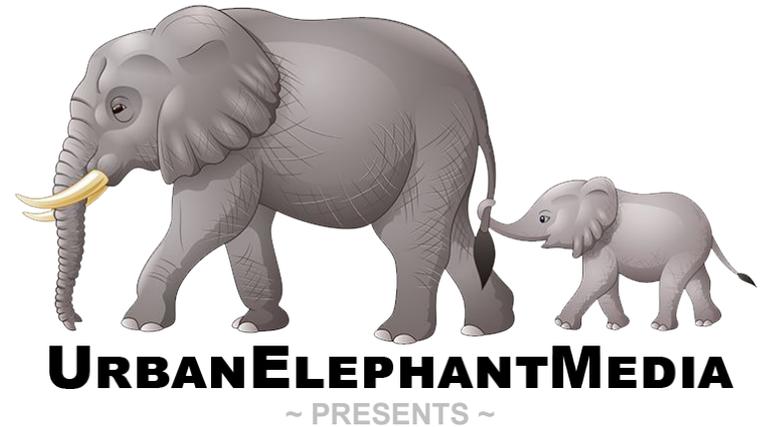


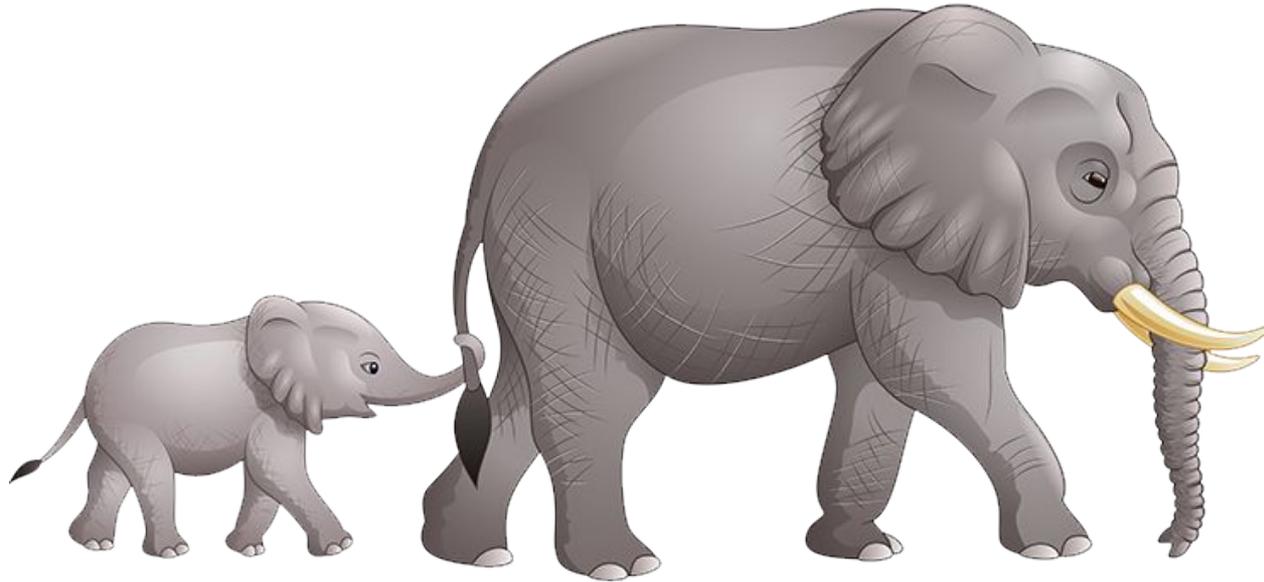
Tuesday, February 20,
2024



A Blueprint To Decarbonize Your Real Estate Portfolio

Featuring Simon Fowell and Nicolette Sanfilippo

Sponsored by Autocase



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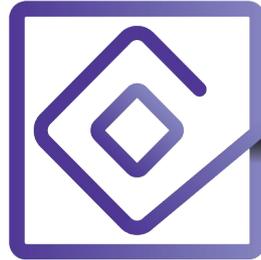
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Randy Rodgers, Director of Big
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Our Presenters



Nicolette Sanfilippo
*Director of Portfolio
Sustainability Strategy*
Stok



Simon Fowell
*Director of Customer
Success*
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A Blueprint to
Decarbonize your
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Do you need a blueprint for your real estate to become greener?

