LEED V5

*LEED v5 is currently in **draft**, and the rating system may change. The information for this webinar was taken from the version published on September 2024. Participants should check www.usgbc.org for the most recent version.*

This course was presented/recorded on October 9, 2024.

Monique Owens

Regional Director

U.S. Green Building Council

Ian Graham

Owner

C.I. Graham Sustainable Engineering

LL97 Overview

- In 2019, New York City took a bold step in the fight against climate change limiting GHG emissions from buildings under LL97.
- On Jan 1, 2024 the energy emissions of buildings are limited.
- For the first time owners will be subject to penalties for excess emissions.
- Avoiding penalties will depend their ability to …
  - Reduce and manage their energy use,
  - Their ability to leverage renewable energy choices under LL97, and
  - How much they move away from heating with fossil fuels.
- By May 1, 2025 owner's will submit Building Emissions Reports that demonstrate how well they are doing.

Why LL97?

Buildings Trajectory to 80 x 50 with Deep Energy Retrofits 2005-2050 ($MtCO_2e$)

NYC Mayor's Office of Climate & Environmental Justice

NYC Mayor's Office of Climate & Environmental Justice

Citywide 80x50 Target 11.8

8 - 9 2050 Buildings Target

2050

y: Built to Last initiatives
struction and substantial
from ASHRAE 2013 standards

ECMs. 50-60% of buildings
r heat and hot water.

TRA

build saf

What's the alternative?

The Coldest Year of the Rest of Their Lives:

Protecting children from the escalating impacts of heat waves

UNICEF (Oct 2022)

CLIMATE AND WEATHER

Study: 2024 Broke A 50-Year Heat Record Around The Globe

By Jennifer Gray (September 18, 2024)

SCI AM

SEPTEMBER 13, 2024 | 4 MIN READ

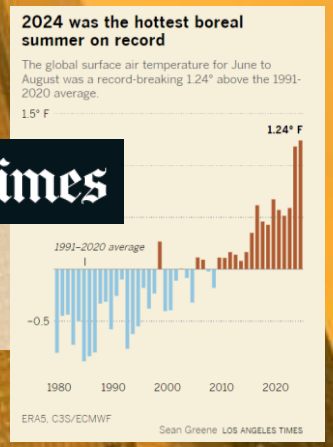
Summer 2024 Was the Hottest Ever Measured, Beating Last Year

The year 2024 could easily shape up to be the hottest ever measured, climate scientists say

BY SAIMA S. IQBAL

Los Angeles Times

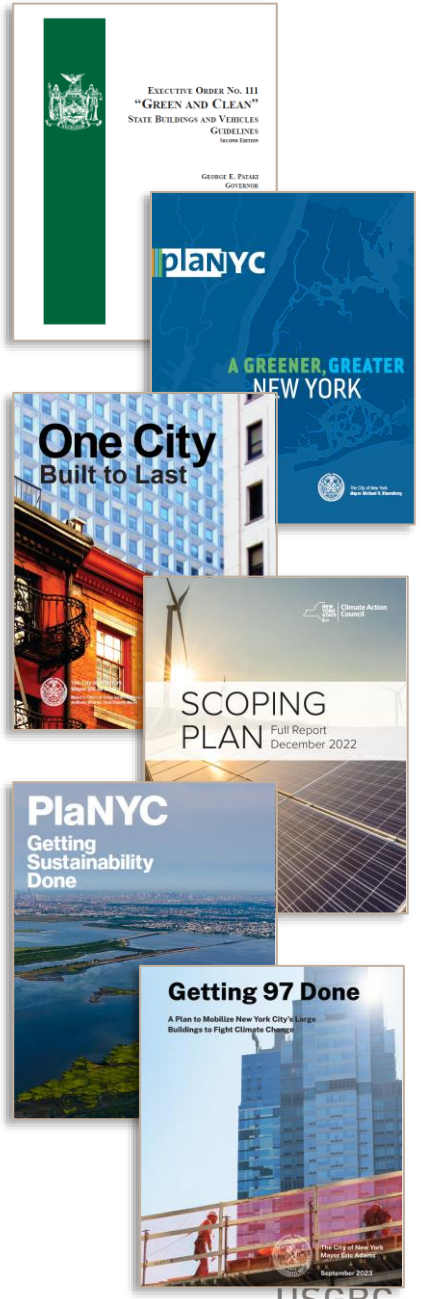
By Hayley Smith Staff Writer
Graphics by Sean Greene
Sept. 6, 2024 3 AM PT



This new summer record, an average temperature of 62.2 degrees F (16.8 degrees C), beats out last summer's extraordinarily high average by a narrow 0.05 degree F (0.03 degree C). Both constitute the highest two summer averages in annals that go back to 1850. But studies of ancient tree rings suggest that 2023's temperature—and by extension 2024's—were the hottest in the past 2,000 years. And some climate scientists calculate that these two years' summer averages **could even be the highest in 125,000 years**; that far back in Earth's history, hippos swam in the waters around Great Britain., and forests dotted the Arctic. The U.S. National Oceanic and Atmospheric Administration's National Centers for Environmental Information now says there is a **97 percent chance that 2024 will beat 2023 as the hottest full year on record as well**.

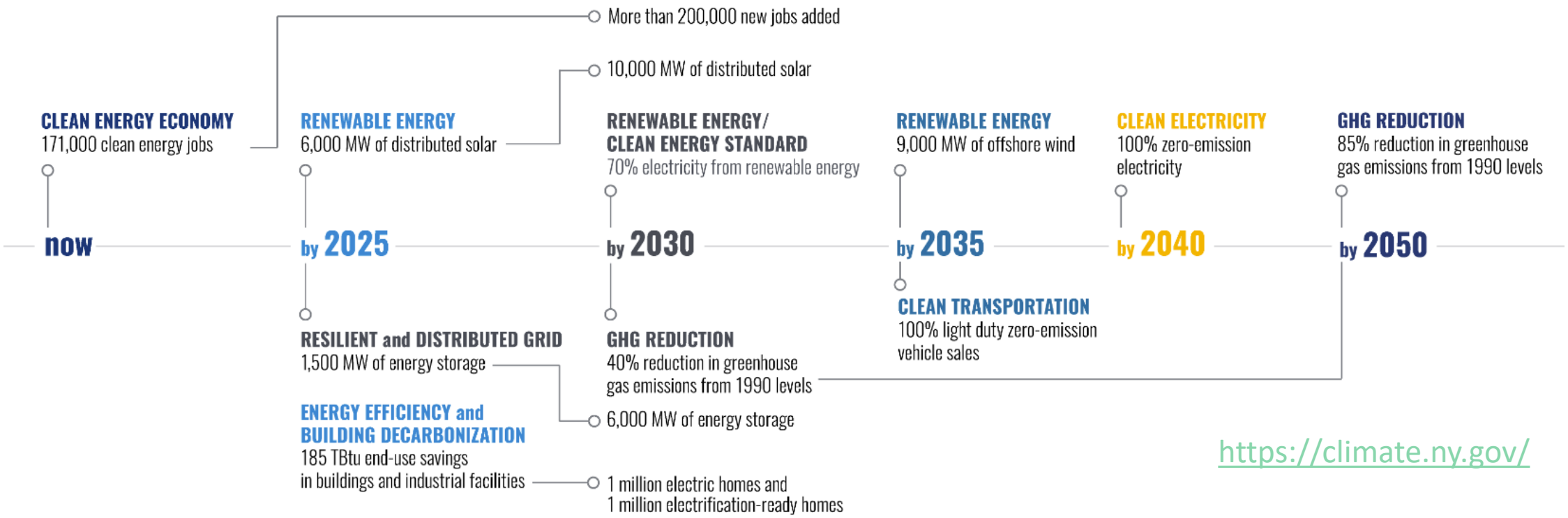
New York's History …

- NYS Green Building Tax Credit (2000)
- NYS Executive Order 111 (2001); EO 88 (2012)
- PlaNYC Greener, Greater Buildings Plan (2009)
- Climate Mobilization Act (April 2019)
- Climate Leadership and Community Protection Act (CLCPA) (July 2019)
- Amended NYS Energy Law (July 2022)
  - Historic buildings
  - Life-cycle analysis defined and broadened
  - List of exempt building changes
- NYS Climate Action Council's – Scoping Plan (Dec 2022)
- NYC Getting Sustainability & LL97 Done



Climate Leadership and Community Protection Act (CLCPA)

