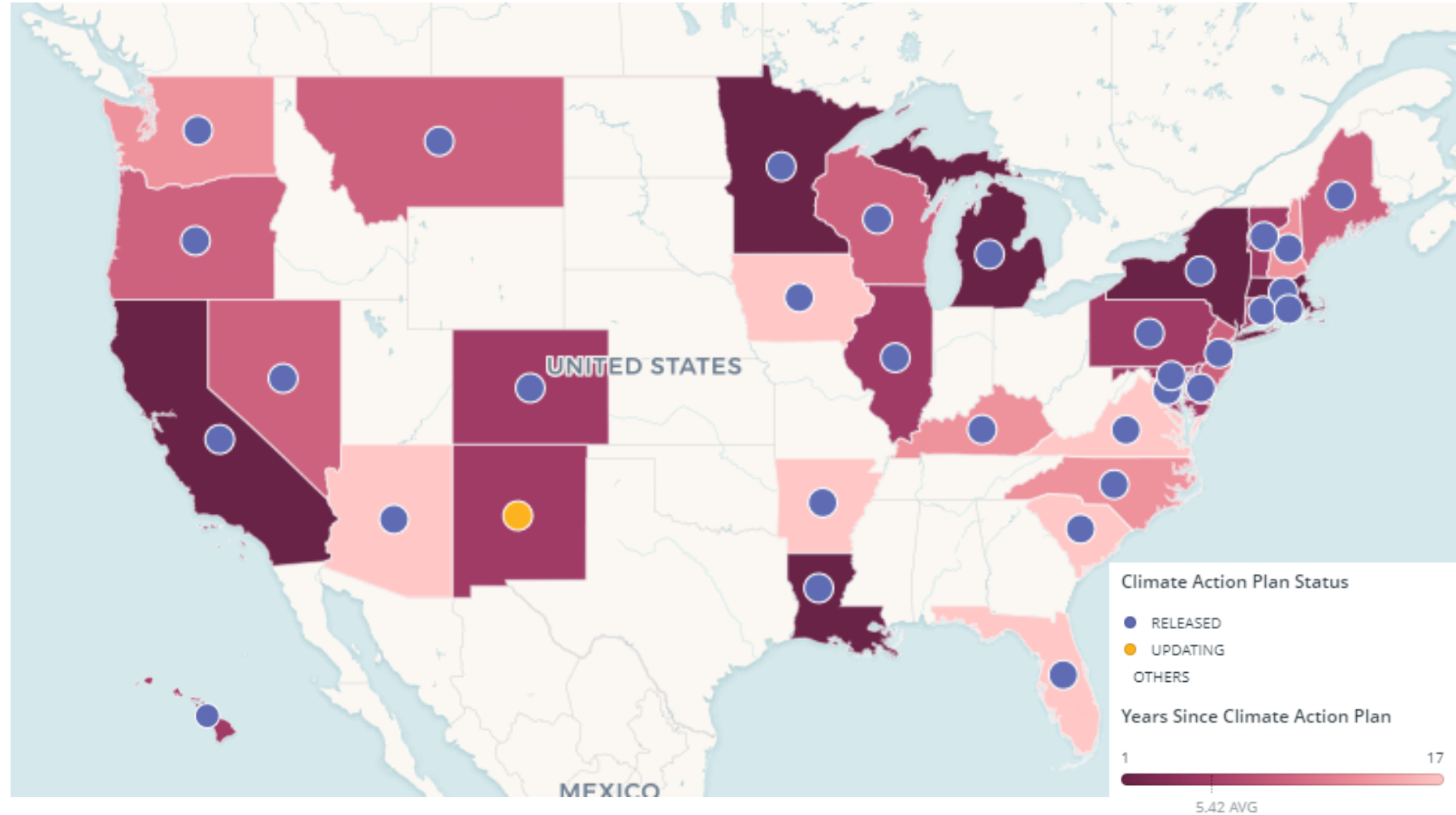
Demand-side policies focus on reducing the consumption of fossil fuels.





Climate Action Plans

State Climate Action Plans and Buildings
State level emissions reduction plans intersect with buildings and require state funded projects to achieve high performance standards.

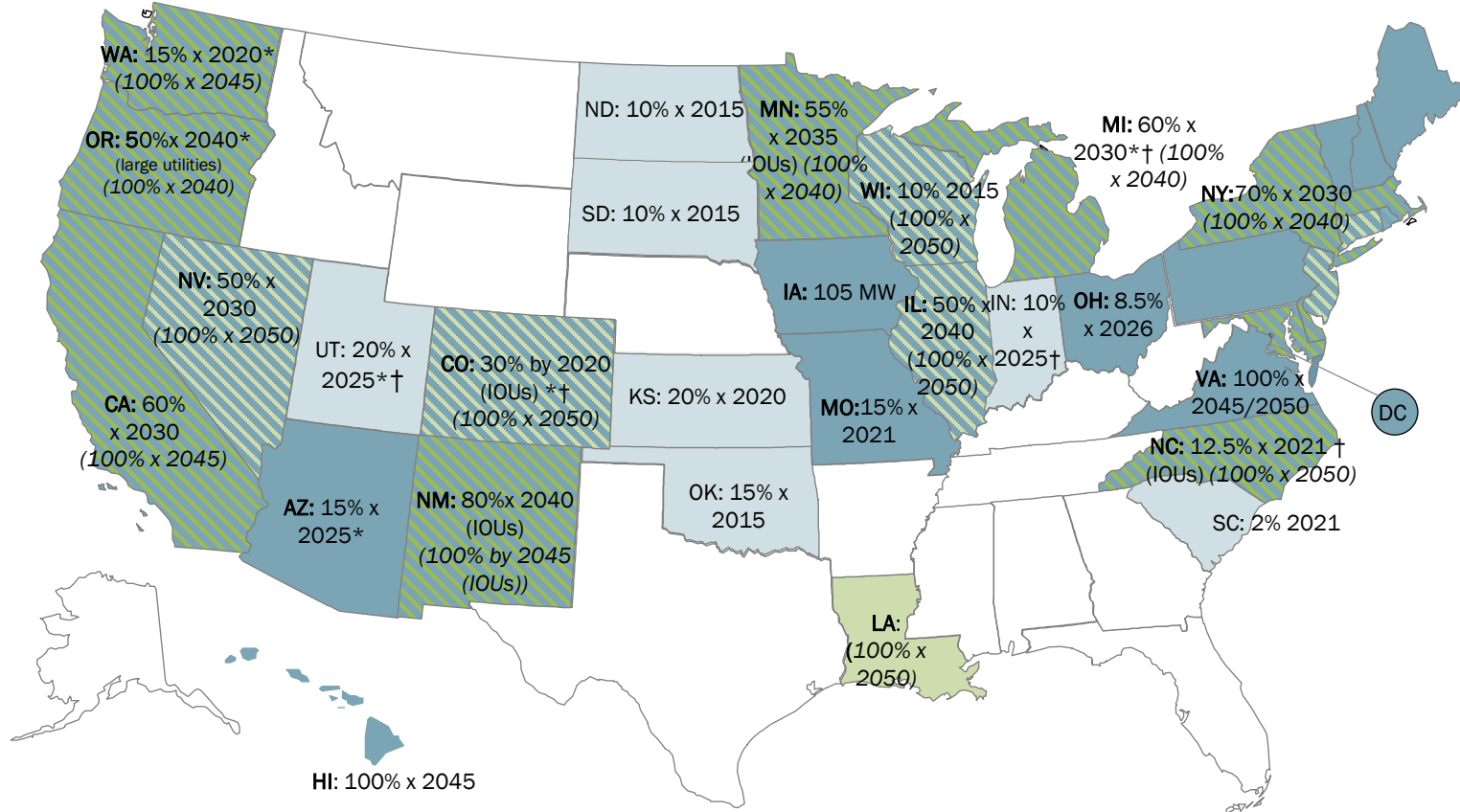




Landscape of legislation – supply-side

28 States + DC have a Renewable Portfolio Standard. 11 states have a Clean Energy Standard.

(7 states have renewable portfolio goals, 7 states have clean energy goals)


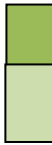






- ME:** 100% x 2050
- NH:** 25.2% x 2025
- VT:** 75% x 2032
- MA:** 40% x 2030 + 1% each year thereafter (new resources) 3.56% x 2021 (existing resources) (100% x 2050)
- RI:** 100% x 2033
- CT:** 40% x 2030; (100% x 2040)
- NJ:** 50% x 2030; (100% x 2035)
- PA:** 18% x 2021†
- DE:** 40% x 2035; (100% x 2050)*
- MD:** 50% x 2030; (100% x 2045)
- DC:** 100% x 2032