This guide offers a step-by-step repeatable process to move from GHG targets to GHG reduction across your building portfolio - whether it's for a campus or across the globe.

Name

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STEP 01

Identify risks of not decarbonizing



STEP 02

Quantify baseline emissions



STEP 03

Set SMART carbon reduction targets



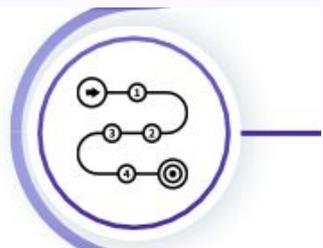
STEP 04

Identify CO2 reduction measures



STEP 05

Create a prioritized action plan to decarbonize



STEP 06

Implement & adapt the plan



STEP 07

Track, report, and communicate



STEP 08

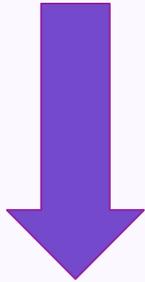
Repeat



Step 1. The risks of not decarbonizing

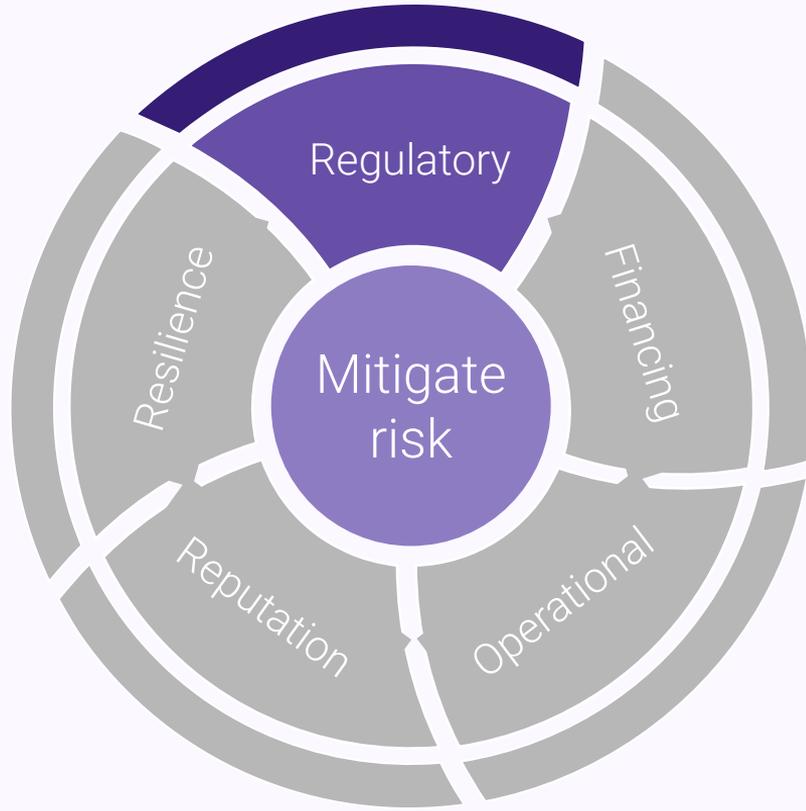
5 key risks leading to the brown discount

“What’s the cost of decarbonizing?”



