



12th Annual CCEC Forum: Webinar 11

August 18, 2021 | 2:00 - 3:00 pm

Next Generation Building Decarbonization: Policy Evolution in California & Washington





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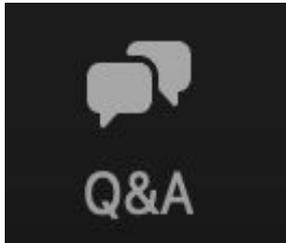


Zoom Features

Q&A

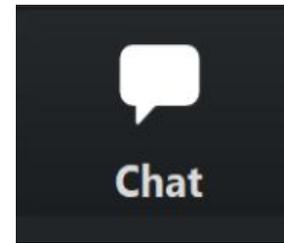
Submit questions for panelists through the Q&A module at any point during the webinar.

Upvote questions that you are interested in.



Chat

Communicate with other participants or reach out to LGC staff if you encounter technical issues.





Meet our Speakers!



Moderator
Marc Costa
*Director of Policy &
Planning,
The Energy Coalition*



Adrienne Etherton
*Sustainability Manager,
City of Brisbane,
Brisbane Building
Efficiency Program*



Barry Hooper
*Senior Green Building
Coordinator,
San Francisco Department
of the Environment*



Emily Salzberg
*Managing Director,
Building Unit, State of
Washington*



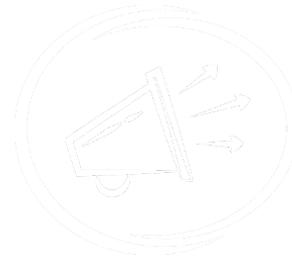
CCEC: Next Generation Building Decarbonization: Policy Evolution in California & Washington

Moderator: Marc Costa, Director of Policy and Planning

August 18, 2021

Agenda

- Context of Decarbonization Policies
- Brisbane, CA
- State of Washington
- San Francisco
- Questions





Adrienne Etherton

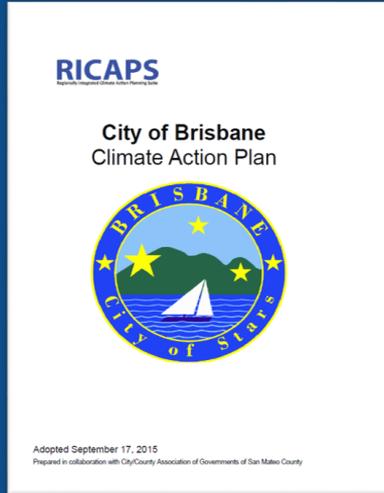
Sustainability Manager

City of Brisbane

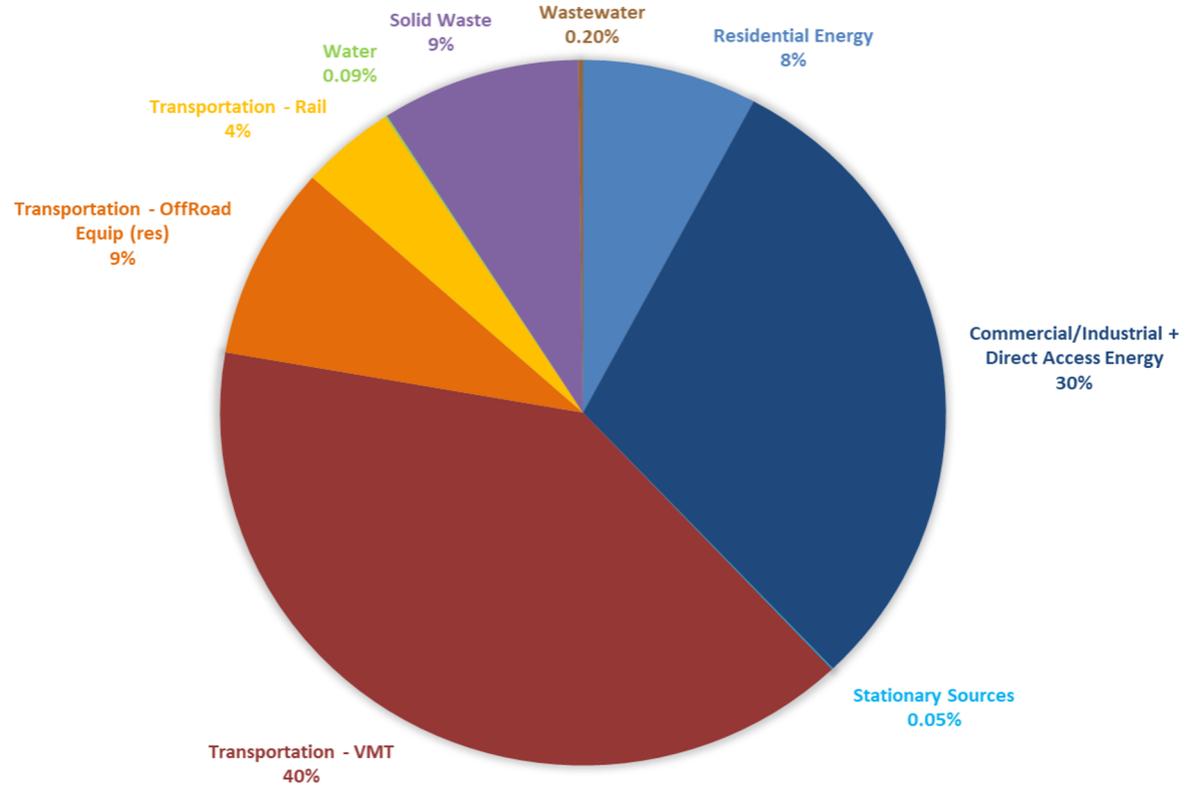
Why?



Why?



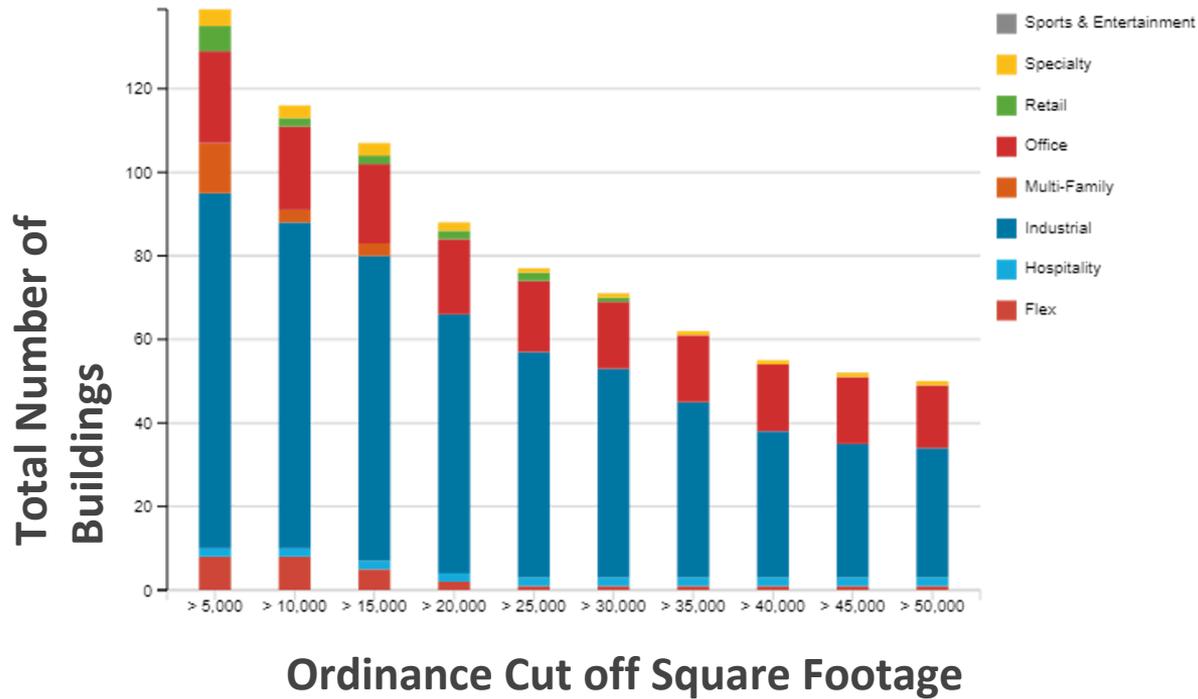
Brisbane 2015 Community GHG Inventory



Goals

- Reduce environmental impact (GHG emissions, energy & water use) of built environment to meet climate goals
- Co-benefits:
 - Increased comfort, safety & health for building occupants
 - Improved resiliency & value of buildings
 - Decision makers informed of improvement opportunities
 - Support clean energy, decarbonization & green jobs
 - Data transparency and market transformation





What type of buildings are in Brisbane?