U.S. Territories

- NMI:** 20% x 2016
- PR:** 100% x 2050
- Guam:** 100% x 2045
- USVI:** 60% x 2025

www.dsireusa.org / December 2023

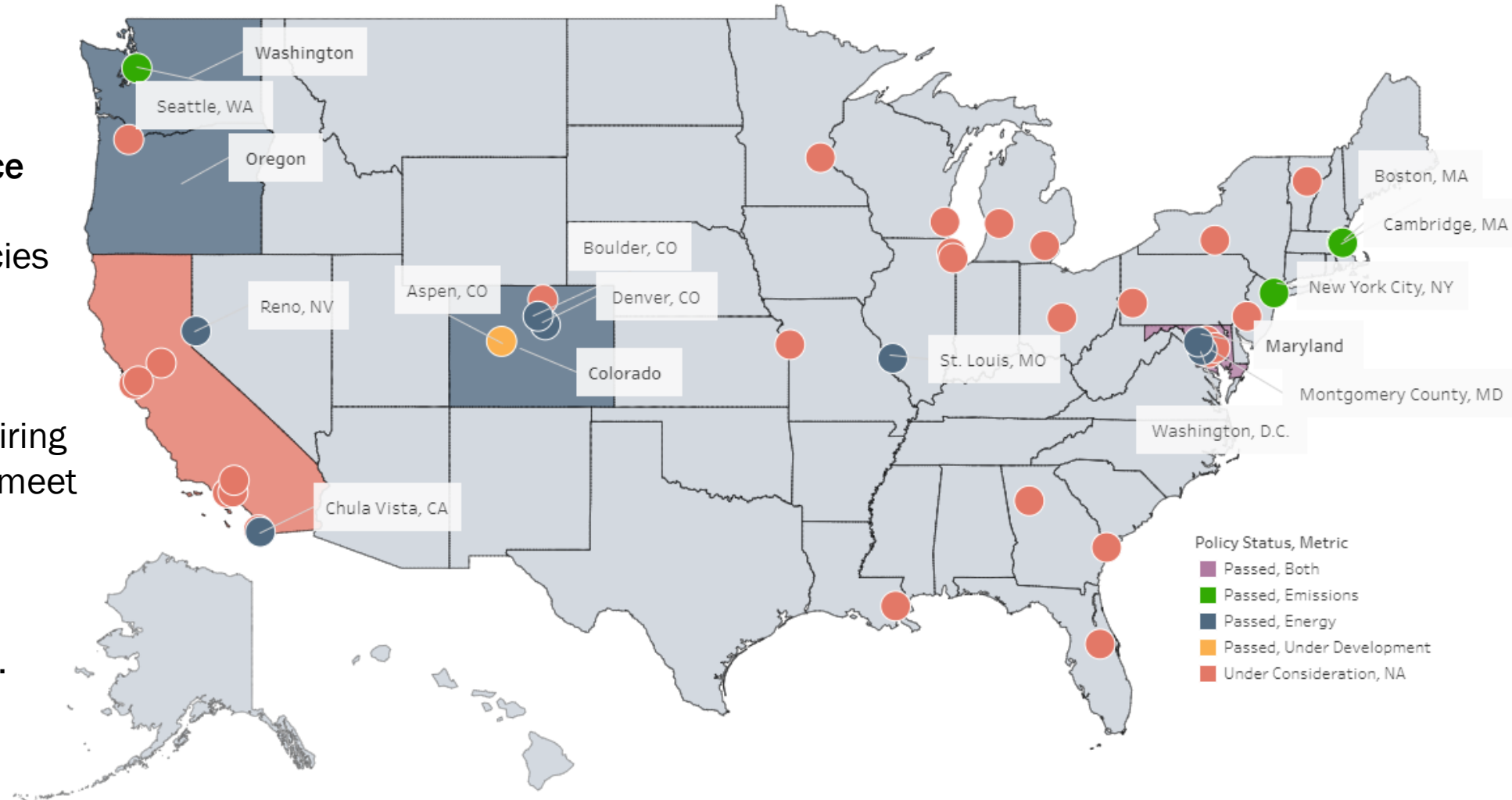
	Renewable portfolio standard		Clean energy standard		Extra credit for solar or customer-sited renewables
	Renewable portfolio goal		Clean energy goal		Includes non-renewable alternative resources





Landscape of legislation – demand-side

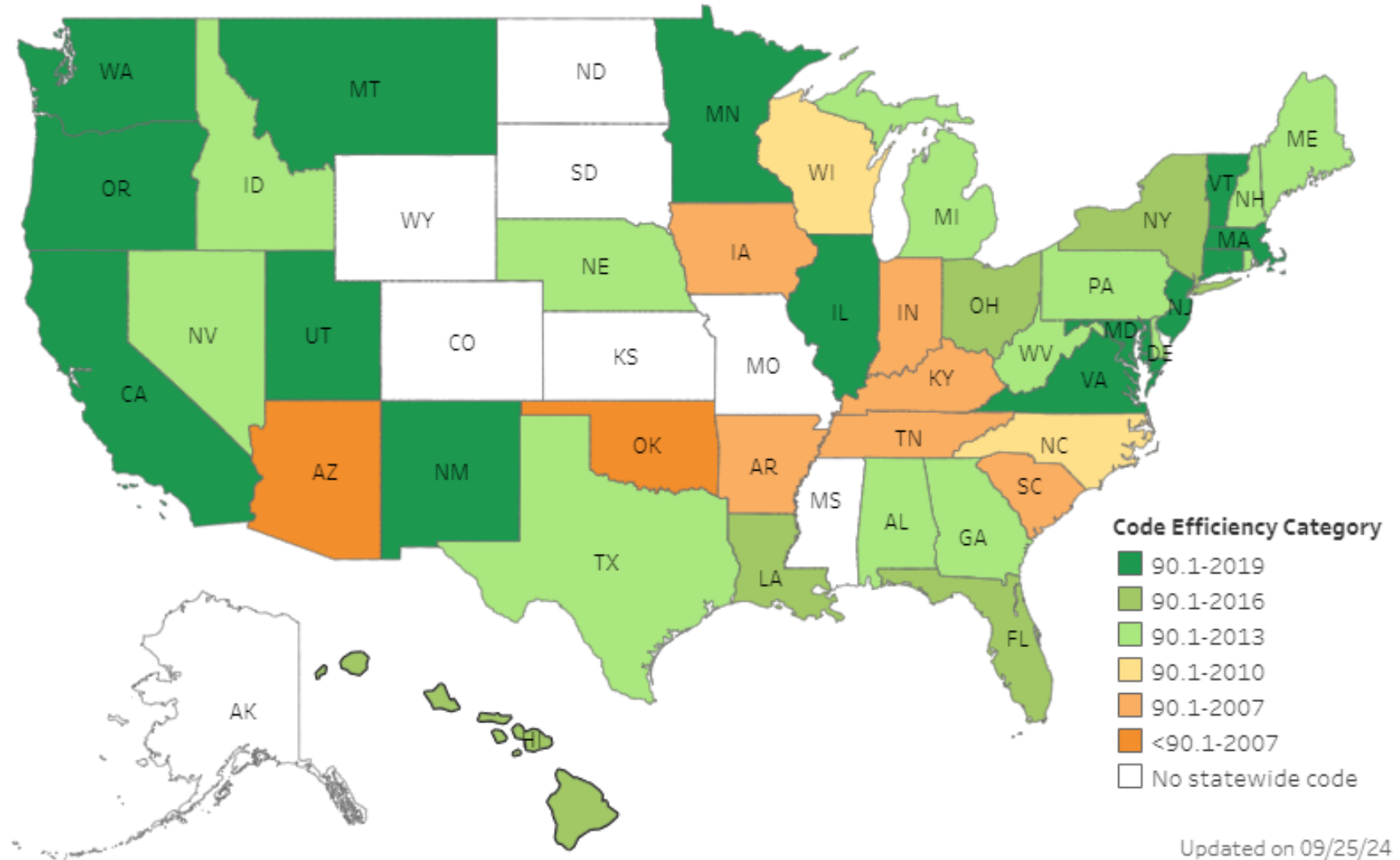
Building Performance Standards (BPS) are outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring existing buildings to meet energy and/or greenhouse gas emissions-based performance targets.





Landscape of legislation – demand-side

State Energy Codes
State energy code adoption is assessed based on a quantitative analysis of energy savings impacts within a given state.