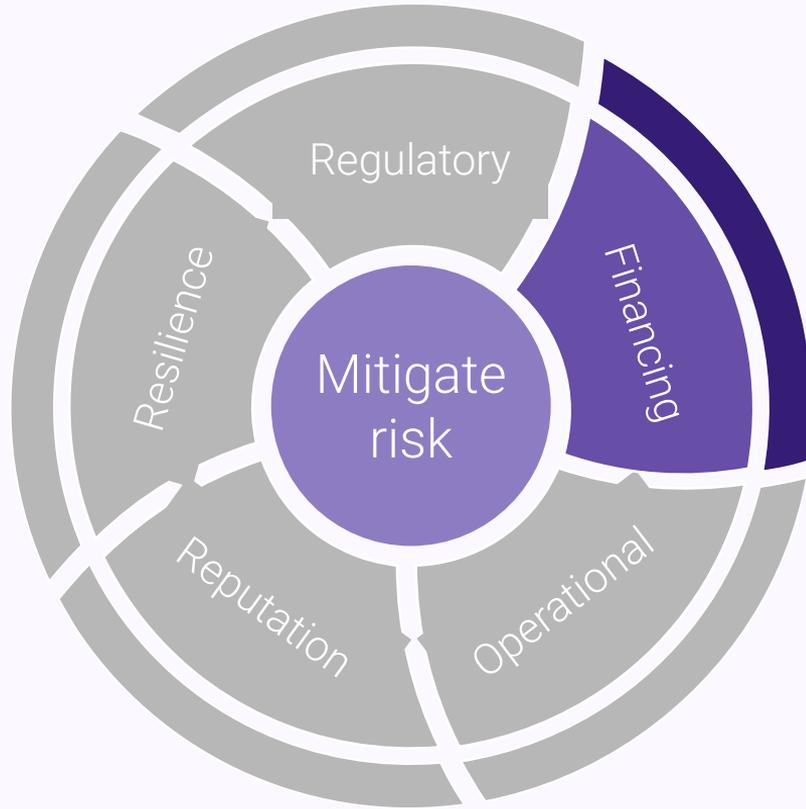
“What’s the cost of *not* decarbonizing?”





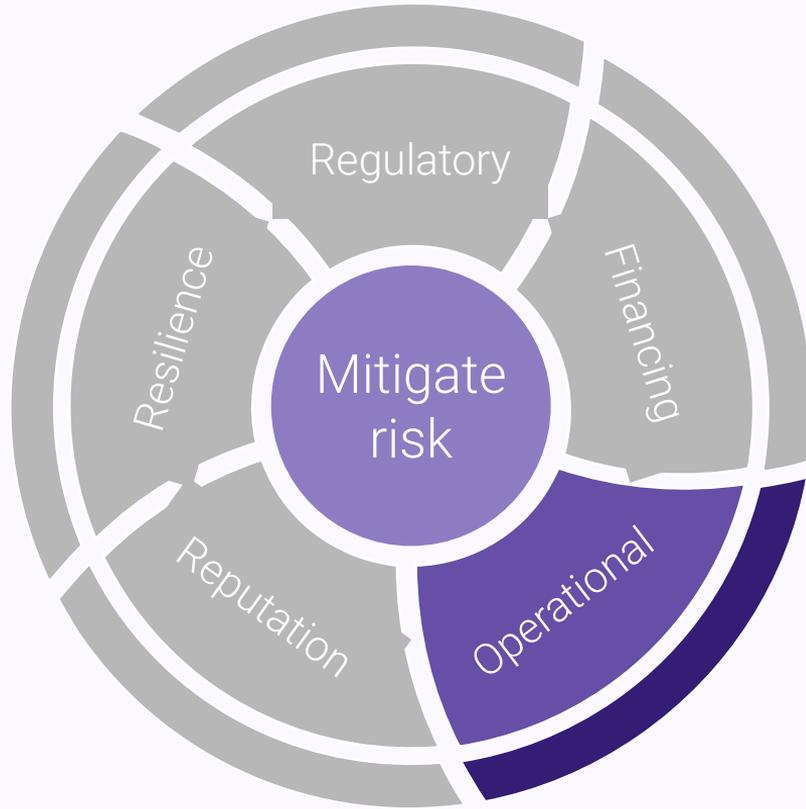
Local building energy performance standards & penalties.

You have to do it sooner or later.