New York's Nation-Leading Climate Targets



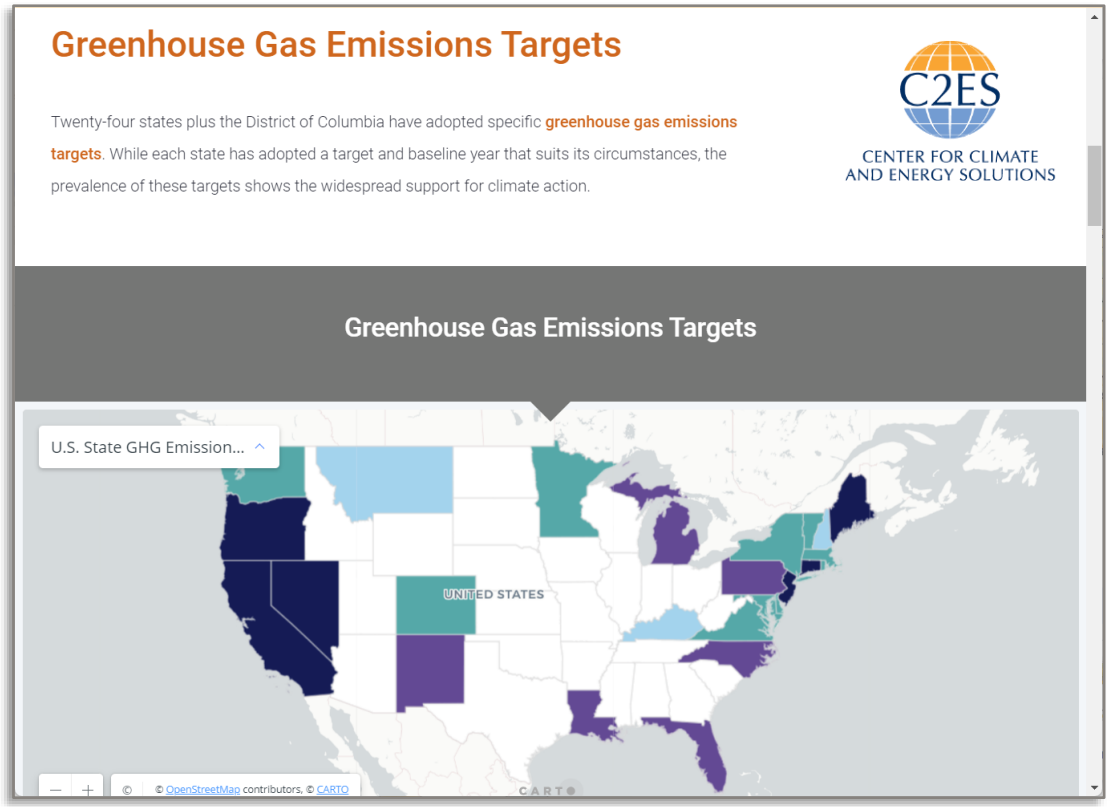
https://climate.ny.gov/

New York City's History …

- PlaNYC Greener, Greater Buildings Plan (2009)
  - LL84: Benchmarking
  - LL85: NYC Energy Conservation Code
  - LL86: Green Building Law for NYC Government Building
  - LL87: Energy Audits & Commissioning
  - LL88: Lighting and Submetering
- Climate Mobilization Act (April 2019):
  - LL92/94: Green or Solar roofs systems
  - LL95: Building energy efficiency grade
  - LL96: Sustainable energy loan program (ie. PACE)
  - LL97: Building emissions limits
- Since 2019 … Getting Sustainability and LL97 Done!

Leading a National Movement

- States
  - 24 states have statutory or recommended statewide GHG emissions targets
- Cities
  - Boston (2021)
  - Washington, DC (2022)
  - Seattle (2023)



https://www.c2es.org/content/state-climate-policy/

NYC's … been BUSY since 2019!

- 2020 LL97 AB and WGs start two years of meetings
- 2021
  - LL97 Adjustments Program & Guide
  - Bulletin 2021-19: Electric Vehicles under LL97
  - LL154: Building Electrification Law
  - Pathway to Carbon-Neutral NYC
- 2023
  - LL97 Advisory Board & Recommendations Report
  - Rules 103-14: LL97/Article 320
  - ESPM Analysis Methodology
  - ESPM Reference Guide
  - Rules 103-14: LL97/Article 320 (Additions and Revisions)
  - Rules 103-17: LL97/Article 321 (Additions and Revisions)
  - Rules 103-18: LL88/Article 310/311
- 2024
  - Article 321 Filing Guide
  - Rules 103-14: LL97/Article 320 (Additions and Revisions)
  - Rules 103-07: LL87/Article 308 (Proposed Revisions)
  - Article 320 Information Guide

The times ARE a changing …

- NYC LL154-2021
  - *28-506.1 Prohibited Emissions in New Buildings.*
  - *24-177.1 Prohibited emissions*
    - *"No … combustion of any substance that emits 25 kilograms or more of carbon dioxide per million British thermal units of energy …"*
- NYC LL51-2023: Green Building Law
- Section 11-104 of the NYS Energy Law
  - Part RR of Chapter 56 of the Laws of 2023
  - Part 1240 of Title 19 of the Official Compilation of Codes, Rules and Regulations
    - 2024 Draft Rule: 1240.7 Fossil-fuel Equipment and Building Systems
- 2024 NYS & Stretch Energy Code Proposed Updates
  - IECC 2024 & ASHRAE 90.1-2022

LL97: Articles 320 & 321

Plus Rules 103-14, 103-17, 103-18

Article 28-320

Covered Buildings

Compliance (2024)

- Building Emissions Limit
- Building Emissions
- Beneficial Electrification
- Emissions Deductions
- Rent Regulated (2026)
- Income Restricted (2035)

Reporting

Penalties

Adjustments

- 320.8: Excess Emissions for Special Circumstance
- 320.9: Not for Profit Hospitals & Healthcare
- 320.7: Adjustments for other circumstances

Article 28-321

Covered Buildings

Compliance

- Performance: 2030 Emissions Limit (from Article 320)
- Prescriptive: Energy Conservation Measures

Reporting (Performance, Prescriptive, Shared)

Penalties

LL97 Covered Buildings

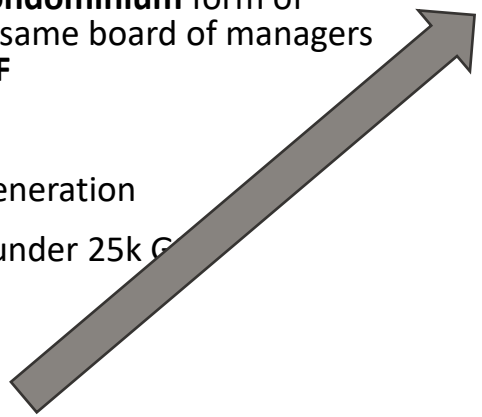
Article 28-320

Covered Buildings

- A building that **exceeds 25,000 GSF**,
- **Two or more** buildings on the same **tax lot** that together **exceed 50,000 GSF**,
- **Two or more** buildings held in the **condominium** form of ownership that are governed by the same board of managers and that together **exceed 50,000 GSF**

Exceptions:

1. Industrial … electricity and steam generation
2. Low-rise residential, independent, under 25k G
3. City buildings (defined term)
4. NYCHA
5. **Rent regulated (defined term)**
6. **Religious houses of worship (A-3)**
7. **HDFC Coops**
8. **Project-based Federal housing**



Article 28-321

Covered Buildings

- Rent regulated (defined term)
- Religious houses of worship (A-3)
- HDFC Coops
- Project-based Federal housing

AND such building

- **exceeds 25,000 GSF**,
- **is one of two or more** buildings on the same **tax lot** that together **exceed 50,000 GSF**,
- **is one of two or more** buildings held in the **condominium** form of ownership that are governed by the same board of managers and that together **exceed 50,000 GSF**