Innovating to address concerns

- Industrial buildings included
- Extends requirements to tenants
- Green Lease compliance option
- Report on current or planned distributed energy resources

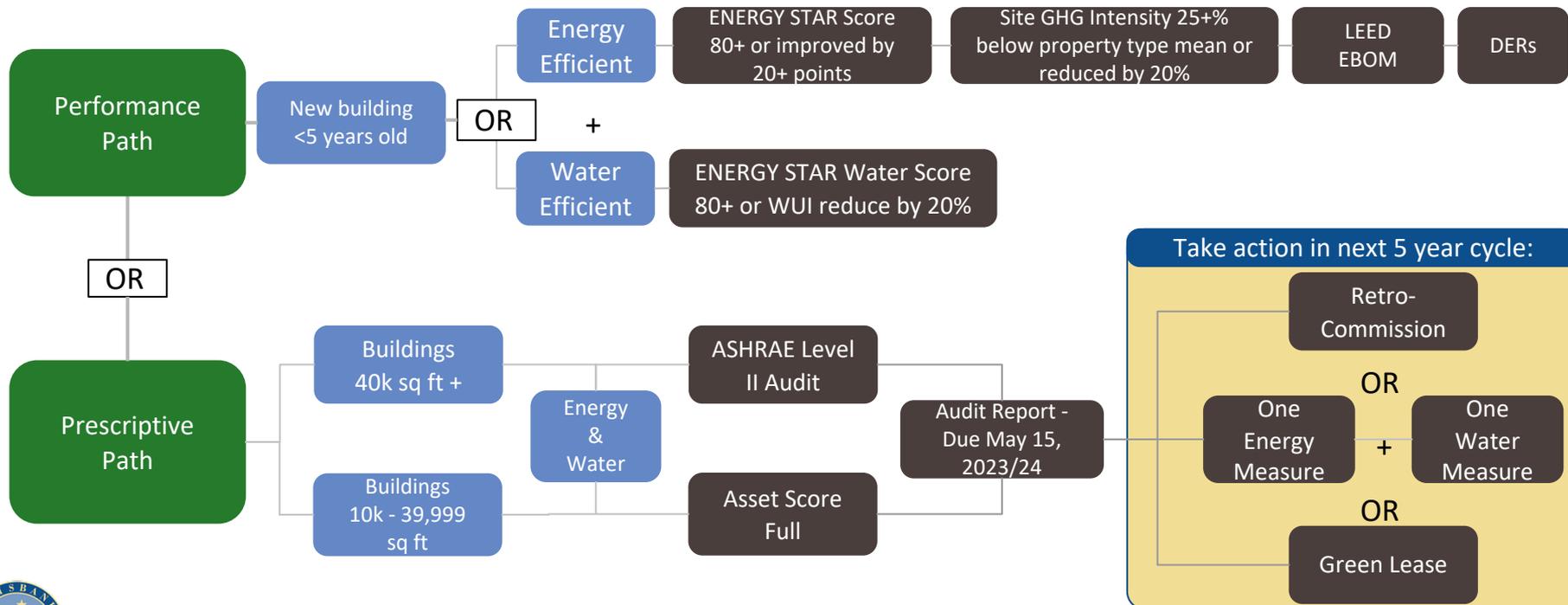


Compliance Pathways



Annual Benchmarking beginning 2021 - 10,000 sq ft or more

Beyond Benchmarking - every 5 years beginning: 2023 for commercial, 2024 industrial + residential



Expected Impacts

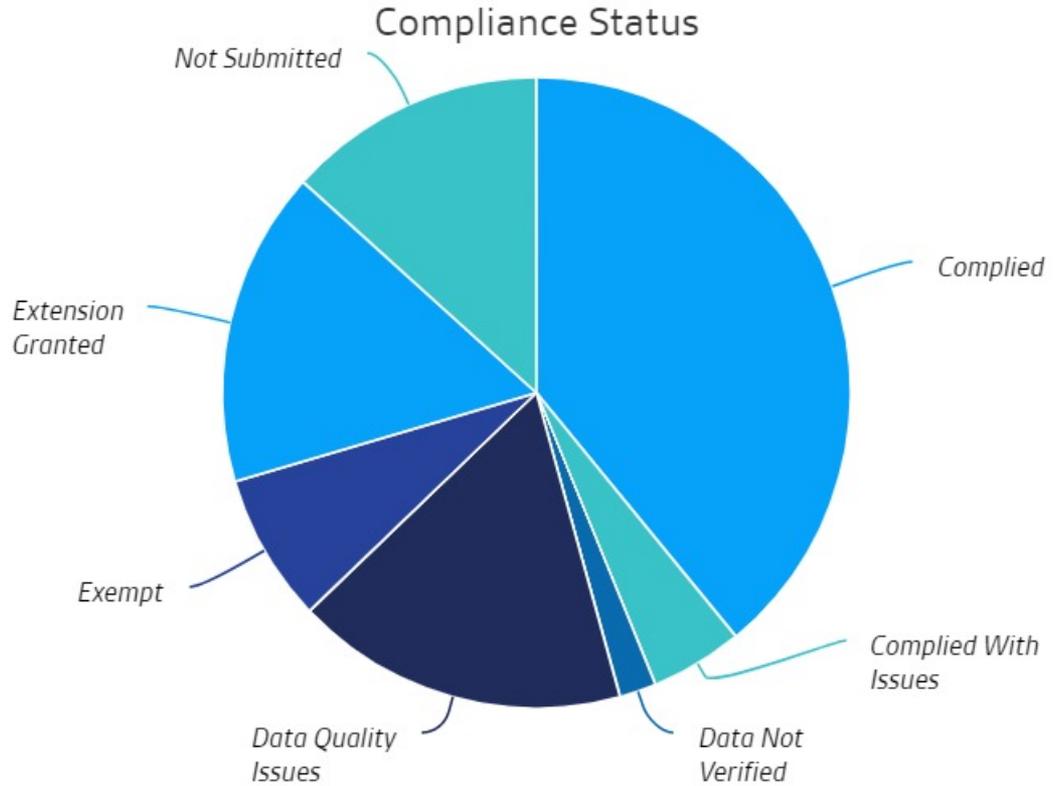
- **Buildings affected**
 - Benchmarking: 109 / 6.6M sqft
 - ASHRAE Level 2 Audits: 48 / 5.3M sqft
 - Asset Score - Full: 61 / 1.3M sqft

- **GHG Impacts**
 - ~2700 MTCO₂e reduction within 5 years of ordinance effective date
 - ~ 14.4% reduction from sector / ~4% citywide



Compliance To Date*

*as of July 29



Trends & Lessons Learned

- LOTS of outreach required
 - Climate Corps Fellow to the rescue!
- Smaller companies need help (and sometimes larger ones too)
- Better late than never
- Low EUI
 - 2020 was not a normal year!
- Custom IDs & other special requests
 - Errors & blanks very common
- It's only the first year!