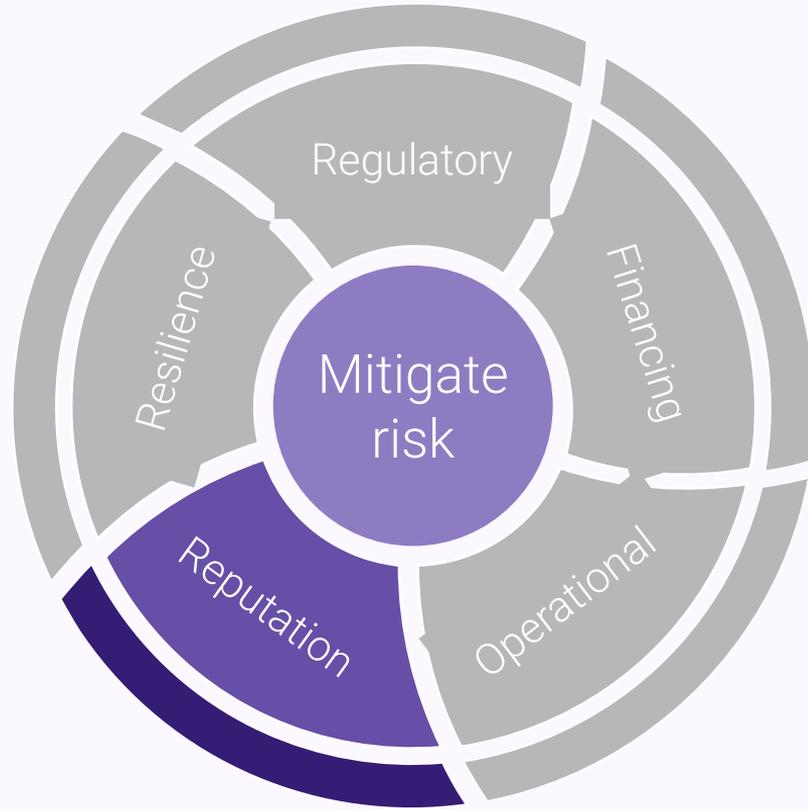
ESG reporting requirements to show meaningful action.

Investors & clients are asking:
“What are you doing to decarbonize?”

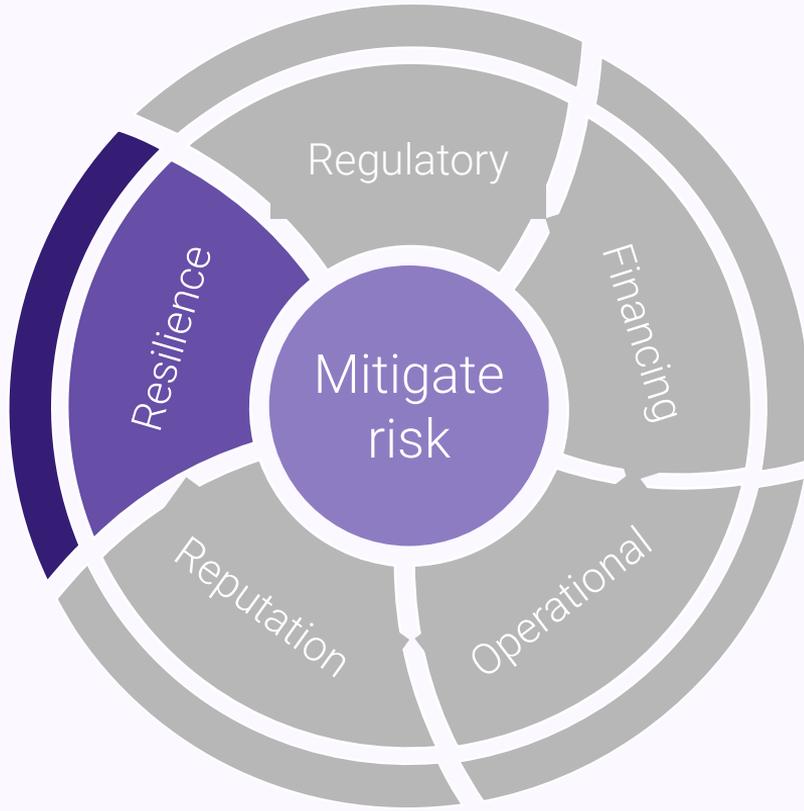


Fluctuating energy prices.

Less maintenance.



Occupancy and retention.
Climate-savvy consumers.



Reduced down-time from shocks.



Where, what, when (& how long), & how big



Step 2. Quantify baseline emissions

The importance of baselining

You can't manage what you don't measure.

Conduct a GHG inventory / carbon audit.

Follow existing protocols e.g.