LL97 Covered Buildings

Breakdown Buildings

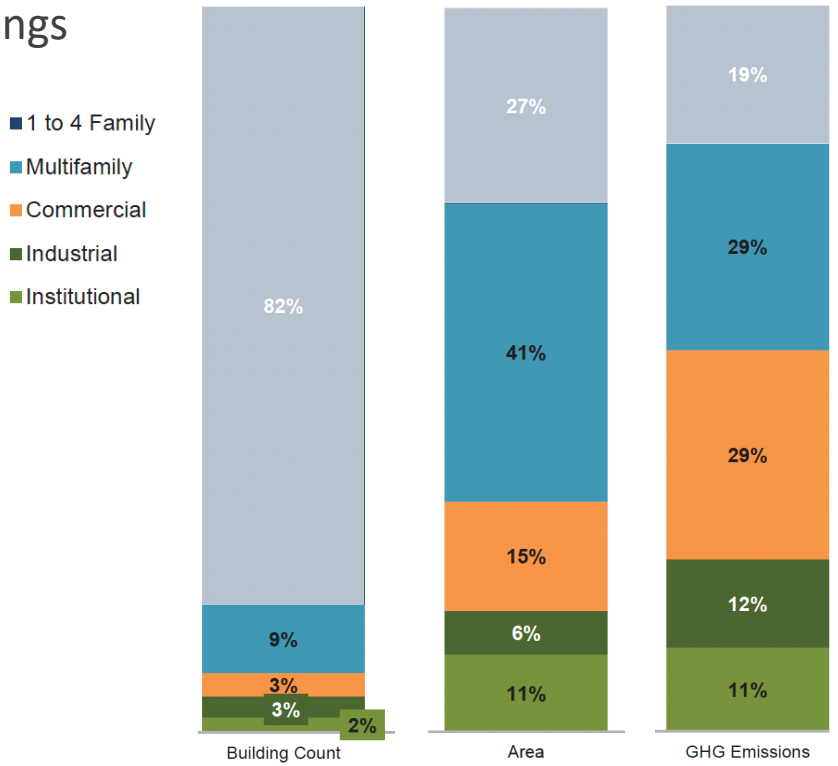


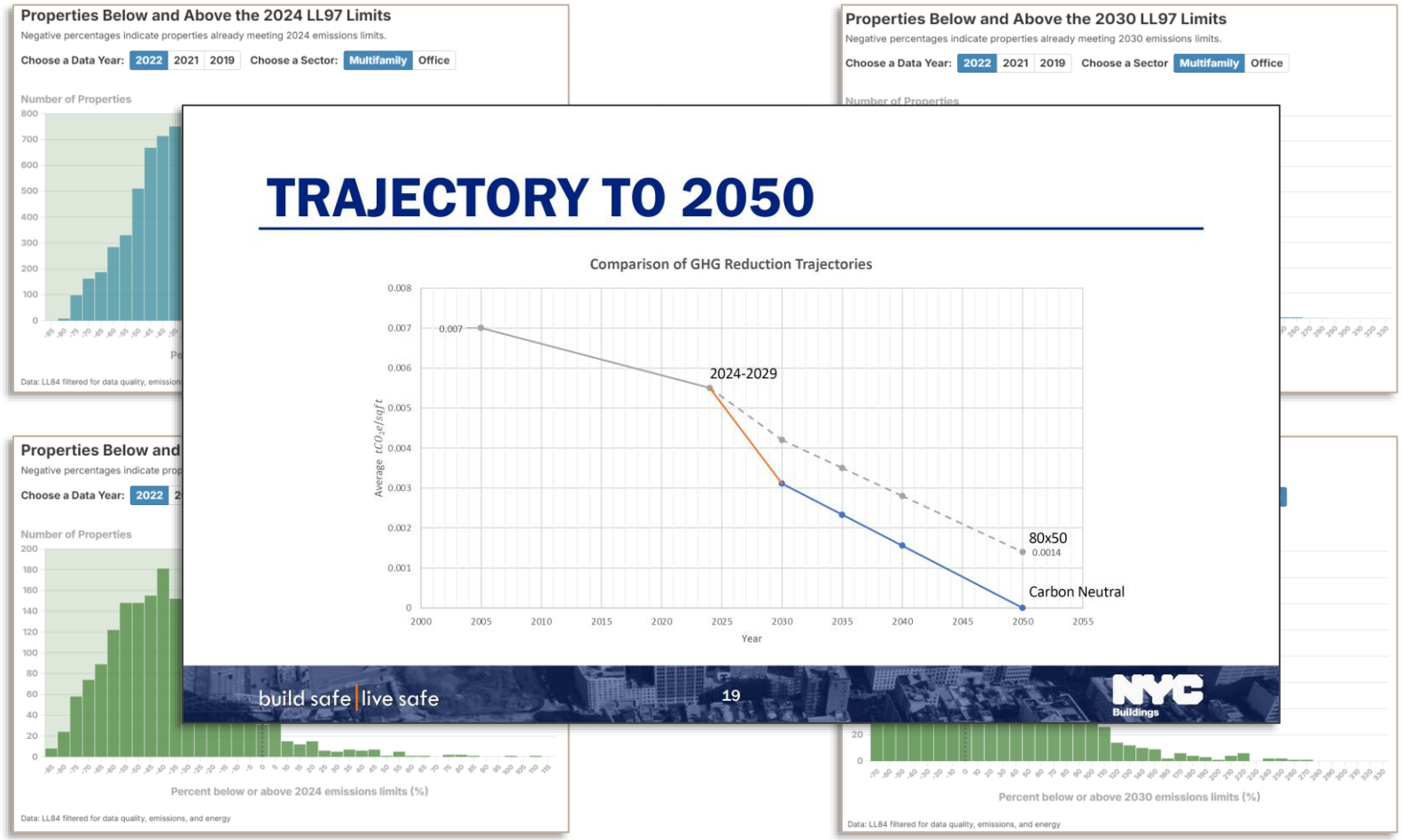
Fig. E3. **Building Uses by Building Count, Floor Area, and GHG Emissions**

Only … about 15% by Number
BUT… about 75 % by Floor Area
AND … about 80% by GHG Emissions

From the One City Built to Last - Technical Working Group Report

LL97 Compliance

2024 2030



USGBC

LL97 Issues to Resolve

- Are you a covered building?
- Do you know when your compliance starts?
- Do you know which rules to follow?
- Are you eligible for an adjusted limit?
- Do you know your limit?
- Are your emissions calcs complex?
  - Time of Use?
  - Energy Storage?
  - Campus generation?
- Do you comply? 2024? 2030? Beyond?
- Are Deductions needed (RECs, CDERs, Offsets)?
- What about Beneficial Electrification?
- Have you started work that qualifies as Good Faith Efforts?

Preparing for LL97 … Begins NOW

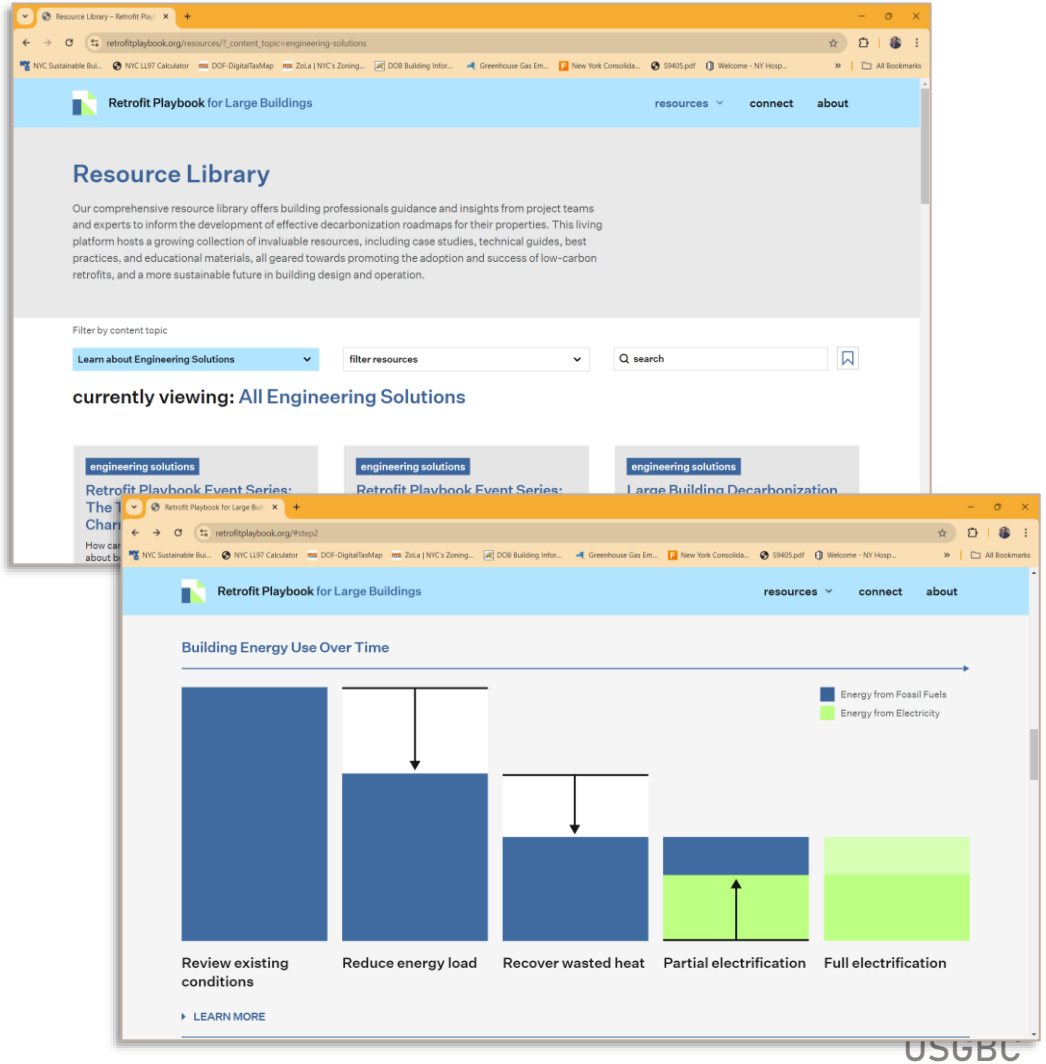
- Plan for Future Compliance
  - 80-90% comply in 2024-2029
  - Approx 25% comply in 2030-2034
  - Chart a path to Zero by 2050
- Energy Audit
  - Analysis of energy use of building to determine GHG emissions
  - Determine building emissions limit
- Reduce Greenhouse Gas Emissions
  - Improve energy efficiency
  - Reduce carbon intensity of Energy Sources
  - Beneficial Electrification
  - Purchase Renewable Energy Credits (RECs)
  - Install Clean Distributed Energy Resources (CDER)

Preparing for LL97 … Begins NOW

- Engage an RDP (or RCx)
  - Reports must be certified by an RDP (or RCx for 28-321)
  - Assess PT allocations by space use
- Develop a Decarbonization Plan
  - Path to Zero by 2050
  - Develop a list of energy and emissions reduction strategies
  - Quantify emissions savings for each measures
- Develop the capital needs and plan
- Schedule work and get started
- Determine building emissions limit
- Track progress toward compliance and refine plan

Solutions are SIMPLE … just not free or always easy

- Low-Energy Buildings
  - REVIEW existing conditions
  - REDUCE heating, cooling and DHW use
  - RECOVER waste heat/energy
  - RETROFIT systems with all electric
    - High COP
    - Cold Climate
- Partial Electrification
- Zero Emissions Energy
  - Renewable Electric Grid
  - Low/No emissions fuels
    (e.g., Green H2, Synthetic & Biogenic RNG)
- Full Electrification
- Code and Regs to Support Transition
  - High-COP Electrification



Funding, Education, and Technical Support

- NYSERDA & NY Green Bank
- Utility Programs
- NYC Accelerator & NYCEEC
- Building Energy Exchange (BEEx)
- Urban Green Council

What would YOU DO for a more secure future?

My teenager and his friends answered...

"Eliminate single use plastics."

Things WE need to do with Buildings ...

- Start NOW
- Think LOWEST COST ... NOT payback
- Make the process EASY for our "client"

The Coldest Year of the Rest of Their Lives:

Protecting children from the escalating impacts of heat waves

UNICEF (Oct 2022)

Thank you!