Unlocking Future Opportunities

- Planning for decarbonization
 - ACEEE Paper [Next Generation Benchmarking: Leveraging Benchmarking Ordinances for Decarbonization Planning](#)
- Help understand monthly energy and water usage to advocate for local, PG&E, BayREN, CCA or other incentive programs
- Beyond Benchmarking - understanding hourly energy consumption and energy end-use profiles to estimate impacts of:
 - Electrification ordinances
 - Local Grid Capacity issues and solutions (community solar, virtual power plants)
 - Demand Flexibility and Grid-interactive Efficient Buildings (GEBs)
 - Reach Codes
 - Building Emissions Performance Standards (BEPS)



Metrics for Success

- Context matters!
- Our CCA:
 - Supplies 98% of Brisbane electric customers
 - Goal of 100% GHG-free energy in 2021 & 100% renewable by 2025
- ENERGY STAR Score
- Site GHG Intensity
- Distributed Energy Resources & EV charging



Toolkit



What's in the box?

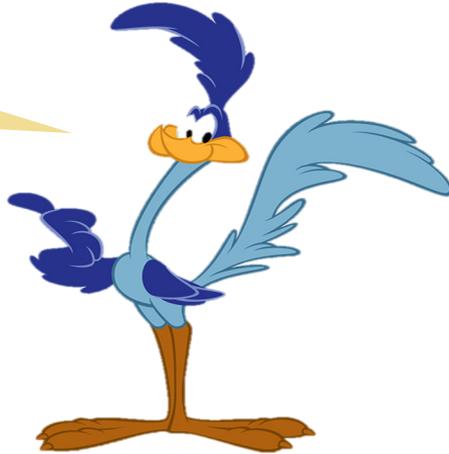
- Comprehensive guide from concept to implementation and beyond
- Considerations for drafting the ordinance:
 - Timelines, flowcharts and decision points
 - Guidance on market analysis
 - Engaging peers, state and national resources
 - Community input and council consideration
- Implementation & compliance preparation:
 - Schedules and pilots
 - Back-end infrastructure & ESPM
- Samples & templates:
 - Final ordinance in editable Word document
 - Notification letters, forms, training & compliance guides, FAQs
 - Outreach materials: language for emails, articles, template slide decks
- Program notes: what we learned or wish we had done differently
- Other resources and guides

www.brisbaneca.org/bbep-toolkit



Thank You

B-BEP!



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Building Sector Decarbonization

EMILY SALZBERG

AUGUST 18, 2021

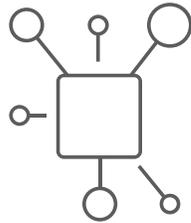


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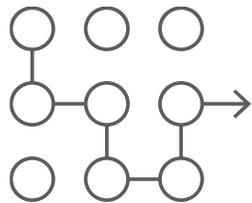
INFRASTRUCTURE



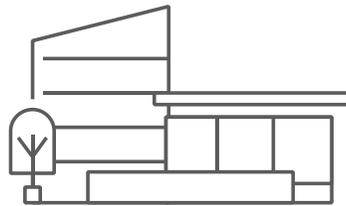
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PLANNING



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**CRIME VICTIMS &
PUBLIC SAFETY**



**COMMUNITY
SERVICES**

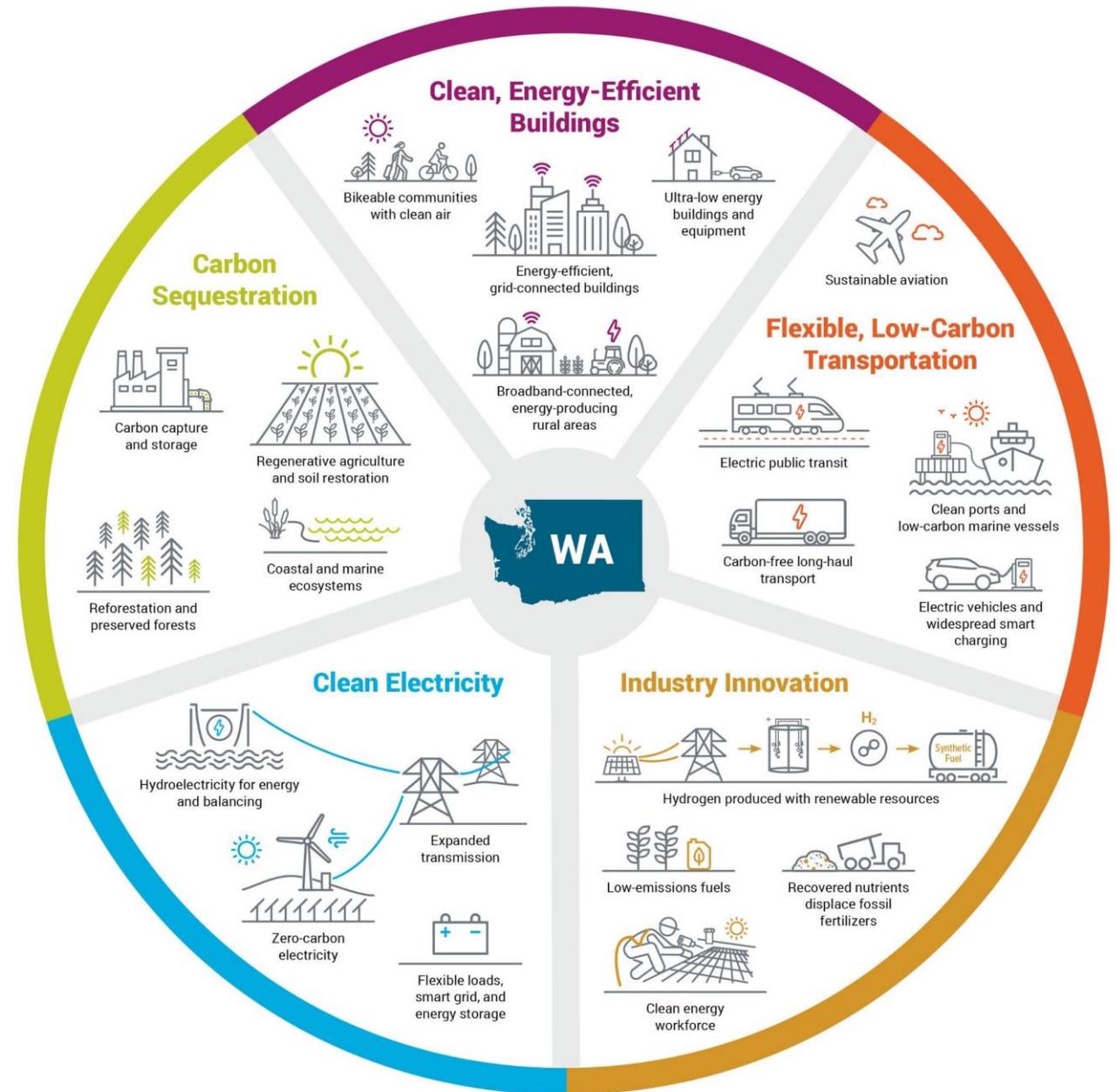
2020 State Energy Strategy

- Align strategy with clean electricity laws
 - Energy Independence Act (I-937, 2006)
 - Clean Energy Transformation Act (SB 5611, 2019)
 - After 2025, no coal in resource mix
 - By 2030, greenhouse neutral electricity supply
 - By 2045, 100% renewable or non-emitting sources
- Align strategy with greenhouse gas emissions limits (HB 2311, 2020)
 - By 2030, 45% below 1990 levels
 - By 2040, 75% below 1990 levels
 - By 2050, 95% below 1990 levels and achieve net-zero emissions.