- US EPA Greenhouse Gas Reporting Program (GHGRP)
- Greenhouse Gas Protocol from World Resources Institute (WRI) & World Business Council for Sustainable Development (WBCSD)
- ISO 14067:2018 Carbon footprint of products – Requirements and guidelines for quantification

Bucket by scope

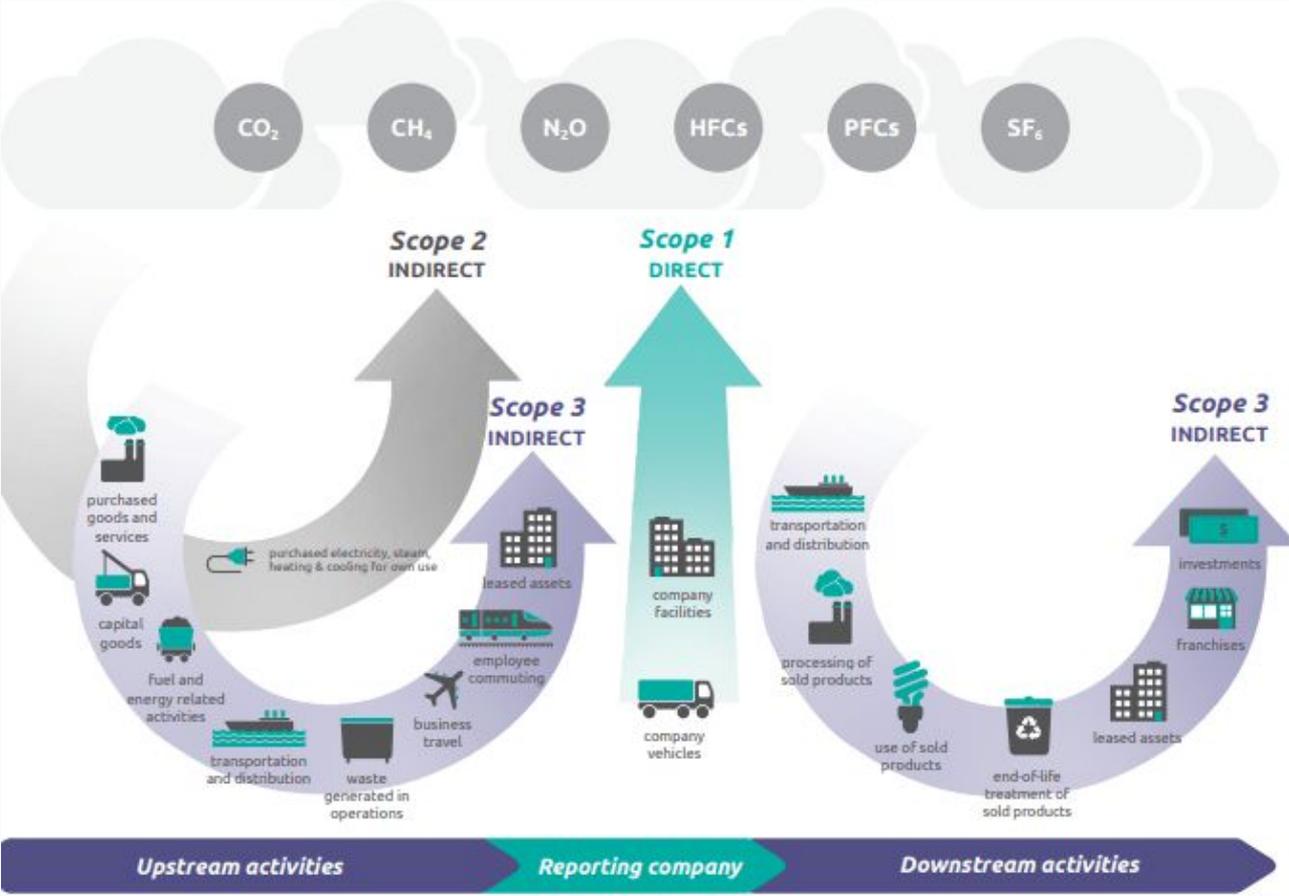
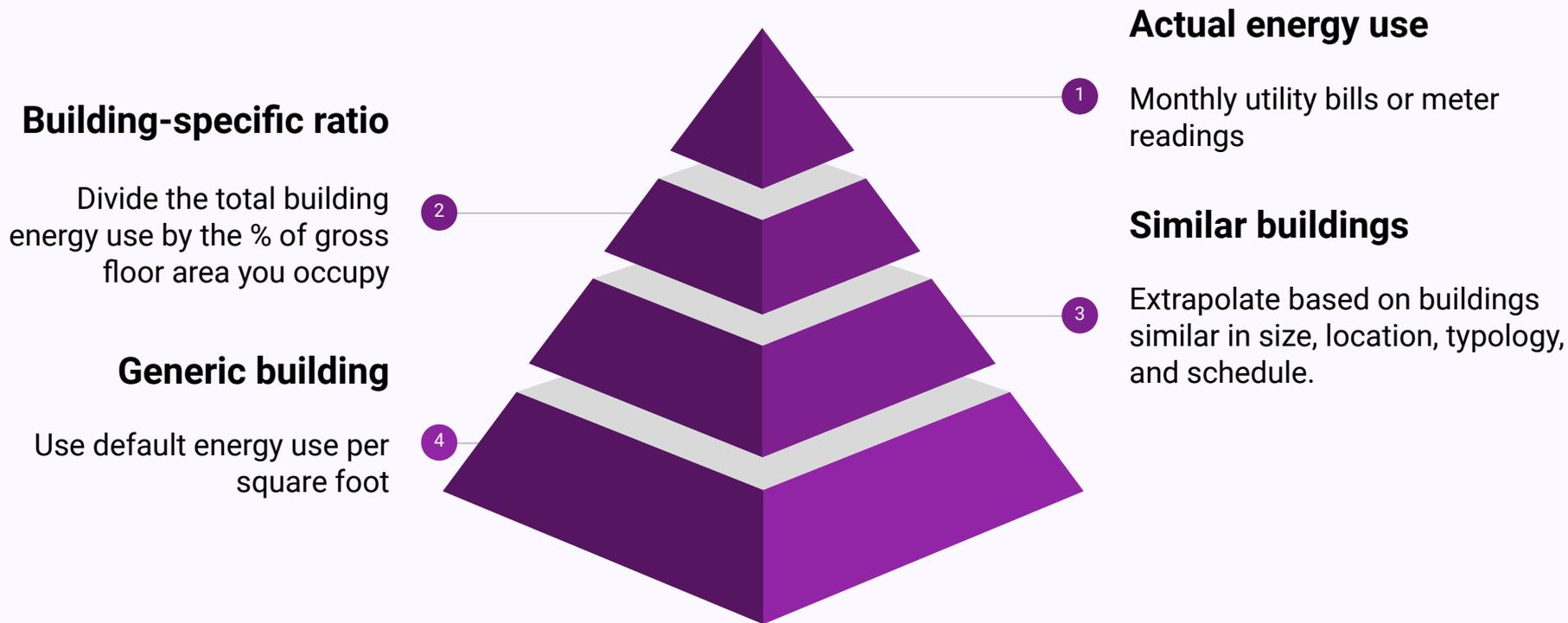