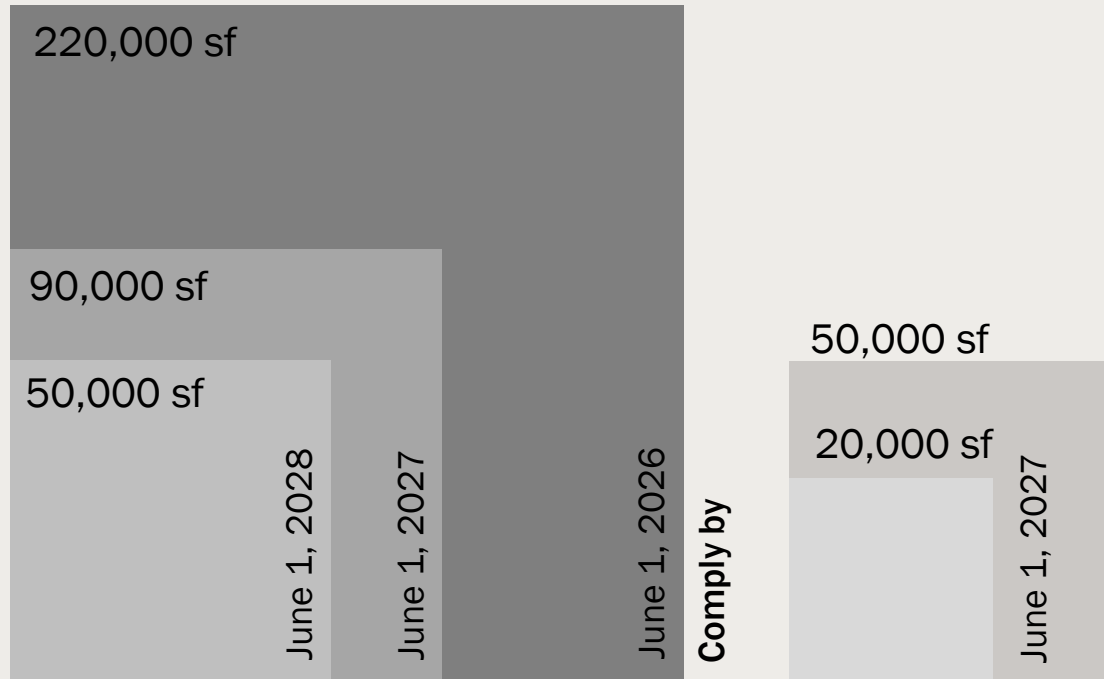
Demand-side performance standard Washington State HB 1257



Clean Building Performance Standards

The objective is to lower costs and pollution from fossil fuel consumption in the state's existing covered buildings, multifamily buildings, and campus district energy systems.

Buildings greater than

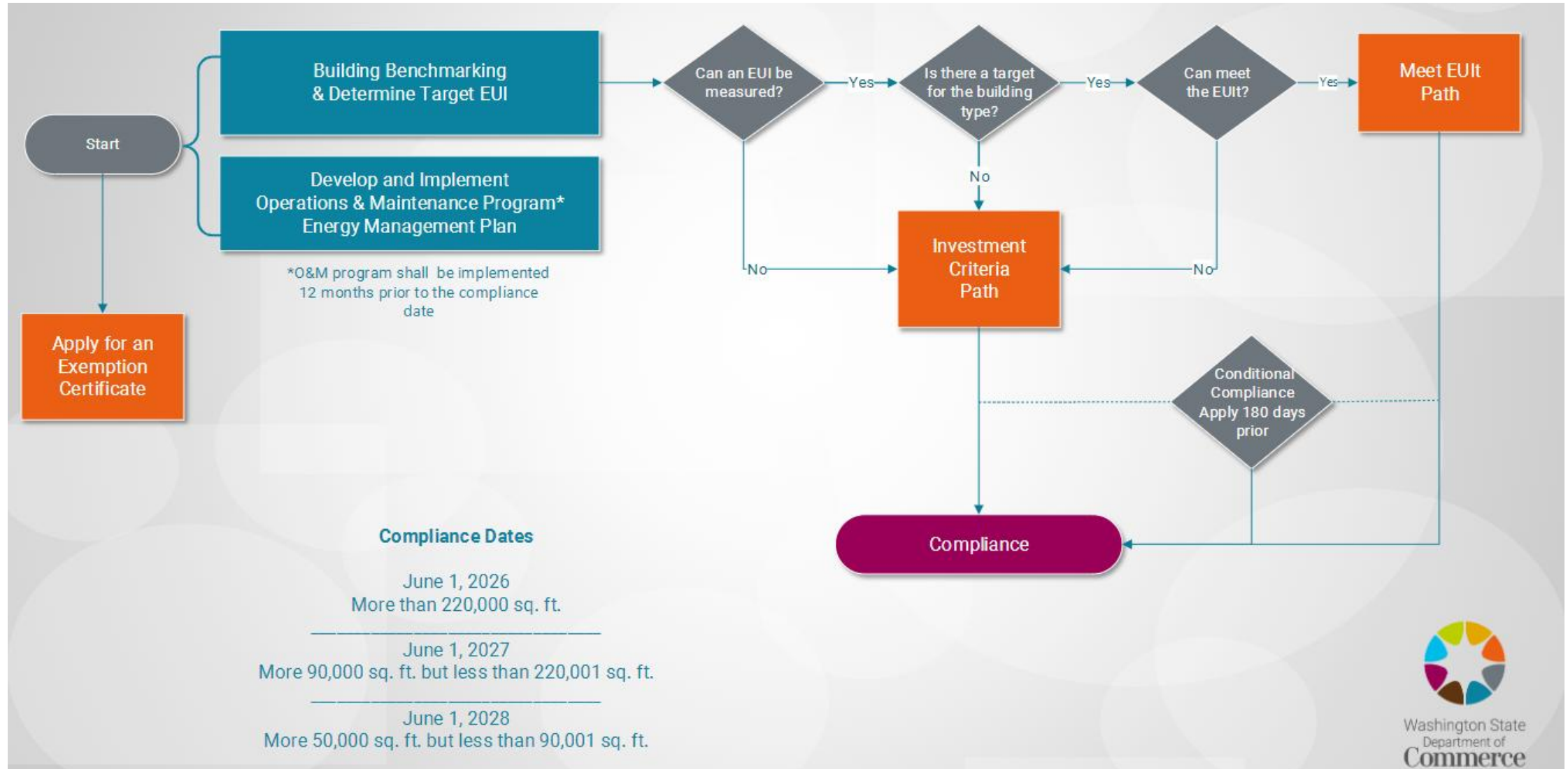


Objective

Tier 1 covered buildings

Tier 2 covered buildings

Demand-side performance standard Washington State HB 1257





Landscape of legislation

Navigating the landscape

States and regional entities use mainly three levers to achieve climate goals related to building's energy consumption.

01

Supply-side clean energy standards

Requiring clean energy generation on a timeline.

Also beginning to focus on methane emissions.

02

Demand-side existing building standards

Targets for buildings of certain size that is increasing in performance requirements.

Penalties and incentives for achieving the target.

03

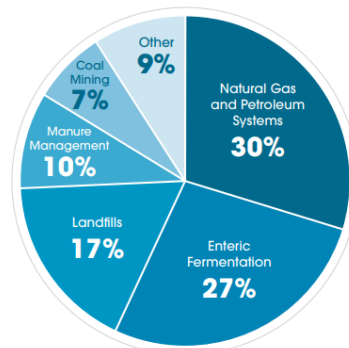
Demand-side new building or renovation standards

Energy efficiency standards for new construction and renovation.

LEED and other green building policies focused on energy and carbon.

Specific focus on public buildings as way to demonstrate leadership and influence the industry.

2019 U.S. Methane Emissions, By Source



Case Studies

Planning for legislative changes





Our approach to holistic planning and implementation



Engage

Engage holistically through an iterative process.

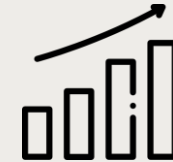
Target a compelling vision.



Enrich

Use a data driven approach.

Leverage diverse expertise in high performance buildings.



Evolve

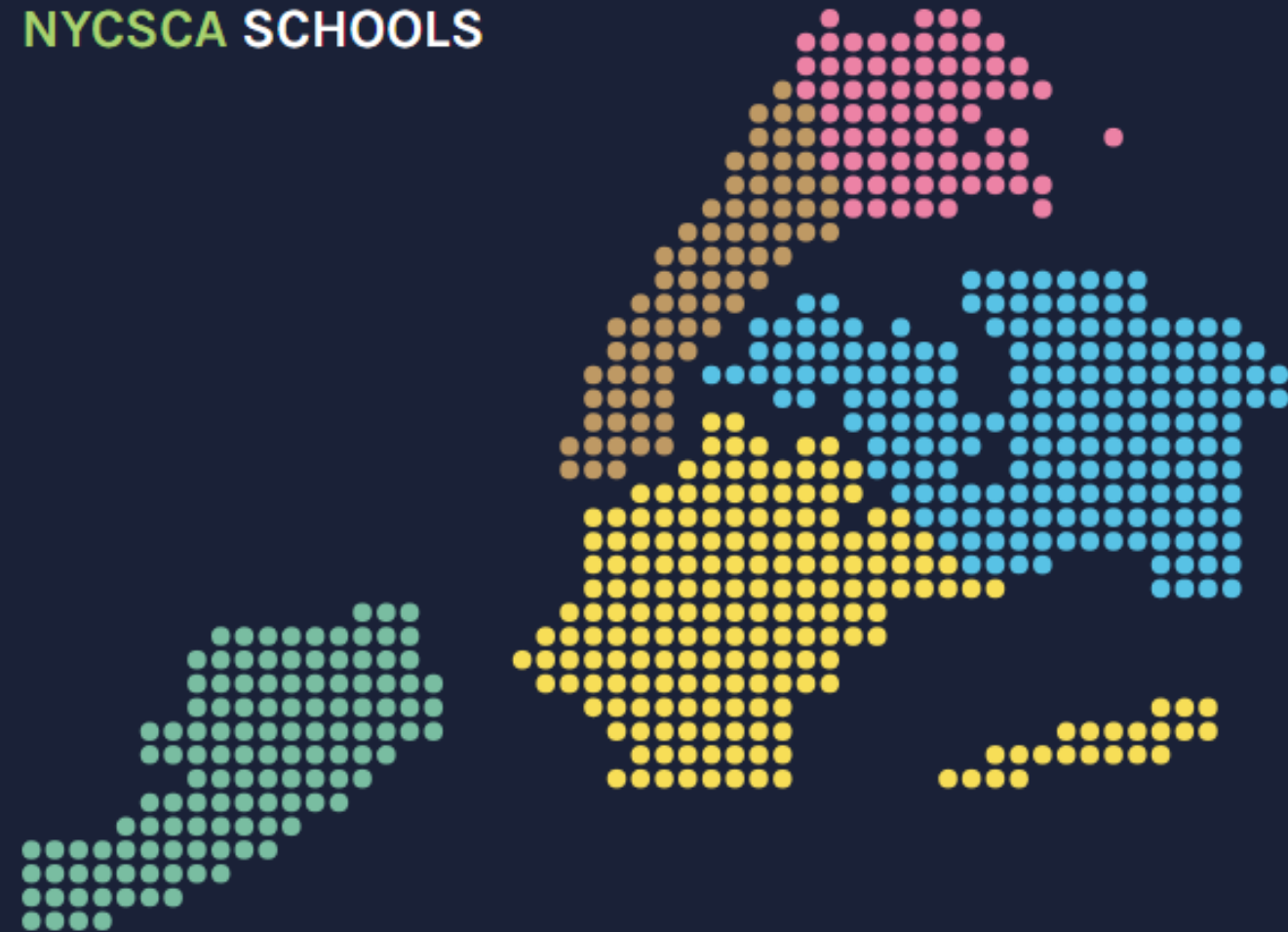
Adapt to changing trends.