WASHINGTON STATE 2050

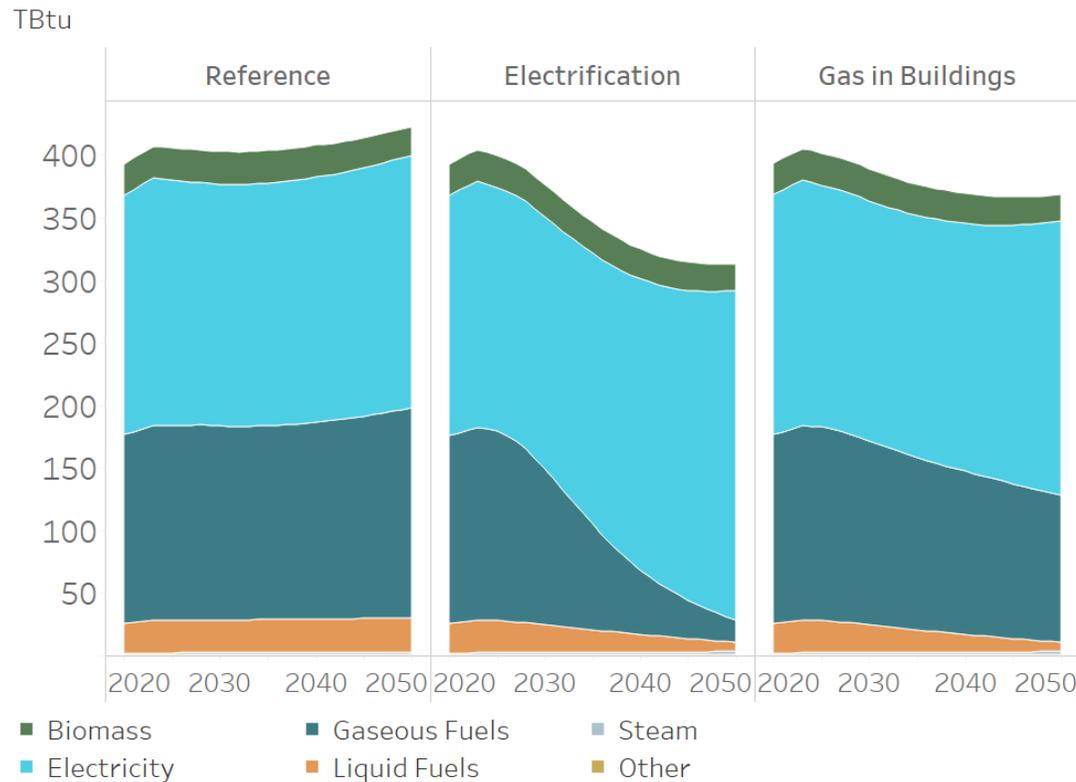
Net-Zero Vision

A blueprint for how we can meet our state's climate goals to nearly eliminate the use of climate-threatening fossil fuels by 2050, while growing a prosperous economy and maintaining affordable and reliable energy supplies.



Decarbonizing the building sector

Final Energy Demand in Buildings



- Two scenarios, each meets emissions limits
 - Electrification
 - Gas in Buildings
- Both use electricity – either directly in buildings or indirectly to make synthetic gaseous fuels
- Neither scenario eliminates fossil natural gas in the short run
- Neither scenario maintains significant fossil natural gas in the long run

Decarbonizing the building sector



Percentage commercial and residential buildings powered by electricity

 **Electric space heating**

64%
electric in 2030

82%
electric in 2050

 **Water heating**

64%
in 2030

100%
in 2050

GHG EMISSION REDUCTIONS



14.8
MMT

2020

9.1
MMT

2030

0
MMT

2050

- Greater efficiency & electrification in buildings in 2020s short- & long-term benefits
 - ✓ Avoids the need for clean fuel investments
- Significant reductions in energy
- Pipeline gas largely eliminated from heating buildings by 2050

Near term priorities

- Clarify authority of electric utilities to support customer electrification
 - Financial analysis of consumer-owned utilities
 - Possible legal analysis
- High efficiency heat pump market transformation
- Codes and standards
- Develop residential decarbonization strategy

Codes and standards

- Washington state energy code
- Performance standards for existing buildings
- Appliance standards





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www.commerce.wa.gov



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Benchmarking Enables Evolution and Experimentation