Carl Ian Graham, PE

CIGraham Sustainable Engineering
cigraham@cigraham.com
845-480-2078

Image by: Fred Froese

Since 2018, LEED-certified assets held a 21.4% higher average market sales price per square foot over non-LEED buildings.

Cushman & Wakefield. (2021). Green Is Good: Sustainable Office Outperforms in Class A Urban Markets.

A LEED for every project.

LEED addresses new and existing: interior spaces, buildings, homes, communities and cities.

Fremont Office Building
Seattle, Washington | LEED Gold
Photo by Built Work
Photography Courtesy Weber Thompson

Taikoo Li Sanlitun North
Beijing,China | LEED Gold
Photo credit: ShuJun

The Element House
Sarasota, Florida | LEED Platinum
Photo credit: Ryan Gamma Photography

Hoboken, New Jersey
LEED for Cities Gold
Photo credit: ShuJun

Nearly

197,000

total registered and certified **LEED projects** worldwide

Grupo Roble - Multiplaza Bogota | LEED Platinum
Bogota, Colombia | Photo credit: © Ricardo Canino

As of February 2024

Over

1.2 Billion

Square feet of LEED space
in New York

As of October 2024

What's next?

A Thank You to Our Community of Volunteers and Members

LEED has always been consensus-based, and we thank our volunteers, past and present, for their contributions to our shared mission of creating a more sustainable world. With LEED v5, our staff and volunteers engaged in a yearlong, expansive community engagement process to determine what the future of LEED would hold. We then collaborated further with our deeply knowledgeable and expansive community of USGBC committee volunteers.

LEED STEERING COMMITTEE CONSENSUS COMMITTEES

New Construction
Existing Buildings
Cities and Communities

TECHNICAL ADVISORY GROUPS

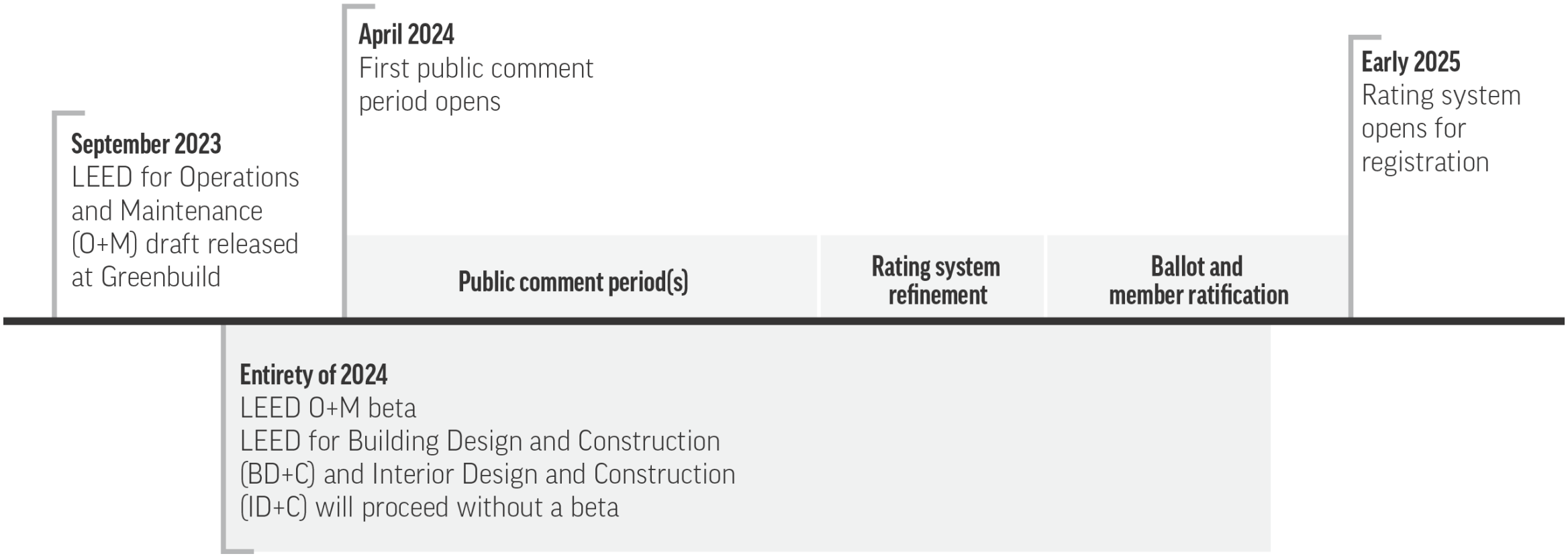
Location and Planning
Sustainable Sites
Water Efficiency
Energy and Atmosphere
Materials and Resources
Indoor Environmental Quality

WORKING GROUPS

Diversity, Equity, Inclusion
Resilience

LEED is built by the market, used by the market, and advanced by the market.

LEED v5 DEVELOPMENT TIMELINE



LEED v5: Notable changes in the second public comment drafts

Photo credit: Elias Bitar, Adobe Stock.

Selina Holmes

Sep 27, 2024

5 minute read

Explore credit-level changes in progress in LEED v5.

The first public comment period for LEED v5 garnered nearly 6,000 comments across three rating systems: Building Design and Construction (BD+C, which includes New Construction and Core and Shell Development), Interior Design and Construction (ID+C),

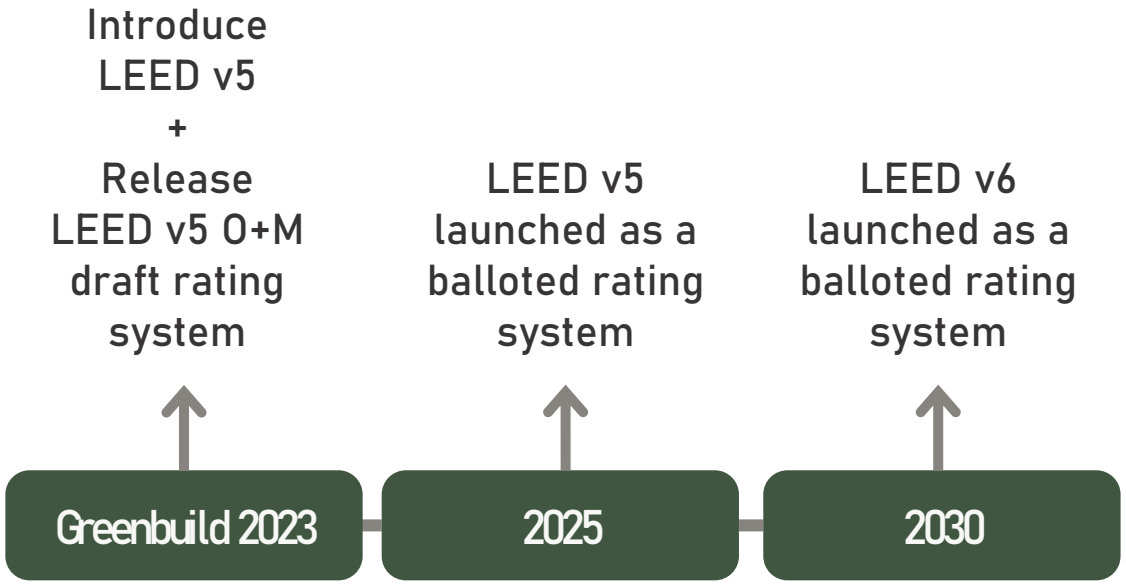
LEED v5 Public Comment 2

September 27 - October 28

LEED V5

USGBC

The cycle of LEED rating system updates will now be once every 5 years



Project Priorities and Innovation Credit Category

The Innovation in Design credit category evolves to become “Project Priorities and Innovation”

FLEXIBILITY

This update creates greater flexibility for projects to address their unique contexts and priorities including typology, culture, location, areas of innovation and individual performance objectives.

RESPONSIVENESS

This approach will support LEED project teams in responding to rapidly emerging industry knowledge, technologies and innovative solutions.

CREDIT POINT THRESHOLD RAISED

This category will afford project teams greater creativity and versatility in balancing their respective priorities.

New requirements for Platinum certification

LEED BD+C and ID+C Platinum Requirements
Highly energy-efficient
Has no GHGs from on-site emissions except emergency and backup needs
Has 100% renewable energy from on-site/off-site sources
Reduces embodied carbon

LEED O+M Platinum Requirements
Highly energy-efficient
Low operational emissions
Procures renewable energy from on-site/off-site sources
Plans for further operational emissions reductions


ECOLOGICAL CONSERVATION & RESTORATION
QUALITY OF LIFE
DECARBONIZATION
IMPACT
AREAS

Laurie Kerr

Principal Climate Advisor

U.S. Green Building Council

DECARBONIZATION

LEED v5 drives the industry towards a decarbonized built environment across all major sources of emissions: operational, embodied and transportation.