Collaborate to achieve vision.



NYC School Construction Authority

NYCSCA SCHOOLS



No. of Schools

1600+ BUILDINGS



School Enrollment

84+ THOUSAND



2019 CO2 Emission (Tonnes)

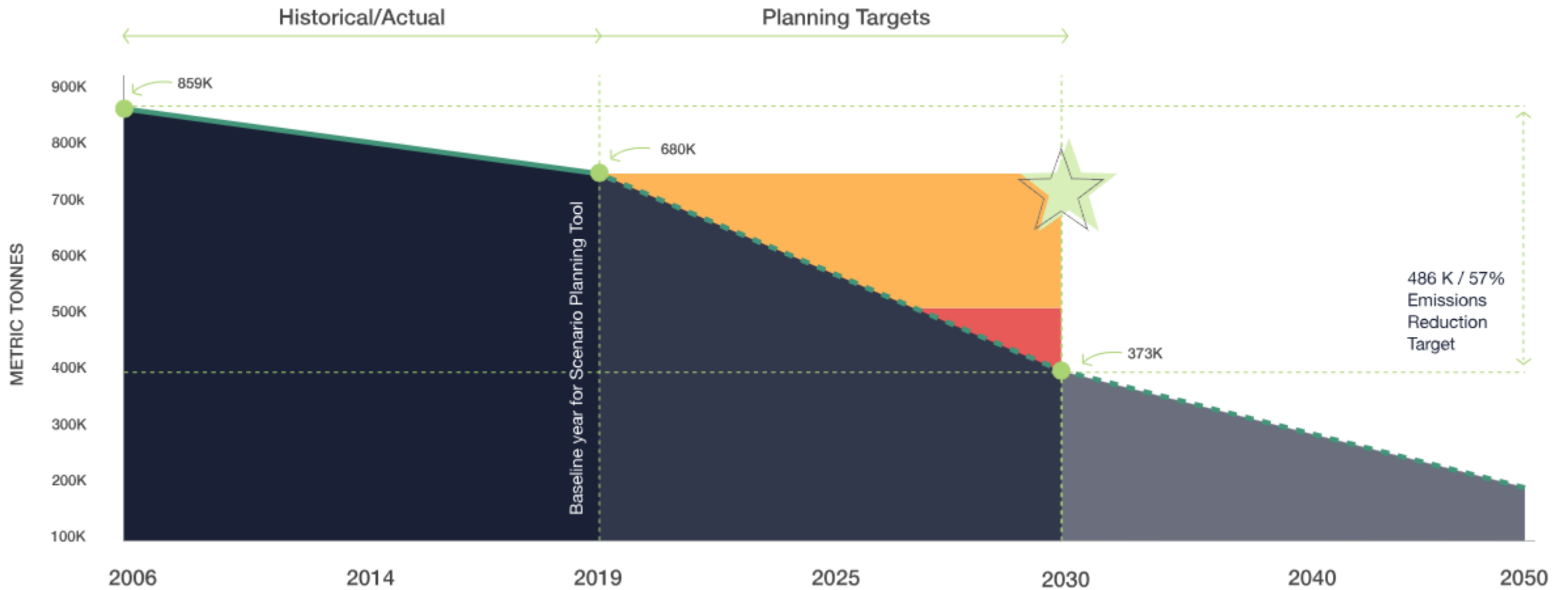
680 THOUSAND



Square Footage

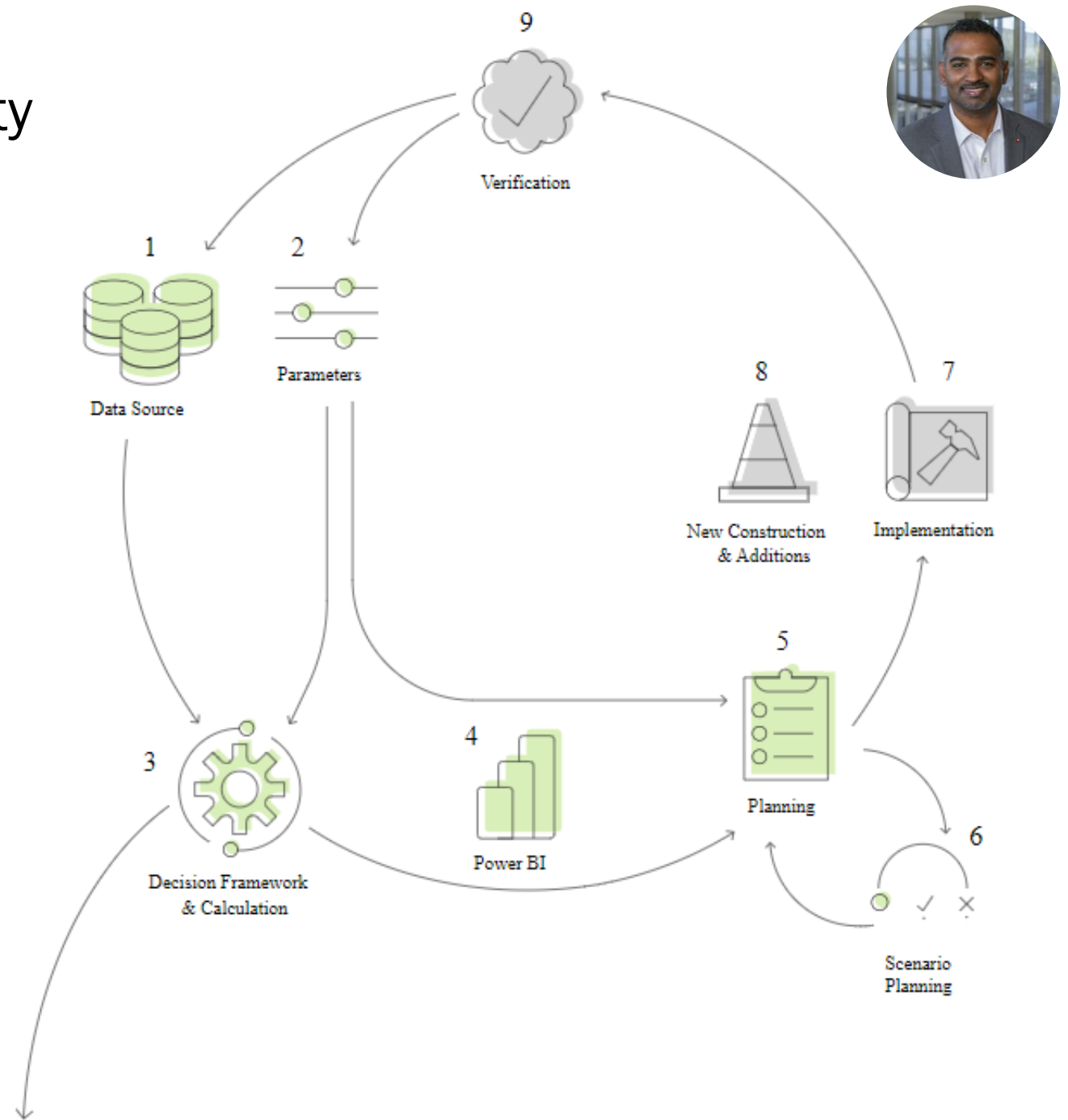
123 MILLION

NYC School Construction Authority Goals and Expectations



NYC School Construction Authority Approach

1. Data Collection
2. Prioritize through engagement
3. Decision tree
4. Validation through site walks
5. Cost estimation & scope of work
6. Scenario planning for flexibility
7. Implementation
8. New Construction & Addition
9. Verification