Barry Hooper
August 18, 2021



Existing Buildings Ordinance



Buildings Affected

2011 Ordinance

- Commercial

1,649

- Municipal

498

2019 Update

- Mixed Multifamily & Commercial

816

- Multifamily

157

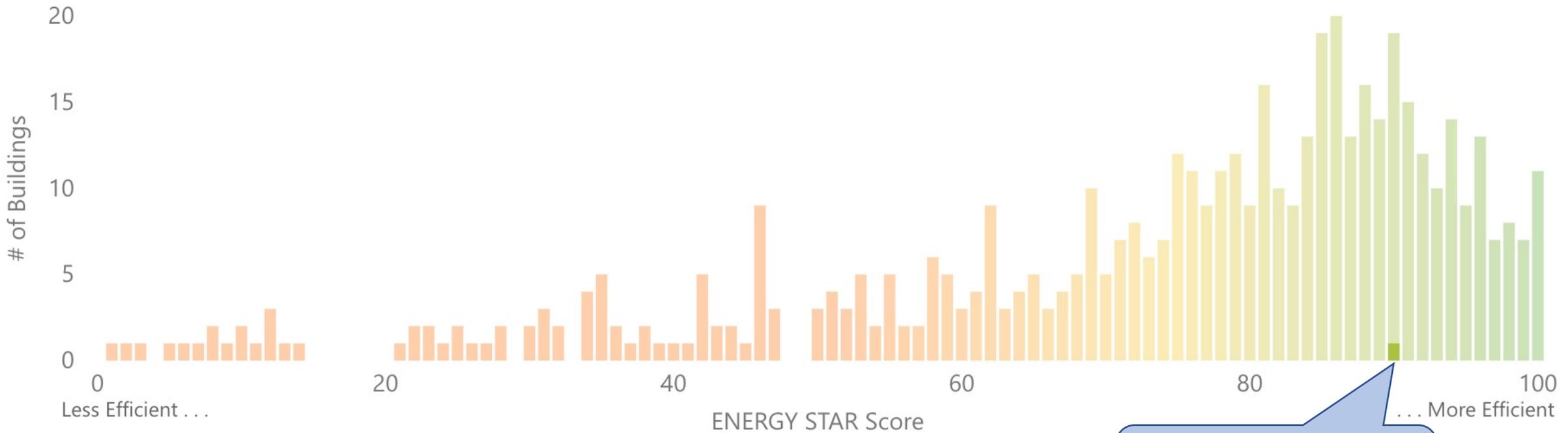
Total

3,114

Transparent Data

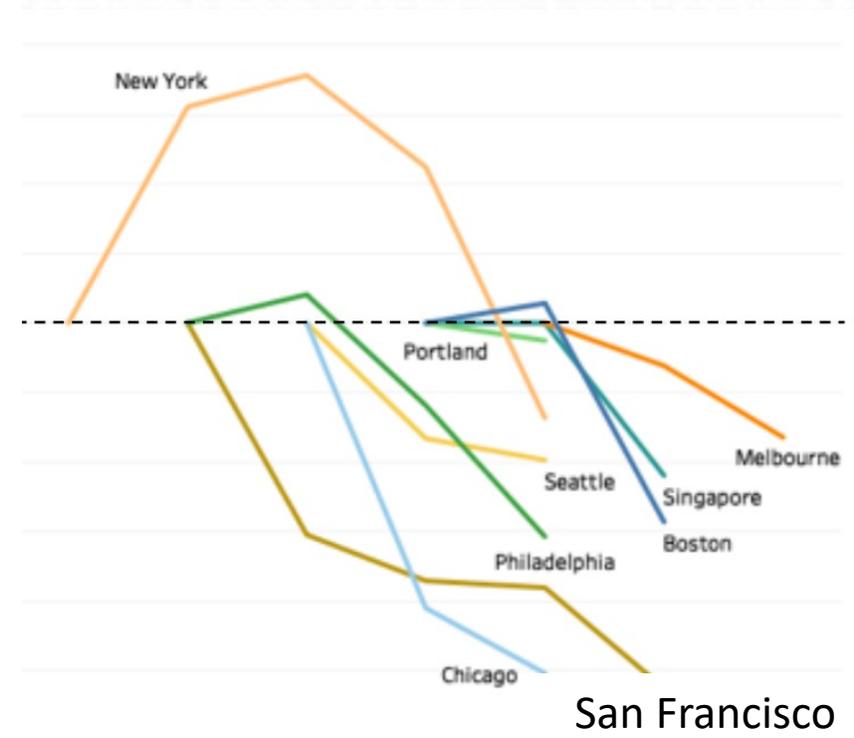


ENERGY STAR Score Distribution



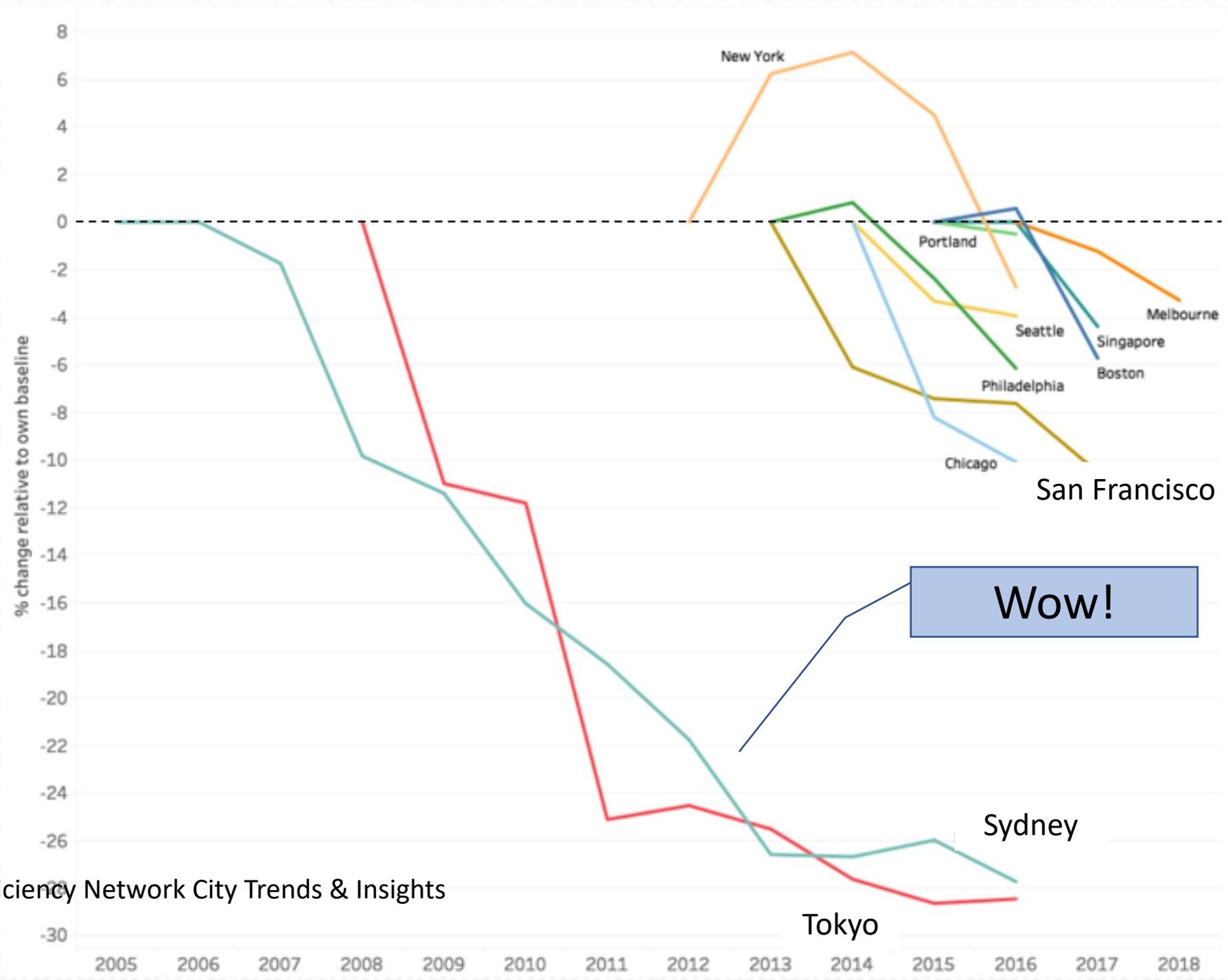
1 Bush St

Benchmarking All Offices In A City



Source: C40 (2019) Private Building Efficiency Network City Trends & Insights

Benchmarking All Offices In A City



Source: C40 (2019) Private Building Efficiency Network City Trends & Insights

Wow!

Challenges

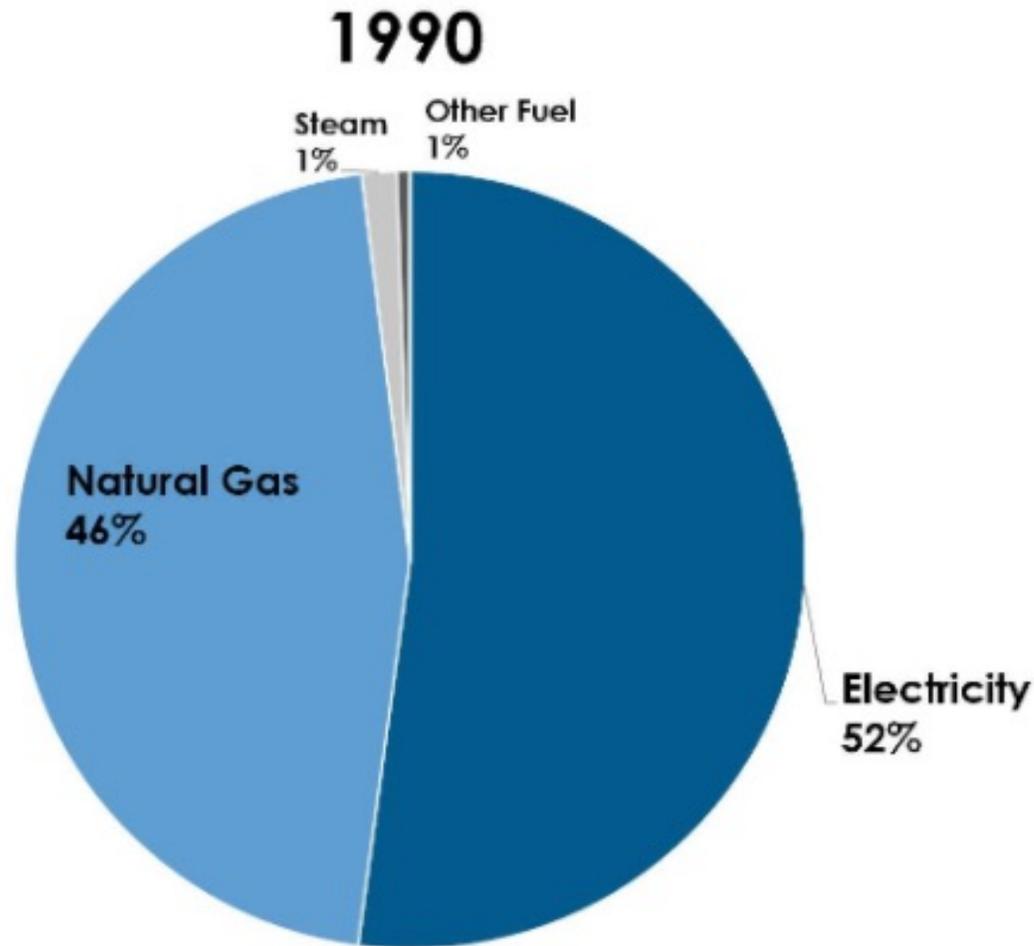


- 2009 – 2017: Data access
- 2018 – Today: Data quality
- Though efficiency is essential, efficiency is not decarbonization.