LEED v5 and Decarbonization of Operations

1. Increasing carbon literacy across the industry
2. Providing a recipe for near-zero new construction
3. Helping existing buildings plan for decarbonization

1. CARBON LITERACY

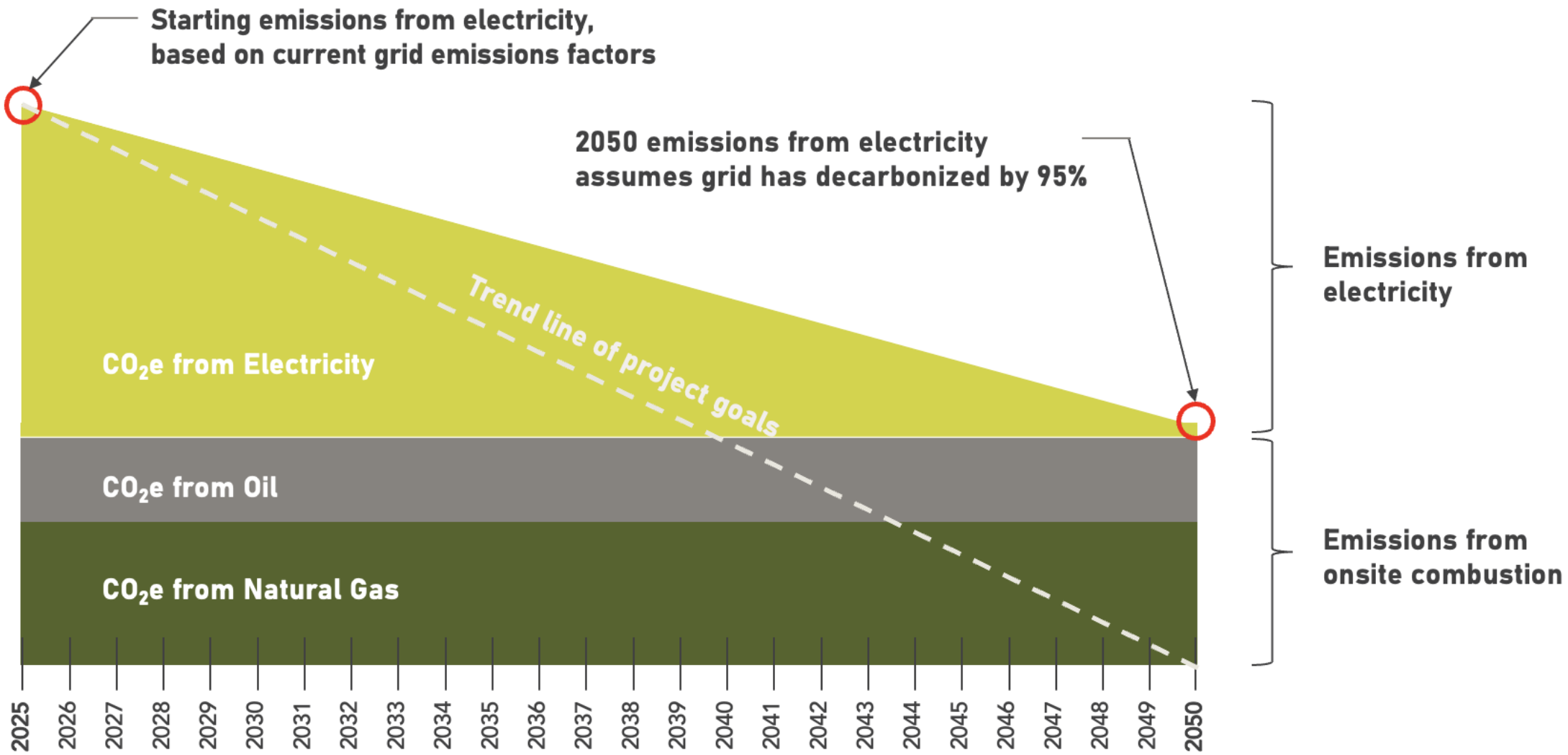
INDUSTRY VERY FAMILIAR WITH ENERGY

...CARBON NOT SO MUCH

MOST PROJECT TEAMS DON'T KNOW:

- Current carbon emissions from energy and how it will change as grid decarbonizes
- Their embodied carbon emissions
- Their annual emissions from refrigerants

LEED v5 PROVIDES BAU CARBON PROJECTIONS FROM ENERGY THROUGH 2050



Pre-reqs: Carbon Assessments & Projections

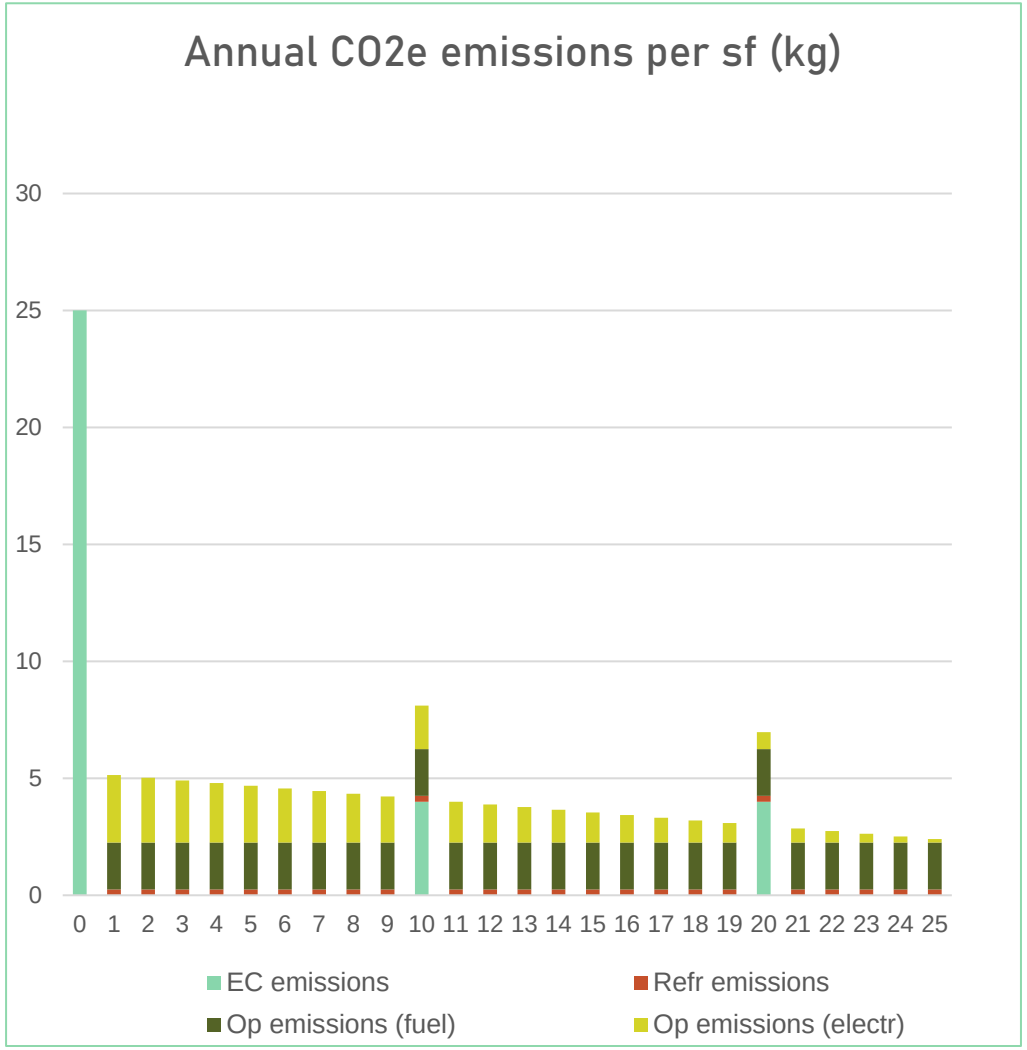
EA Prerequisite:
Operational Carbon Projection & Decarb Plan

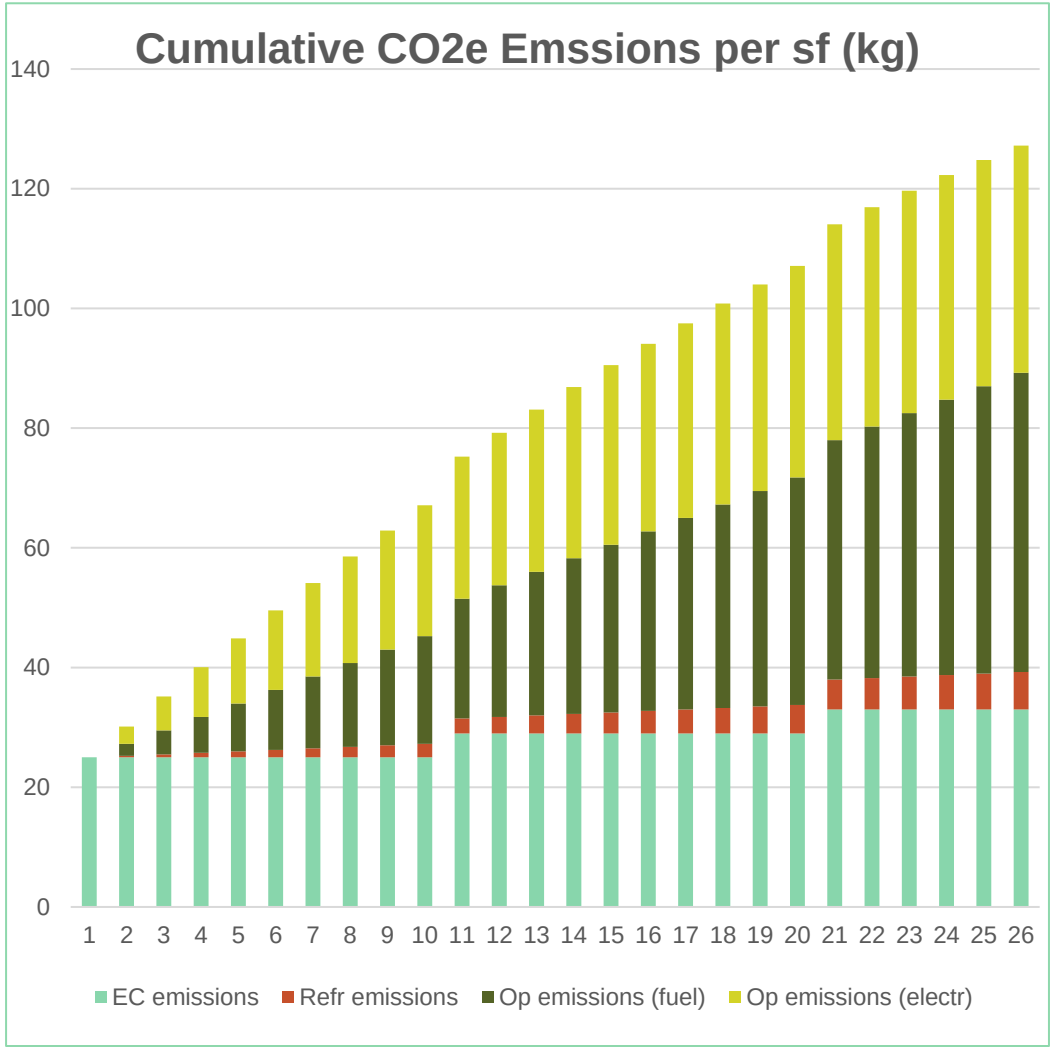
EA Prerequisite:
Tally refrigerant GWP

MR Prerequisite:
Tally GWP of upfront emissions from structure, enclosure & hardscape