NYC School Construction Authority Sustainability Planning Application



SCA **Portfolio Tracker** **Portfolio Summary** **Building Planner** **Scenario Planner**

Tool Filters

Borough: All

Property Type: All

Building Type: Building

BLDG ID: All

Ownership: DOE Owned

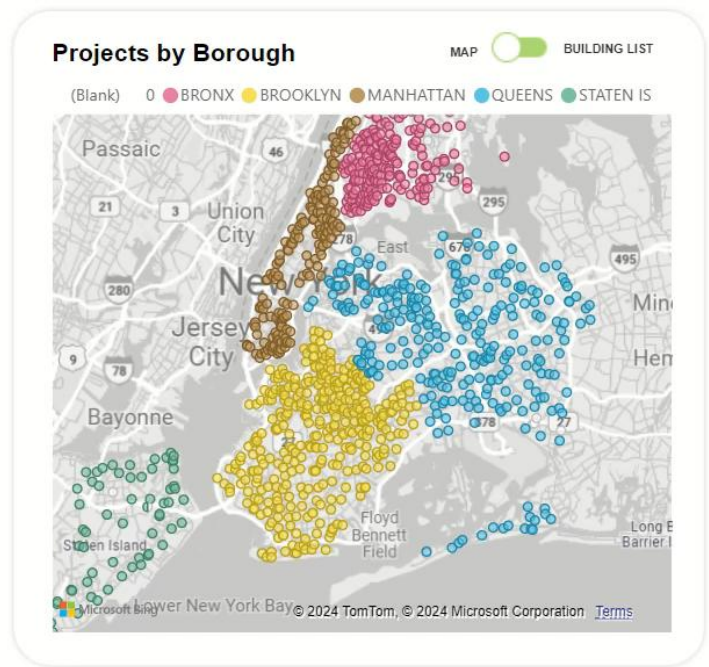
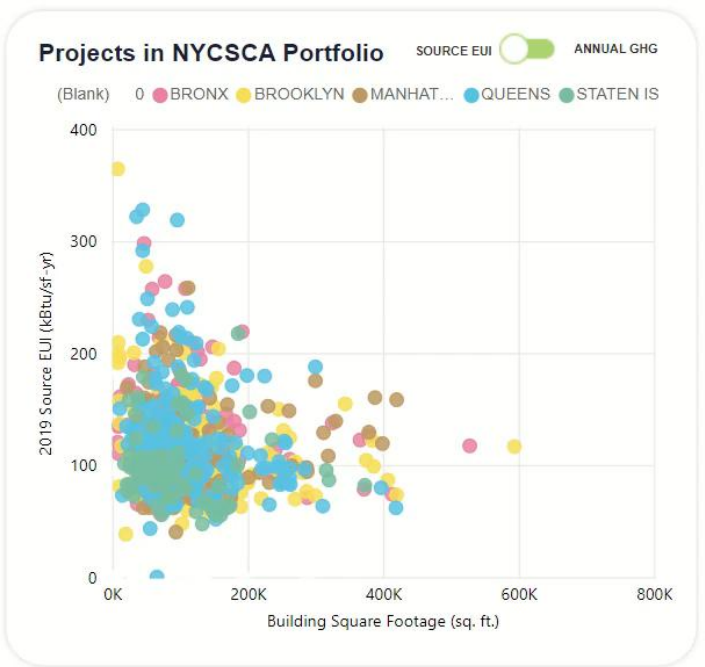
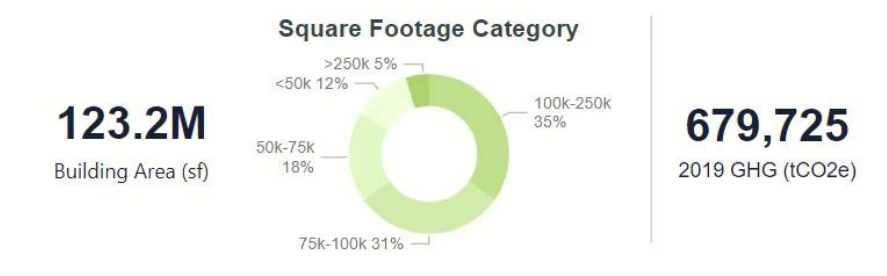
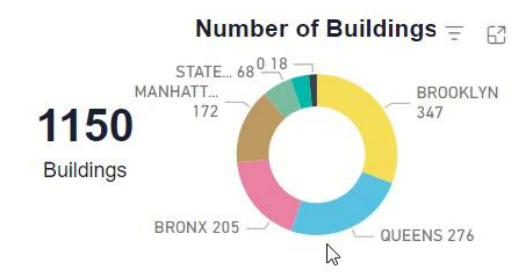
Page Filters

Building Square Footage (sq. ft.): 0 - 750,000

Original Date of Construction: 0 - 2021

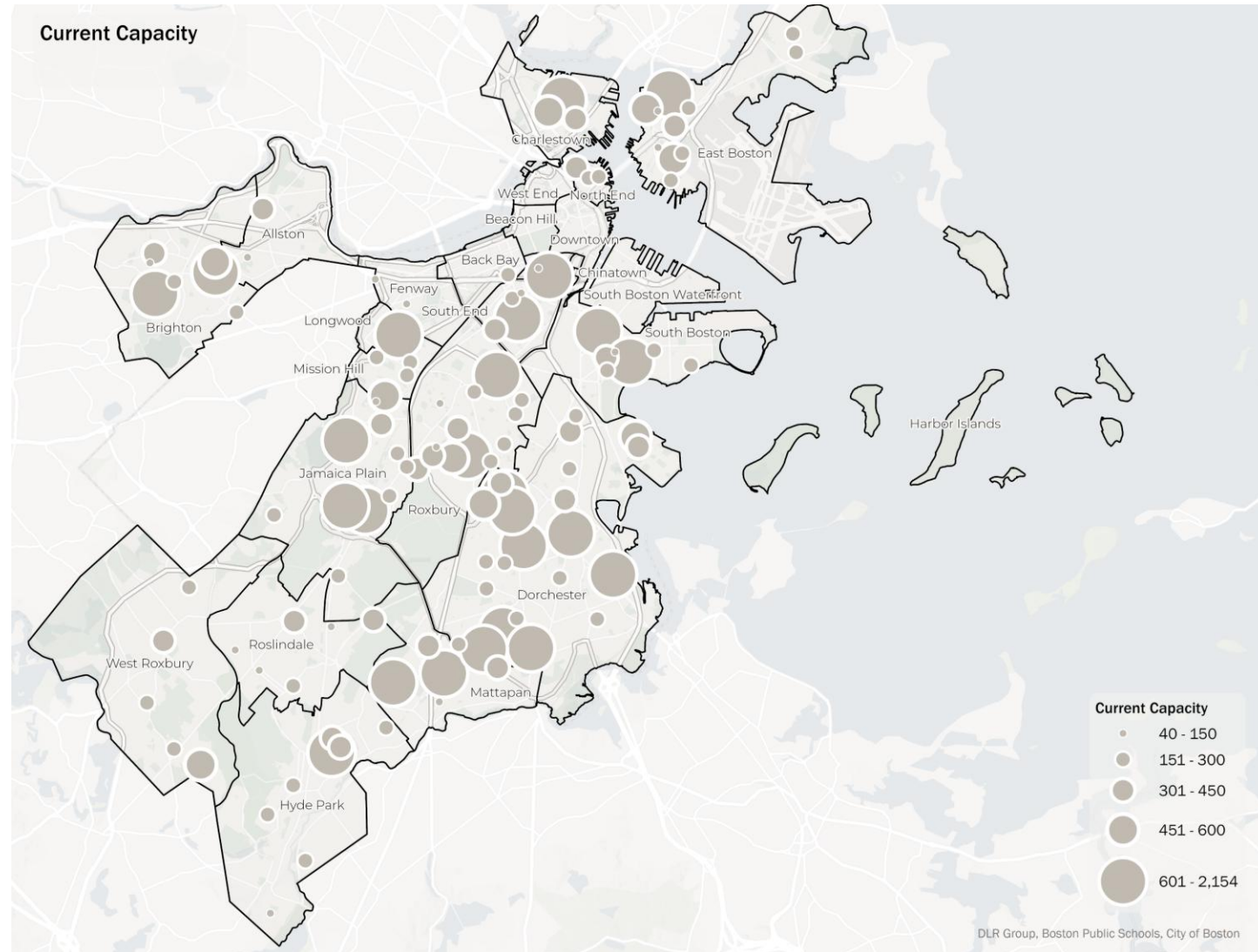
Source EUI (kBtu/sf-yr): 0.00 - 393.00

Powered by **DLRGROUP**





Boston Public Schools



655,000+
Residents

46,000+/-
Students

124
Schools

23
Neighborhoods



Boston Public Schools

Prioritize engagement and investment in the schools where needs are greatest/ communities that are historically underserved.