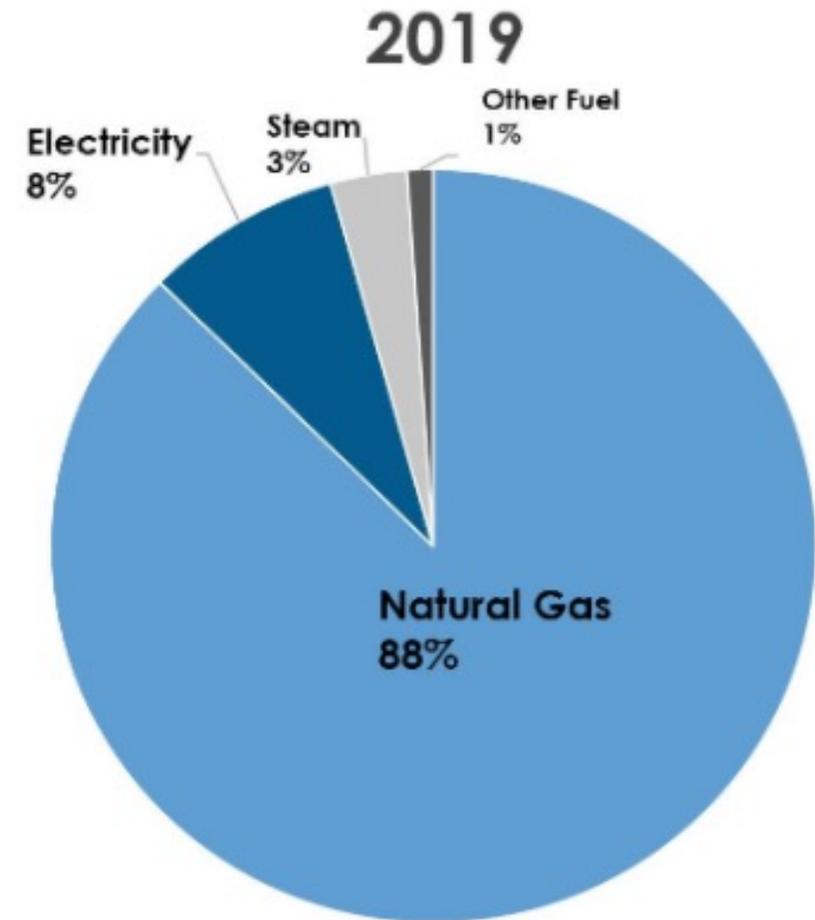
Looking to the Future



Emissions from San Francisco Buildings



Total Building Emissions:
4.4 Million mtCO₂e



Total Building Emissions:
1.9 Million mtCO₂e

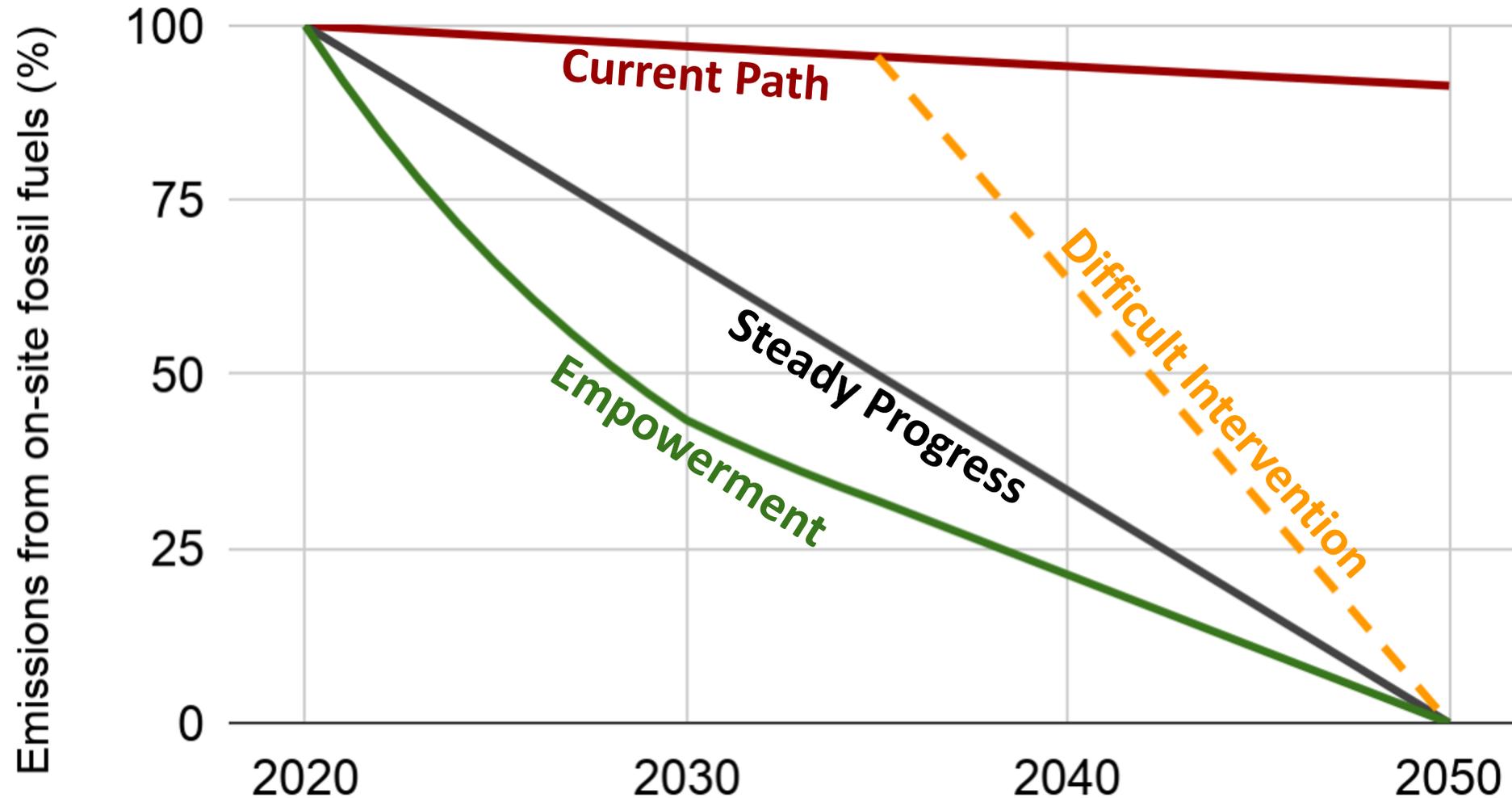
Zero Emission Buildings Task Force



How can we best achieve the Mayor's commitment to zero emission buildings, including **when, where, and with what support?**



Action Today Influences Outcomes and Approach

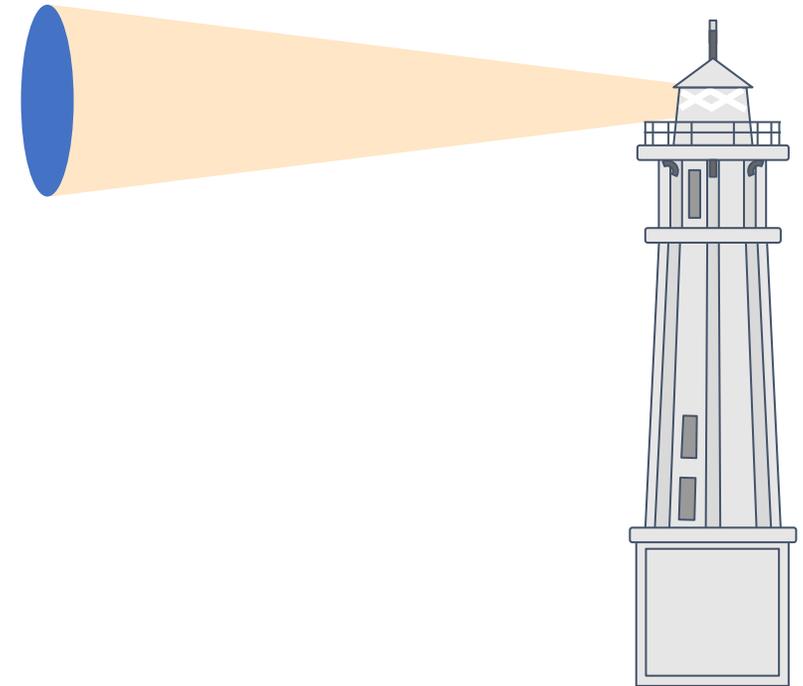


Clarity



Decarbonization requires action now, and the City must **communicate unambiguously about the future.**