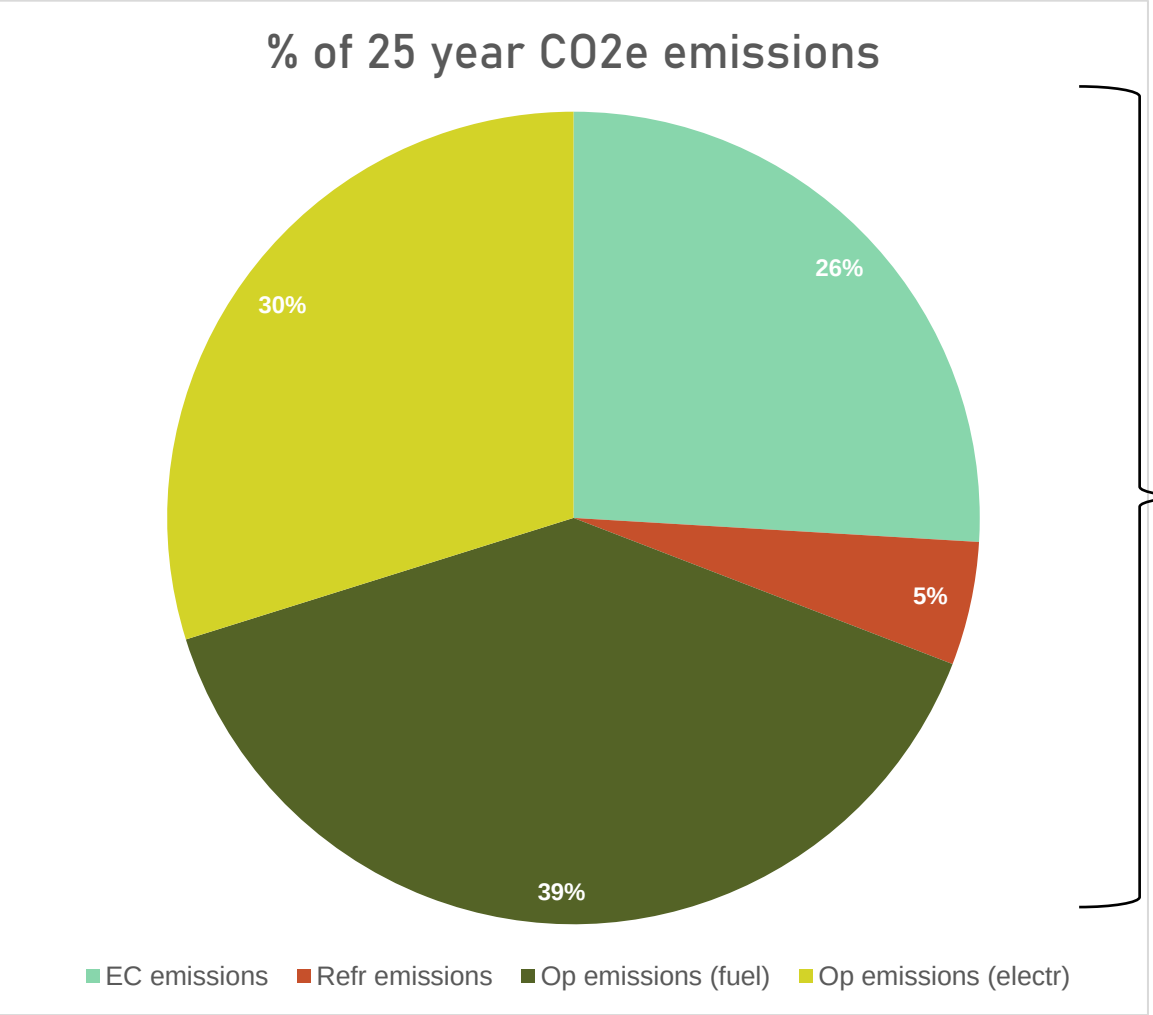
IP Prerequisite:
Carbon Assessment across Categories

LEED v5: CROSS-CATEGORICAL CARBON ASSESSMENT (25 YEARS)





LEED v5: CROSS-CATEGORICAL CARBON ASSESSMENT (25 YEARS)



Not a “Whole Building Life Cycle Assessment” (WBLCA),

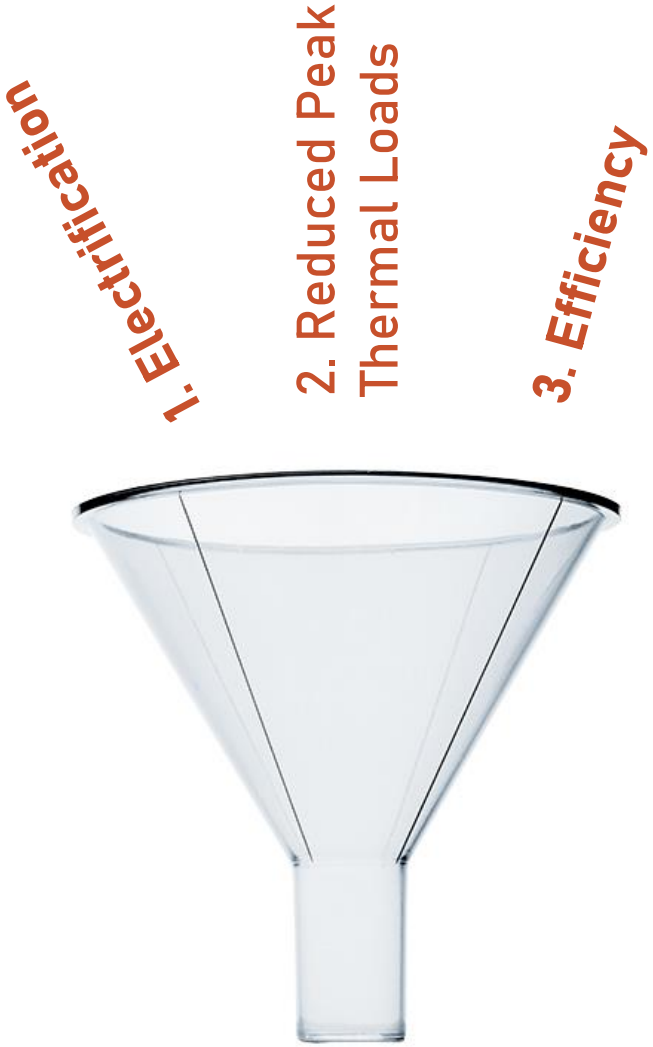
A ballbark assessment available free for all LEED v5 NC projects