Students & Families



we have to
focus on
these



Neighborhoods



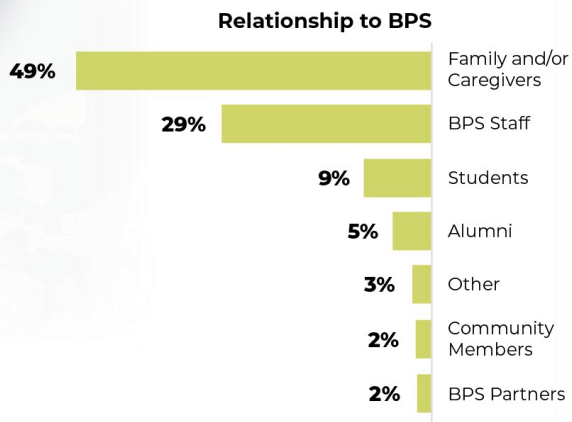
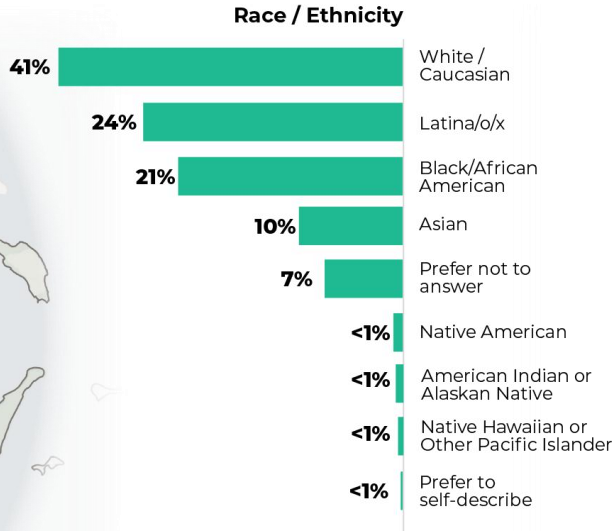
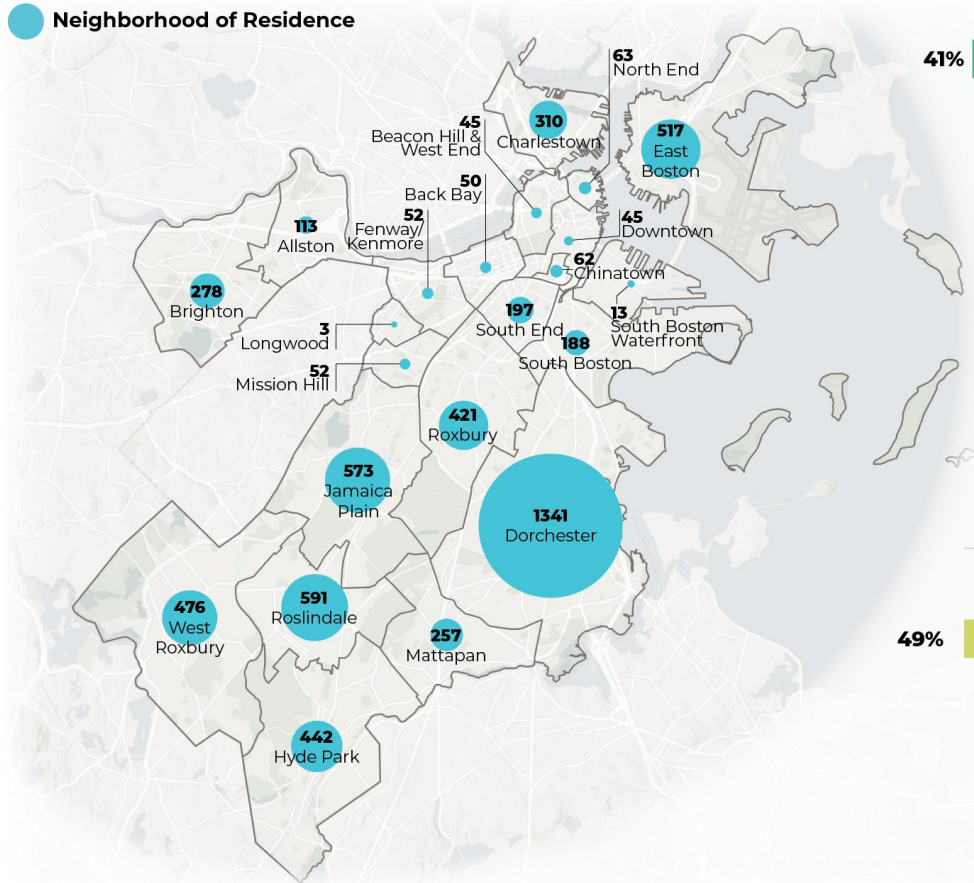
Facilities



to understand the
impacts of this

NAVIGATING LEGISLATIVE CHANGES

Boston Public Schools Equity



Who did we reach?

500+ people

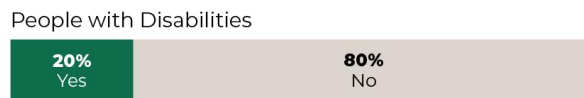
Listening Sessions:
Small Group Conversations

9,000+ people

Survey



Representing the perspective of:



Boston Public Schools Evaluation Rubric: High Quality Student Experience



Beethoven Elementary School

Region 5

Current Facility Information

School Square Footage:	37.45K
Site Acreage:	2.36
Grade Configuration:	PK-6
Number of Seats (Capacity):	237

Building/Site Potential

Model Program Based On:	
Existing Building:	None
Existing Building Alternative:	None
Fits on the Site:	None
Planned Project:	None

Students Served: Current

Note: Based on SY21-22

Student Group	Current Enrollment
Asian	<10
Black/African American	67
Native American or Native Hawaiian/Pacific Islander	0
Latina/o/x	84
Multiracial or Other	21
White	92
Multilingual Learners	93
Students with an IEP	43
Students of Low Socio-Economic Status	157

Neighborhood Opportunity

CDC Social Vulnerability Index Category:	High Vulnerability
Climate Ready Boston Social Vulnerability Index Category:	Lowest Vulnerability

Evaluation rubric criteria

Are Buildings providing a HQSE: Existing Conditions

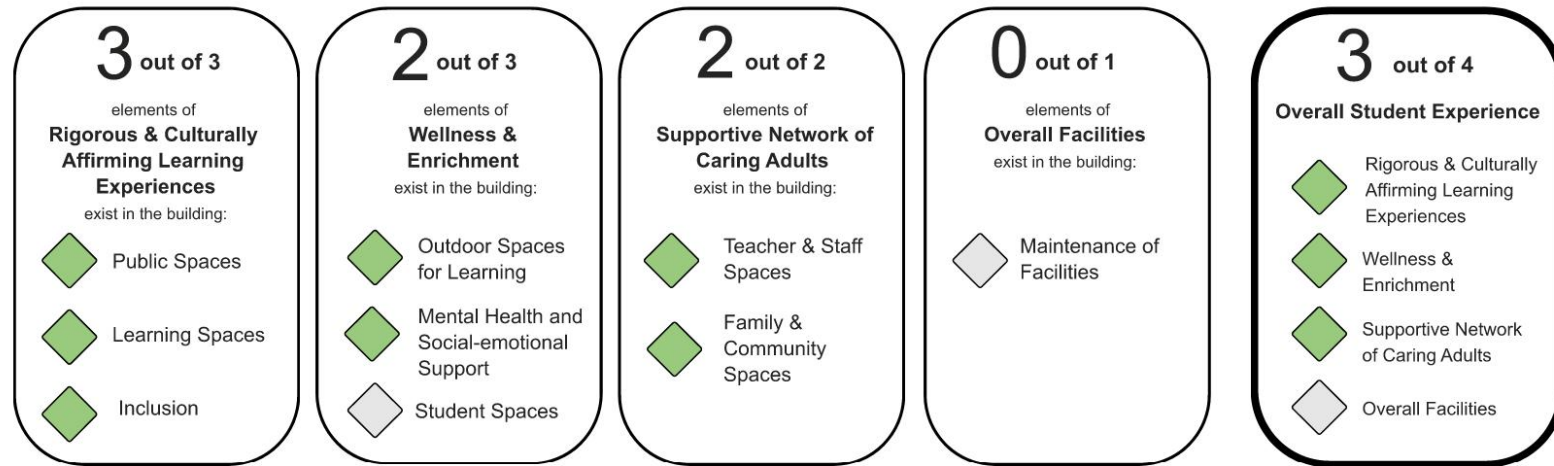
Can Reno or New Buildings provide a HQSE: Capacity & Site

Are HQSE seats close to students: Proximity

Who benefits from HQSE seats: Demographics

Elements of the High-Quality Student Experience

As a collective community we have identified that all students in BPS must have access to a High-Quality Student Experience. The four categories of the High-Quality Student Experience are grounded in the priorities raised during community engagement sessions. The boxes below show whether the physical spaces needed to support the High-Quality Student Experience are present in the building. Each diamond represents a collection of spaces. A darkened diamond indicates the spaces are present.