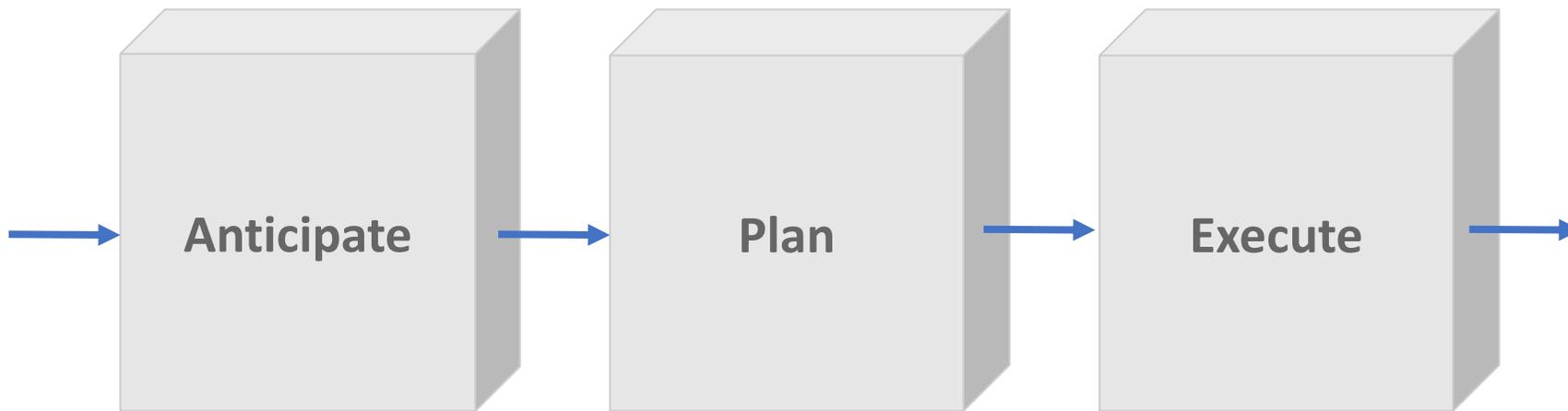
The City must **be a partner** for the duration.



Timing



Decarbonization plans must sync with real estate investment cycles



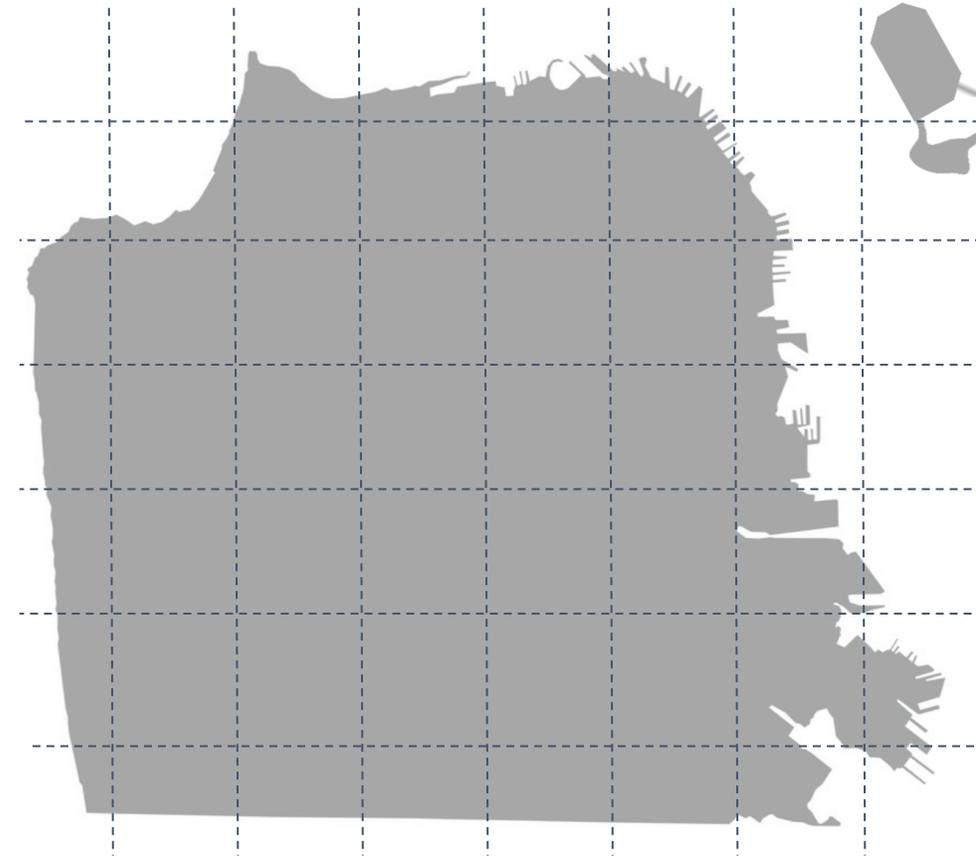
The City must **support planning and execution** to **eliminate missed opportunities** for decarbonization.

Scale



Gas leaks, seismic risk, and distribution fixed costs extend beyond buildings.

Equitable transition requires building-scale action and **inclusive city-led planning** in collaboration with utilities.





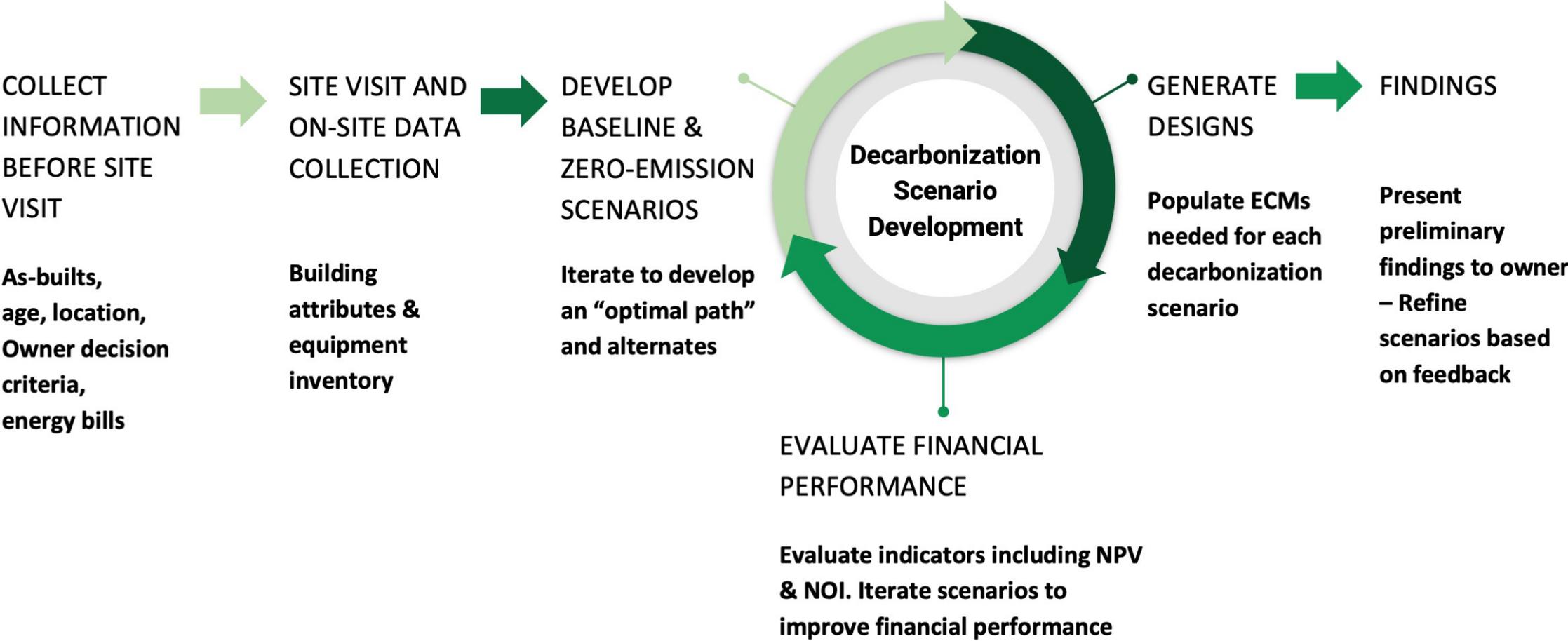
Proposals for Large Commercial Buildings