2. RECIPE FOR NEW CONSTRUCTION

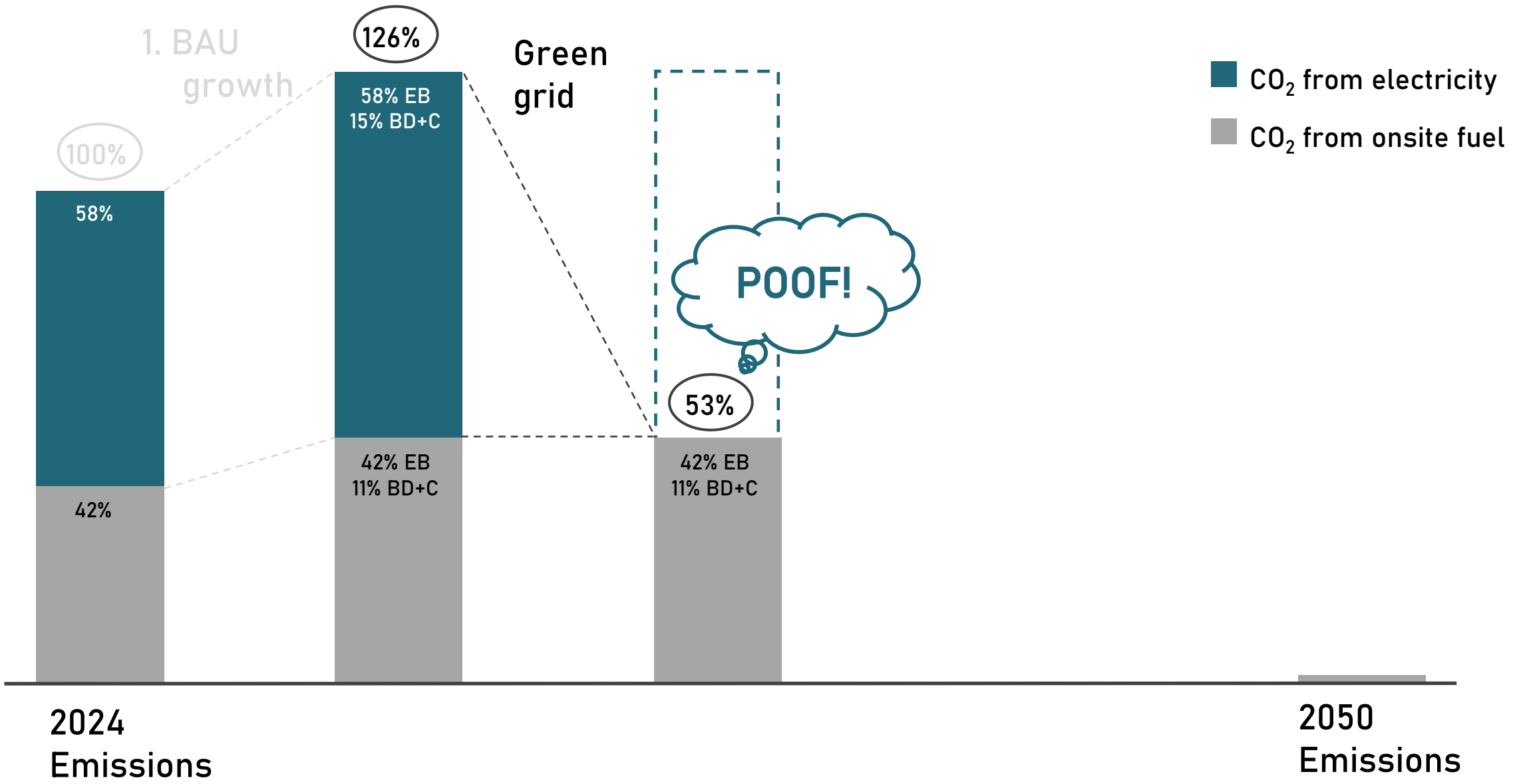
IT'S NOT ROCKET SCIENCE

...WE KNOW WHAT TO DO!

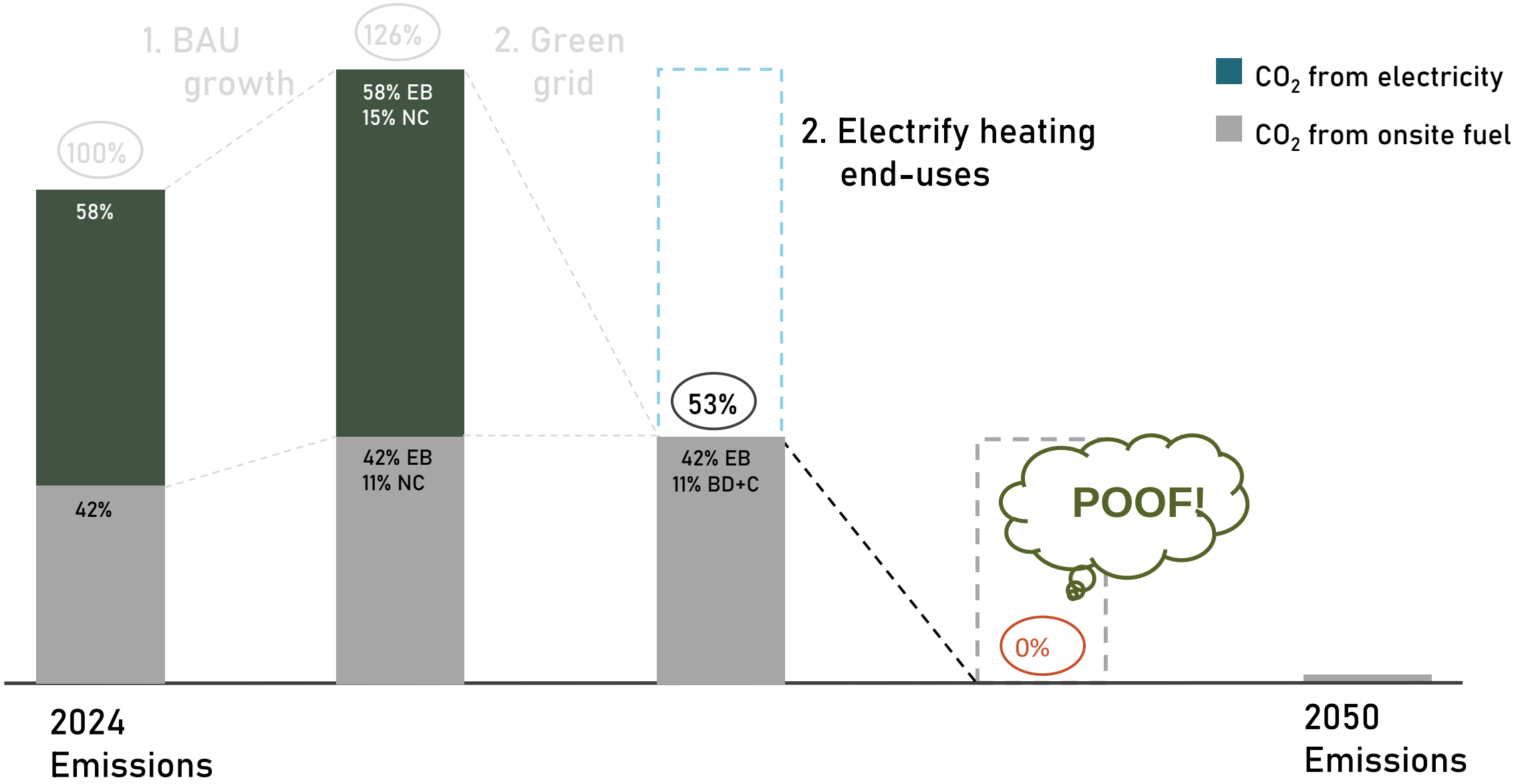
THE RECIPE HAS THREE MAIN INGREDIENTS:



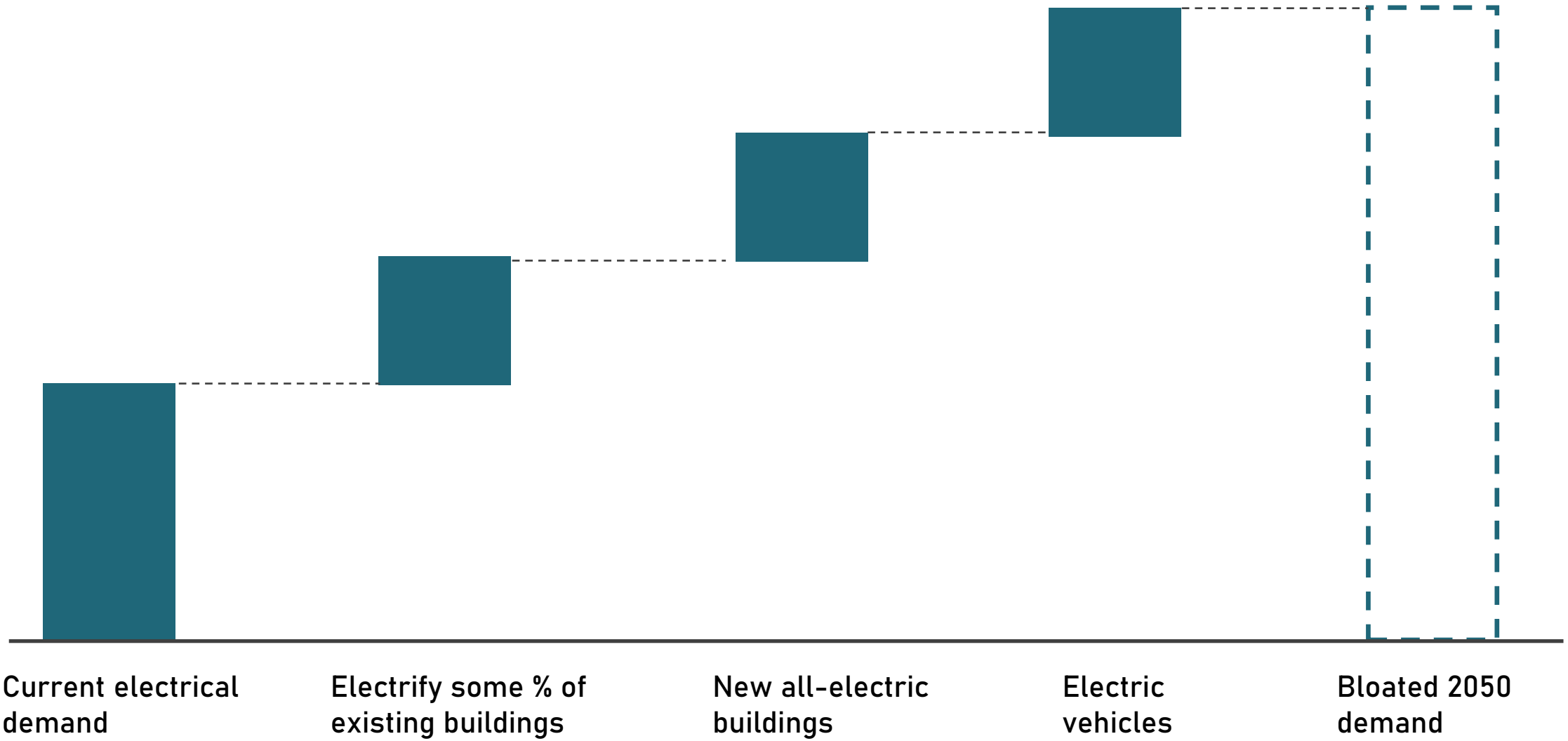
ELECTRIFICATION Emissions from electricity will vanish as grid decarbonizes



ELECTRIFICATION If we electrify heating end-uses, we can get to carbon neutrality



Without efficiency, electrical demand will balloon.
And the system will be unaffordable.