Image Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard

Find energy data and fill gaps the right way



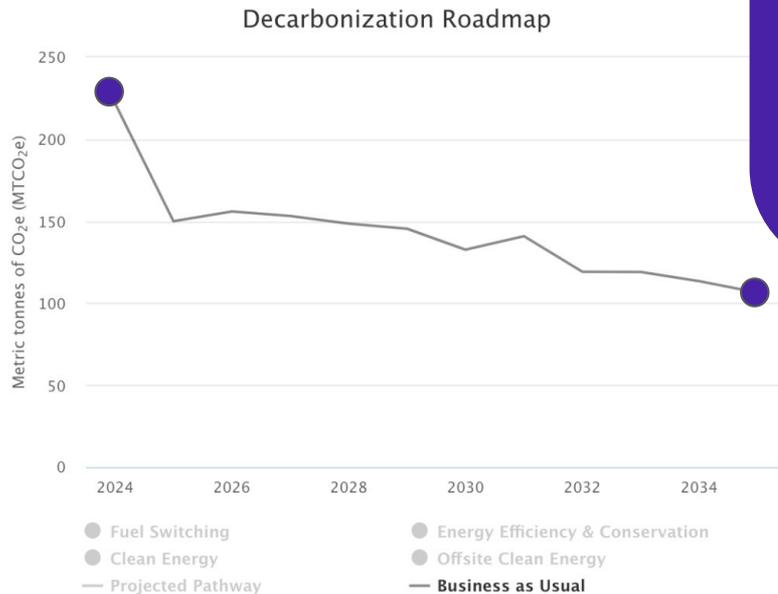
📍 9901 Home Ave, Hanford, California, 93230 + Add Property