- **100% Renewable Electricity:** Subscribe to a qualified GHG-free electricity provider
- **2035 Deadline:** Existing large commercial buildings should be required to achieve zero emissions by 2035
- **Require a Plan:** ... for decarbonization of each building
- **Public Tracking:** Use existing annual benchmarking to track progress, celebrate leaders, and focus attention on laggards

Strategic Decarbonization Assessment (SDA)



A method to plan for the future



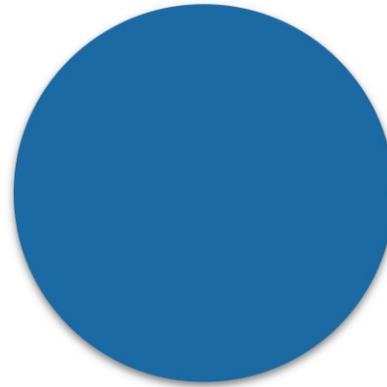
SDA Guides Decision Scenario Creation



Reactive Baseline Cost

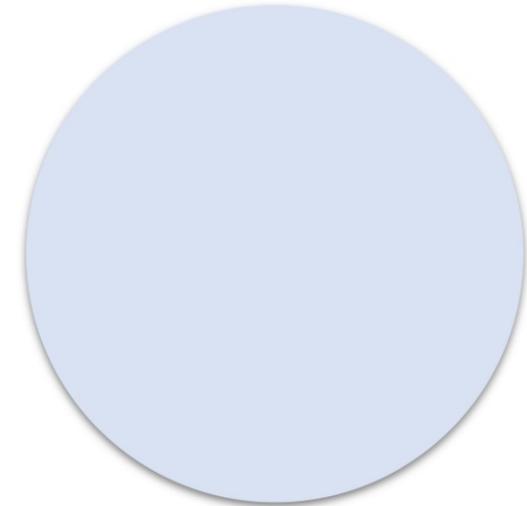
Tweaks but no re-engineering. Replace like-for-like at end-of-life. Small efficiency improvements. Max cost to avoid stranding. Full cost of re-engineering hits in advance of regulatory requirements.

Ideal Scenario Cost



Lowest marginal cost. Opportunistic, tracking advantage of vacancies and other triggers. Maximize NOI while minimizing TCO. Strategically improve and reconfigure systems.

In Between



Rational and realistic proactive/reactive mix, designed for a specific owner based on real constraints.

Energy audits are not the right tool for this job.



Distinction	ASHRAE Standard 211; Level 2 Audit	Strategic Decarbonization Assessment
Question answered:	How can this building perform better, today ?	How should we re-engineer this building to perform in the future ?
Financial significance	Small: ~\$1s /sf. Find the most savings possible within the payback period.	Big: ~\$10s /sf. Find the most cost effective path to decarbonization
Primary audience	Facilities/Ops, Engineering	Asset Management
Time horizon	Short; payback constrained	Long; full capital cycle, 10+ yrs
Downside avoided	Wasted utility spend	Stranded asset, degraded value/NOI, increased CapEx/TCO

Strategic Decarbonization Assessment

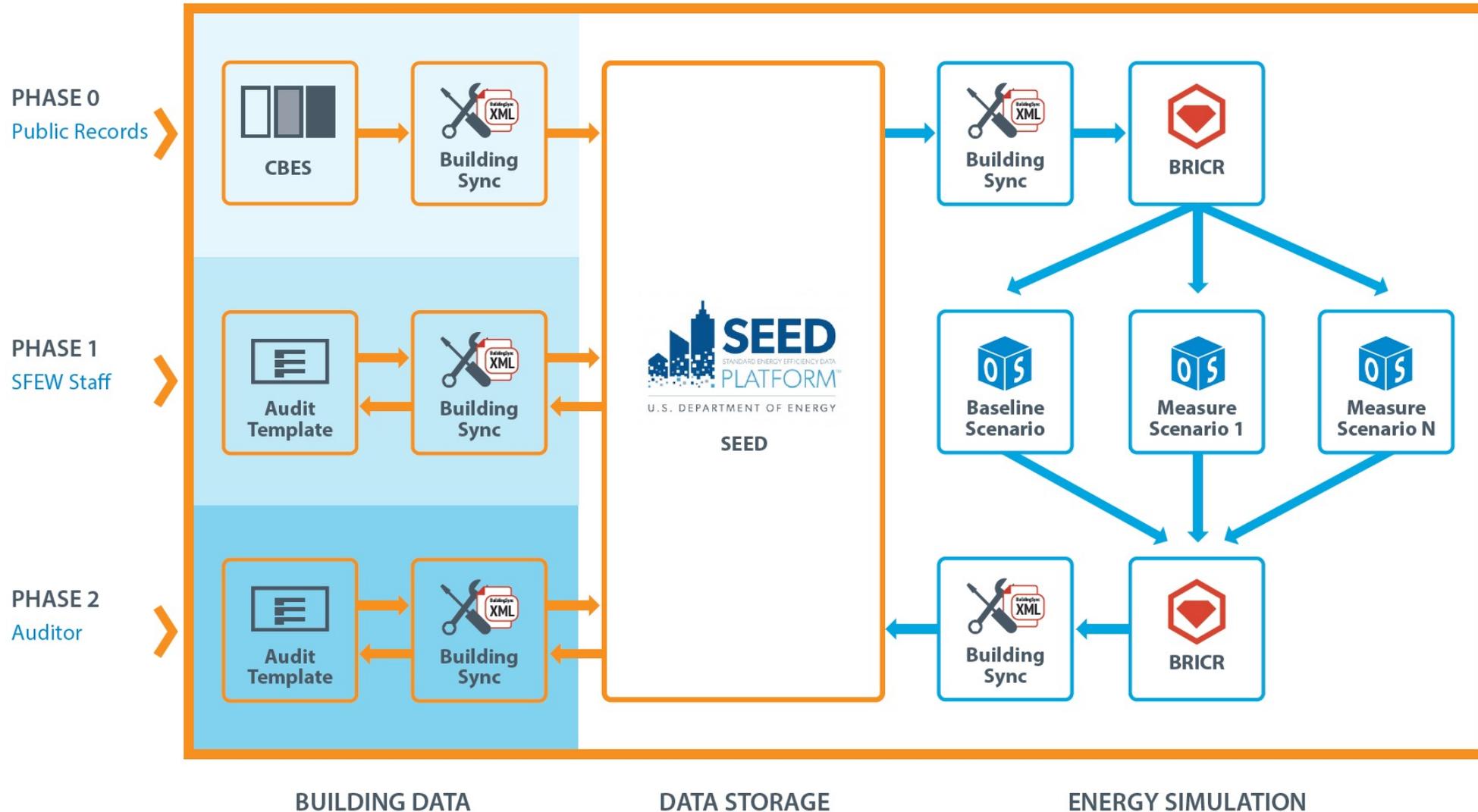


- Catalyzed by Energy Foundation funding.
- Commissioned by San Francisco Department of the Environment, thanks to CA ratepayer support.
- Built by ARUP and Ember Strategies.
- NYSERDA is investing in evolution, simplification.

Today:

- San Francisco and Berkeley accept SDA for compliance.
- NYSERDA is testing SDA in the Empire Building Challenge.

BayREN Integrated Commercial Retrofits (BRICR)



- Links
 - Public record
 - Targeting
 - Decarb plan
 - Measurement
- Leverages
 - Benchmarking
 - Audits
 - Local government program
 - CEC & DOE investments
- Proof of concept

Thank You



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SF Environment

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A Department of the City and County of San Francisco

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Upcoming Events



12th Annual California Climate & Energy Forum

Transforming Tomorrow Together

August 3 - 19, 2021

WEEK 3

- **8/19 Webinar 12:**
Leveraging Solar & Battery Systems to Lower Costs & Increase Resiliency
- **8/19 Closing Plenary:**
Highlights and Horizons: An Interactive Forum Closing

Post-Session Survey:
bit.ly/CCEC-Post-Session-Survey

To view the entire program visit eecoordinator.info/forum-program/