NAVIGATING LEGISLATIVE CHANGES

Seattle Public Schools





Seattle Public Schools – John Rogers ES

SPS's first Net-Zero energy building

Geothermal wells for heating and cooling

Daylighting in all classroom and learning spaces

Shading devices on windows to control glare and solar heat gain

Solar panels on nearly all available roof space



John Rogers



Connection to the Natural World



Collective Impact



Health + Well-being



Equitable Ownership of Place



Joy Of Learning



Inflation Reduction Act



Technologies eligible for financial incentive

Ground Source Heat Pump Systems

Solar/Wind Energy

Energy Storage

Electric Vehicles

EV Charging

Thermal Ice Storage Systems

Dynamic Glazing

	With Prevailing Wage	Without Prevailing Wage or Not Req'd		
Ground Source Heat Pump Systems	-2%	-15% Max.		Use of Tax-Exempt Funds
Solar/Wind Energy	2%	10%	Possible Add'l.10%	Environmental Justice (solar/wind)
Energy Storage	2%	10%		Energy Community (see IRA map)
Electric Vehicles	2%	10%		American Made Products
EV Charging	No	Yes	5X Multiplier	Prevailing Wage/Apprenticeship 5X
Thermal Ice Storage Systems	6%	30% Base		Base Credit for Qualifying Projects
Dynamic Glazing				Not required under 1 MW

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Key takeaways





30,000 ft view

Navigating the landscape

States and regional entities use mainly three levers to achieve climate goals related to building's energy consumption.

New buildings or renovation.

01

Strategic energy management plan

Align with state and regional goals and targets to attract funding and partners and leverage.

Collaborate with multiple stakeholders to leverage best practices.

02

Decarbonization and equity

Plan for electrification across the portfolio by working with the utility partners.

Understand relationship between decarbonization and equity.

Embed decarbonization best practices into design standards.

03

Renewables and resilience

Follow sufficiency, efficiency and then resiliency through renewables.

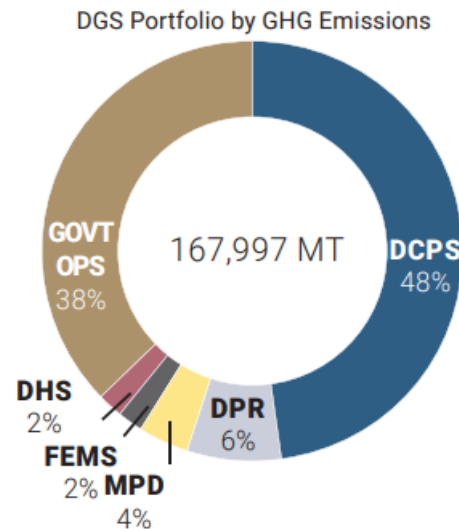
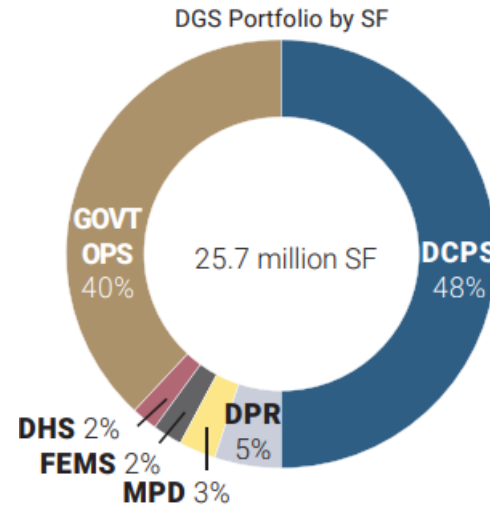
Engage larger community to enhance community resilience.



Collaborate for easier decision making

DC DGS Strategic Energy Management Plan

- Identify a decision-making framework through inclusive collaboration with all stakeholders.
- Allow the decision-making framework to be adapted to changing trends as you implement the plan.





Plan for continuous implementation & tracking

DC DGS Strategic Energy Management Plan

- Application can be used for future project procurement.
- Report and application can be used to show compliance with state and regional entities.



Portfolio Overview
Plan Recommendation
Building Summary

Project Name
Amidon-Bowen Elementary Sch...

Building Characteristics

Area: 70,100
Last Renovation: 2012
Primary Agency: DCPS

Building Systems Information
[View Details](#)

Fuel Mix

56.15%

43.85%

Building Notes

Whole Building Retrofit

\$7M Child Development Center supposed to be added by 31/Oct/23 (12?Sept/23, JC)

Is in line for modernization after addition. Modernization starts in 2026 and will be done 2029. (London, Notes 02/16/23)

Scope Category

Whole Building Retrofit

Baseline Scope Category
Component Retrofit

2019 EUI Baseline

70

Site EUI Target

25

% Energy Reduction

65%

Estimated Cost

Analysis \$0M

Imple... \$2M

Meets BEPS

NO

Energy Consumption [View Monthly Report](#)

Year	Site EUI (kBtu/sf-yr)
2019	70
2020	59
2021	65
2022	51
2023	38

EUI Target: 25

EMP Observations Net Zero vs EMP Tracker

Project	Project Status	Project Completion Percentage	Project Start Date	Proj Date
Amidon-Bowen Early Childhood Education	Close-out	100.00%	10/1/2021	10/1
Amidon-Bowen Early Childhood Education	Close-out	98.00%	10/1/2021	10/1
Amidon-Bowen Early Childhood Education	Close-out	95.00%	10/1/2021	10/1
Amidon-Bowen Early	Close-out	89.00%	10/1/2021	10/1

Modernization Planned: **Yes**

ESPC Candidate: **(Blank)**

Scope of Modernization:

enteliWEB Integrated: **(Blank)**

ASHRAE Audit Status: **(Blank)**



Plan for resources needed for implementation

Riverside College Community District Sustainability and Climate Action Plan

- Consider the total cost of ownership to account for staff needed to implement the identified projects.
- Integrate other planning projects with energy planning to leverage resources such as data collection.



Sustainability and Climate Action Plan

An implementable roadmap toward holistic sustainability Goals, which establishes RCCD as a leader in addressing Environmental Stewardship and Climate Change.

AASHE Stars Alignment

Association for the Advancement of Sustainability in Higher Education (AASHE) Stars is a third-party reporting framework connecting sustainability in the built environment and academics. Planning intentionally infuses the AASHE Stars framework into the Sustainability and Climate Action as a roadmap towards peer group recognition of each College's sustainability efforts.



Integrated Energy Master Plan (IEMP)

Establish an implementable roadmap toward Carbon Neutrality and Net Zero Energy at each campus. The plan will benchmark against established and future Goals.



Total Cost of Ownership (TCO) Model

Develop a framework for cost-effective decision-making that identifies human and capital resources needed to address the Goals of the S-CAP and IEMP. The TCO is also included with the College's accreditation requirements.

INTEGRATED PLANNING

These deliverables will connect to other plans across the District, such as District Strategic Plan, the College's Strategic Plan, Educational Master Plan, Facilities Master Plan, and more.