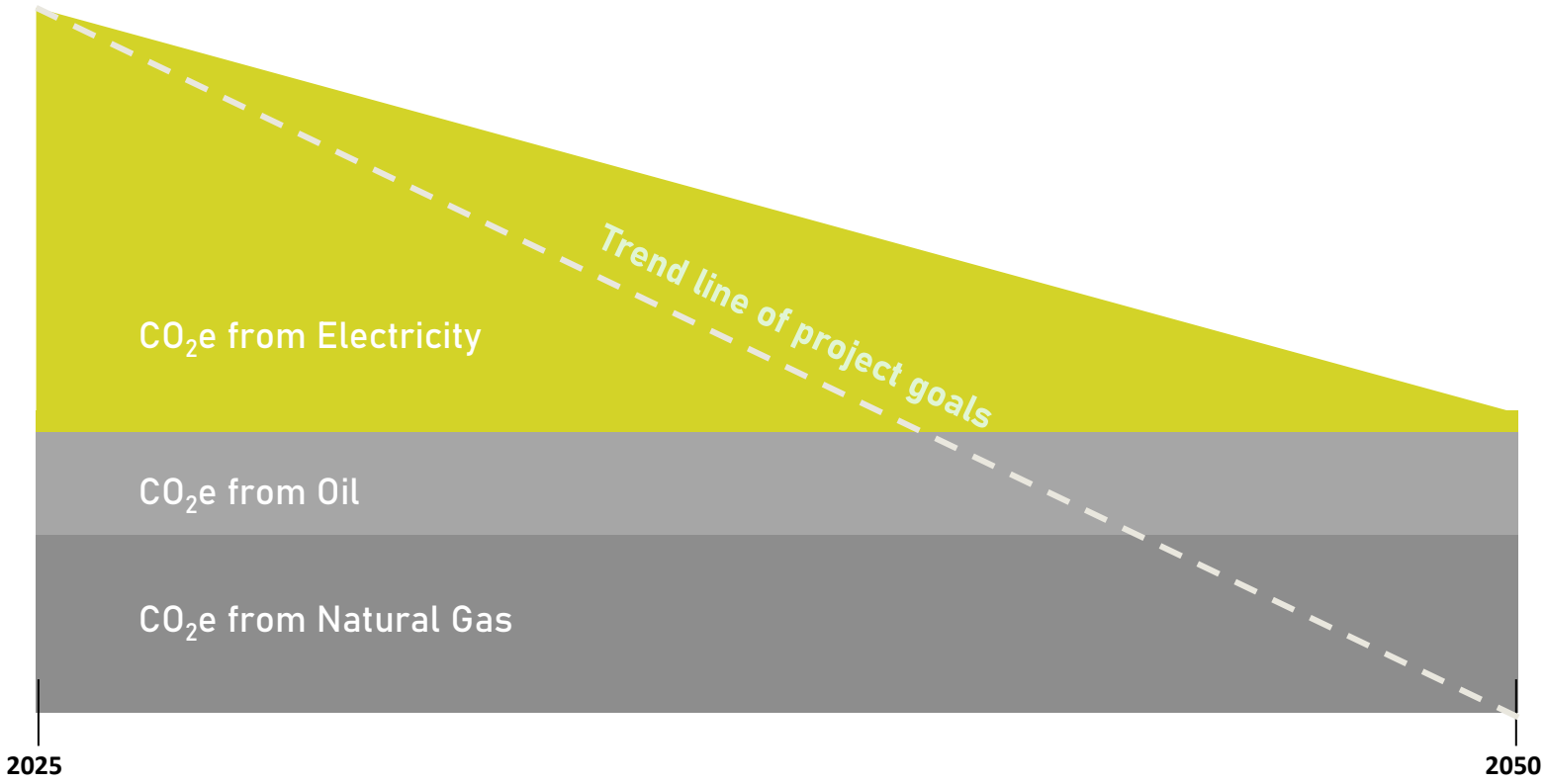


BUILDINGS CREATE THE PEAK...

When they all need heating or cooling at the same time. Reducing peak thermal load reins in peak demand.

EFFICIENCY STILL MATTERS.

- The grid is not yet carbon neutral &
- All energy contributes to the peak



THE RECIPE: NEW LEED v5 EA Credits

Electrification (5 plus 3)

- Designed for no onsite combustion > 20 F
  - Credits system-by-system
- Additional credit for no combustion
- 3 regional credits for cold climates

Reduce Peak Thermal Loads (6)

- Enhanced envelope and ventilation
  - Tighter envelopes
  - Ventilation heat recovery
  - Reduced thermal bridging
  - Reduced thermal peaks

THE RECIPE: UPDATED LEED v5 Credits

Enhanced Energy Efficiency (10)	Renewable Energy (5)	Enhanced / Ongoing Commissioning (4)	Grid Interactive (2)	Enhanced Refrigerant Management (2)

• Prescriptive and performance paths
• More focus on plug loads
	• Tiers 1, 2, and 3 as in v4.1
	• New options:
	  ○ Area based for onsite
	  ○ Located on equity site
		• Enhanced Cx for HVAC & Envelope
		• Monitoring-based-commissioning developed with DOE
		  ○ EIS and/or FDD
		  ○ Includes tech, process, & communications
			• Energy Storage
			• Demand Response
			• Power Resiliency
				• Low and ultra-low GWP refrigerants
				• Reduced leakage rates

A FIRST FOR V5:

PLATINUM CARBON REQUIREMENTS

- ELECTRIFIED ABOVE 20° F
- ENHANCED ENERGY EFFICIENCY
- 100% RENEWABLE ENERGY
- 20% REDUCTION IN EMBODIED CARBON

3. DECARBONIZATION PLANS FOR EXISTING

NEW 4-POINT CREDIT for STRATEGIC DECARBONIZATION PLAN

PLAN TO DECARBONIZE OVER 20 YEARS:

- Meet electrification and efficiency hurdles
- Follow explorative process
- Commit to 5-year capital plan

Required reductions for Strategic Decarbonization Plans (SDP)

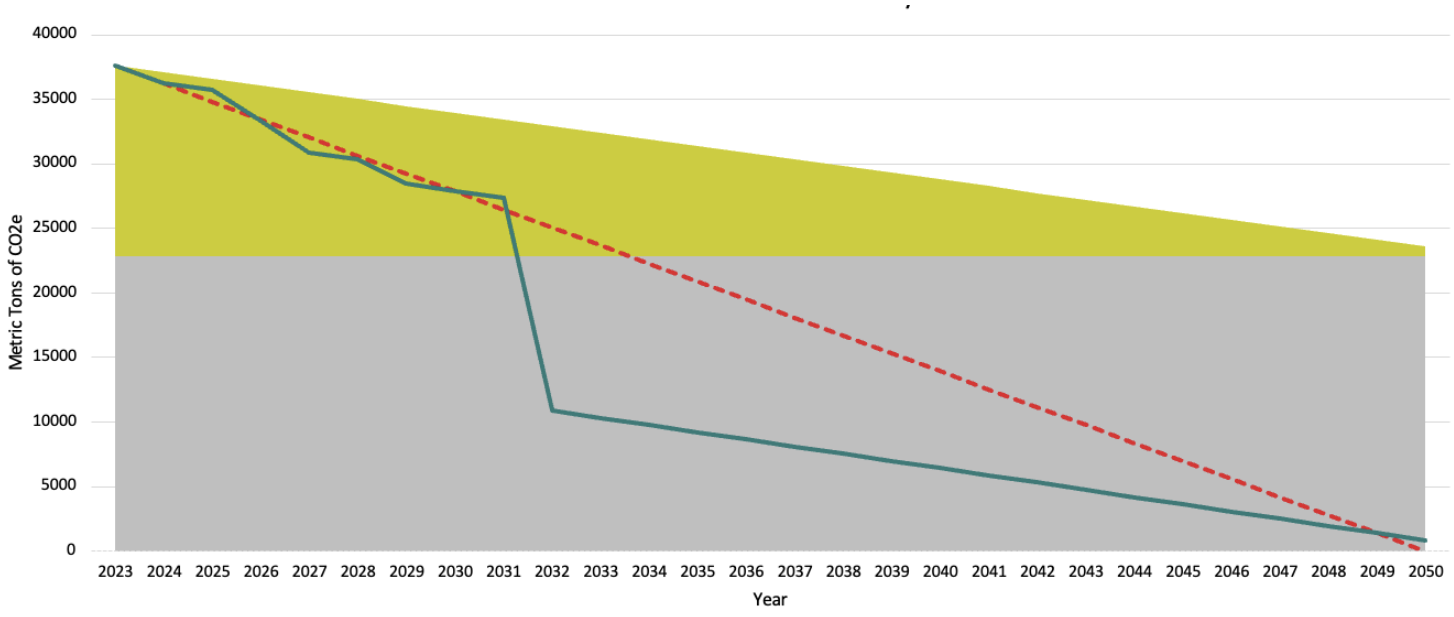
Points	Reduction of onsite combustion	Reduction of site energy
2	≥ 50%	≥20%
3	≥75%	≥25%
4	100%	≥30%

RESOURCES for STRATEGIC DECARBONIZATION PLANS

Guide for Strategic Decarbonization Planning

USGBC SDP Workbook

- Standardization of input information
- Visualization of Plans
- To be accessed on USGBC website



QUESTIONS?

THANK YOU.