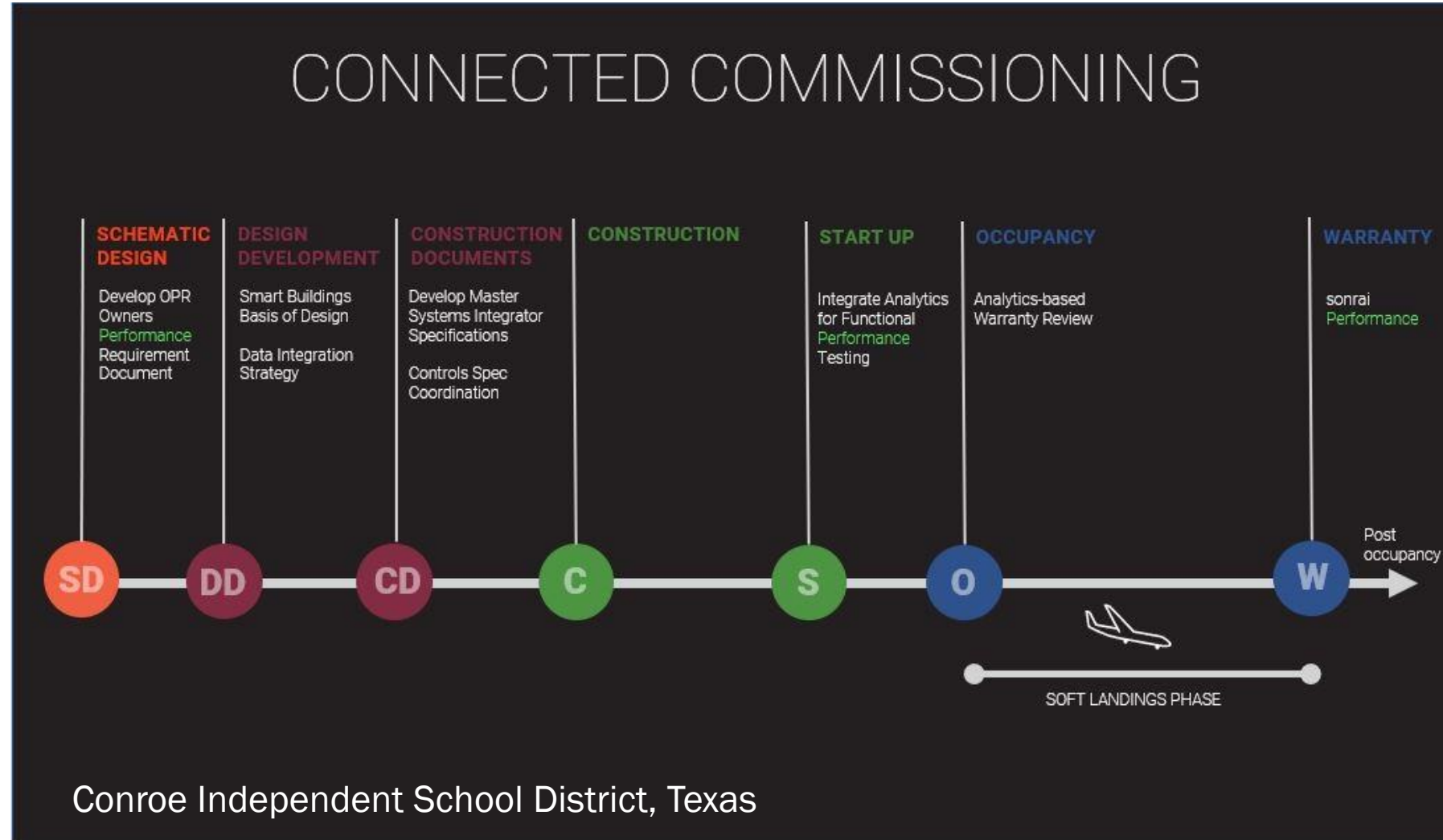
- District Strategic Plan*
- College's Strategic Plan*
- College's Educational Master Plan*
- College's Facilities Master Plan*
- Five-year Capital Construction Plan*
- Operational and Maintenance Plan*
- Fiscal Plan*
- Solar Planning Initiative*
- Student Equity Plan*
- Guided Pathway Plan*
- Affordable Housing Planning*



Get started with immediate opportunities

Opportunities to leverage other funding sources

- Existing portfolio: Leverage utility incentives to start assessments and monitoring based commissioning.
- New or renovation: utilities offer energy modeling programs.





Prepare for grant funding

Opportunities to leverage other funding sources

- Leverage current projects for various federal and state grants such as the Department of Energy grants.
- Design to net-zero ready and apply for grant to close the gap to zero by showing value to the community.
- WA HB1257 – report early and capture incentive money to support other energy reduction efforts
- DOE SASI – Supporting America’s School Infrastructure

Arthur Richards PreK-8
13A Mt Pleasant
St. Croix, USVI 00840



Central High School
SD 2 Kingshill
St. Croix, USVI 00851



Bouschulte PreK-8
9-1 & 12A Bovoni Road Estate Bovoni
St. Thomas, USVI 00802



Charlotte Amalie High School
8 and 9 Alton Adams Sr Drive
St. Thomas, USVI 00802



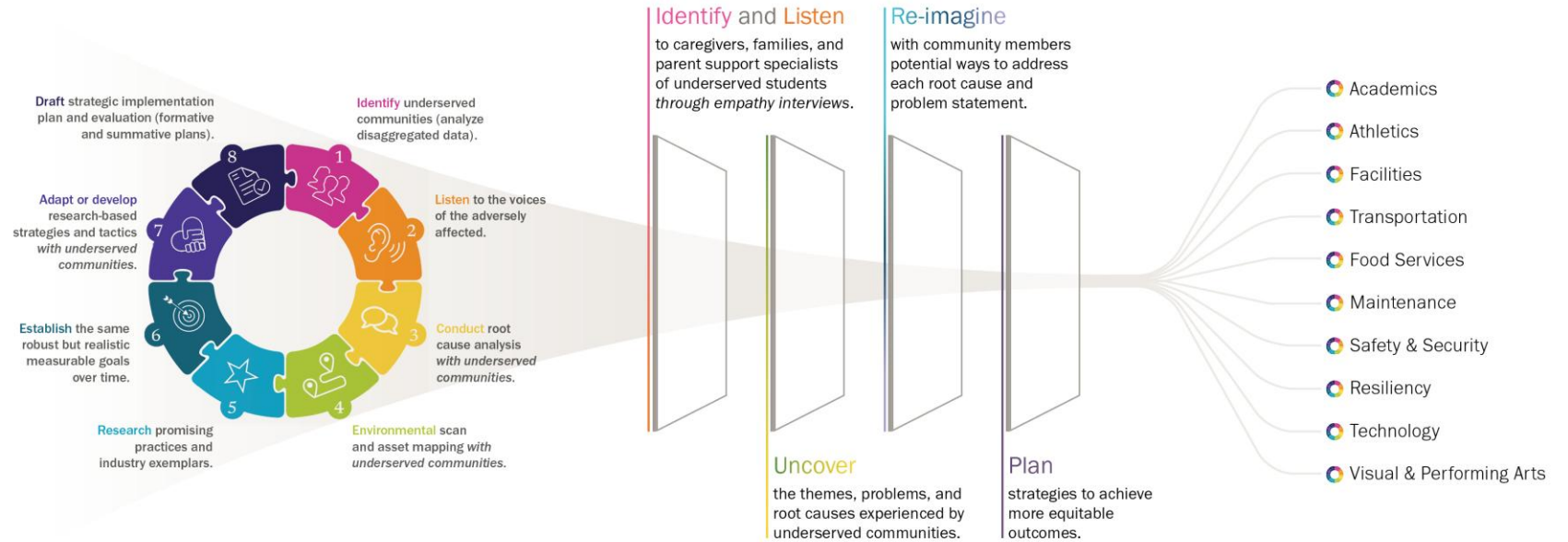


Integrate climate action with equity

| Applying the Austin ISD Equity by Design Process

Austin ISD Equity Plan

- \$2.4 billion in bond funding approved for school facility improvements.
- 74% community acceptance of the largest bond in AISD history.
- 73% of planned bond projects serve students in underserved communities.



Process

The Austin ISD Long-range Plan implemented the Equity by Design Process, *developed by Dr. Stephanie Hawley*, to center equity-driven decision-making with underserved communities.

Application

The team applied the Equity by Design process with myriad actions, including these four key milestones.

Results

400+ community-driven strategies guide bonds, budgets, policies, and procedures across these areas of the district.



Integrate with curriculum

Close the incredible skill gap

- Climate action requires skilled professionals within many industries that educational institutions can provide.
- Ex.: NY will need 269,000 jobs by 2050 to hit its climate goals in electrification, fuels, buildings and transportation.
- Opportunities for Career and Technical Education.





Engage the students

Opportunities for engagement

- Identify opportunities to engage students through consultant's professional mentorship events.
- Invite students to stakeholder meetings and progress meetings so there is a vested interest in celebrating and contributing to the results.





Share impact and gather community support

Sacramento Facilities Master Plan

- Develop a story map online and share the progress of the plan during its development and through its implementation.
- Showcase any data that supports community impact and improvement.



Overview

Campus planning for community impact

Introduction

The Facilities Master Plan recommends capital improvement bond projects that improve the physical environment for teachers, and families for many years. These projects ensure the **creation of safe, comfortable spaces for all** while also providing facilities that support the LCAP's guiding principle to **"improve outcomes for all students and address significant performance gaps between student groups."**

Why it matters

"Sacramento City Unified School District is committed to giving all students an equal opportunity to graduate with the greatest number of postsecondary choices from the widest array of options. SCUSD has evaluated the condition of all of its school sites and identified significant school facility improvement needs, estimated at over \$3.5 billion."

Source: Measure H Bond Language, approved March 2020

Statement of Accountability regarding Equity

The \$750 million school facility improvement bond "would require a clear system of accountability to the public including a project list detailing exactly how the money will be used [through] the development of internal District equity indices to help identify funding priorities based on level of need."

Source: Board of Education Resolution 3113, approved November 2019

Overview

1) Participation

2) Campus Assessments

3) Educational Specs

4) Equity Indicators

5) Priority Methodology

6) Vision Projects

7) Planning for Equity

The community impact planning process is outlined by seven steps:



This shouldn't be hard! Have fun!





Summary

Navigating the landscape

States and regional entities use mainly three levers to achieve climate goals related to building's energy consumption.

New buildings or renovation.

- Collaborate for easier decision making
- Plan for continuous implementation & tracking
- Plan for resources needed for implementation
- Get started with immediate opportunities
- Prepare for grant funding
- Integrate climate action with equity
- Integrate with curriculum
- Engage the students
- Share impact and gather community support
- This shouldn't be hard! **Have fun!**

Questions and discussion

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