- ← Back Edit 🗑️
 - 📍 Info & Energy Profile
 - 📊 Property Measures
 - 📈 Results**
 - ⚙️ Advanced Settings
- Last Updated: Fri Jan 12 2024

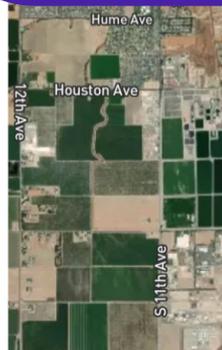
📈 Property Results

Decarbonization Pathway

By Measure Type By Scenario



Energy →
Baseline CO₂ now
using local grid
emission factors
→ Business as
usual projection
as grid changes



Step 3. Set SMART targets

Why you need to set a SMART carbon target

S	Specific	<ul style="list-style-type: none">• Define exactly what you are trying to accomplish
M	Measurable	<ul style="list-style-type: none">• You need to be able to verify you've actually achieved it
A	Achievable	<ul style="list-style-type: none">• Set a target you can actually reach
R	Relevant	<ul style="list-style-type: none">• Align it to your long-term objectives as a company
T	Time-bound	<ul style="list-style-type: none">• Nothing happens without a deadline



“Reduce absolute operational Scope 1 and 2 CO₂e emissions from our North American facilities by 50% relative to 2019 by 2030.”



“Reduce emissions by 80%”



Absolute vs. intensity-based goals

Absolute

Reduce GHG emissions by a discrete amount

E.g. Reduce total emissions 50% by 2030 vs. 2019.

Actually tackles carbon reduction

Intensity-based

Sets a goal relative to an economic or operational metric

E.g. Reduce...

- kgCO₂e/\$ in revenue,
- kgCO₂e/sq ft,
- kgCO₂e/widget made,
- etc.

...50% by 2030 vs. 2019.

Doesn't restrict growth potential

Step 4. Identify decarbonization strategies

The levers you can pull

Energy efficiency and
conservation measures

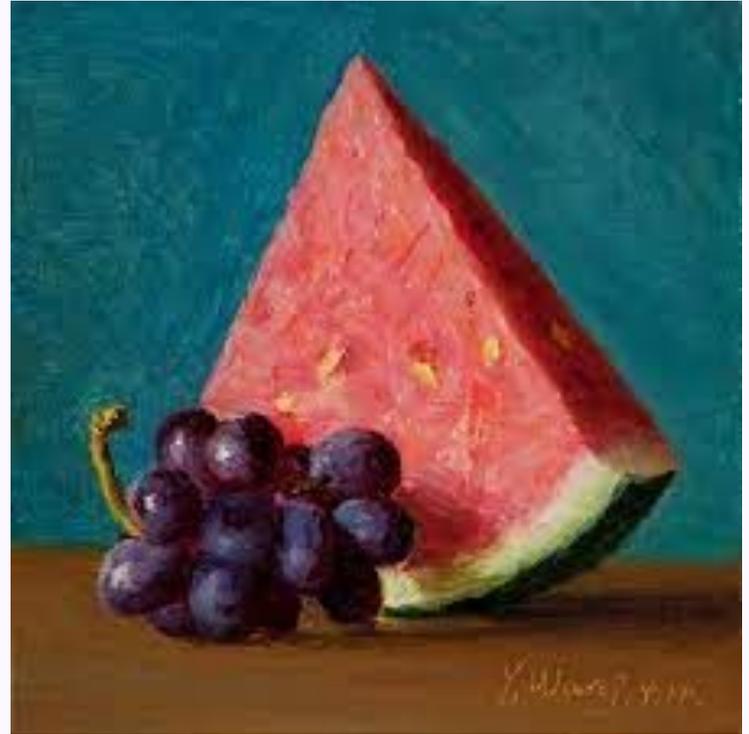
Fuel switching /
electrification

Decarbonizing the
supply of energy

Low hanging fruit

‘A slice of watermelon is still bigger than a bunch of grapes’.

80-20 rule.



Which buildings to focus on

EUI

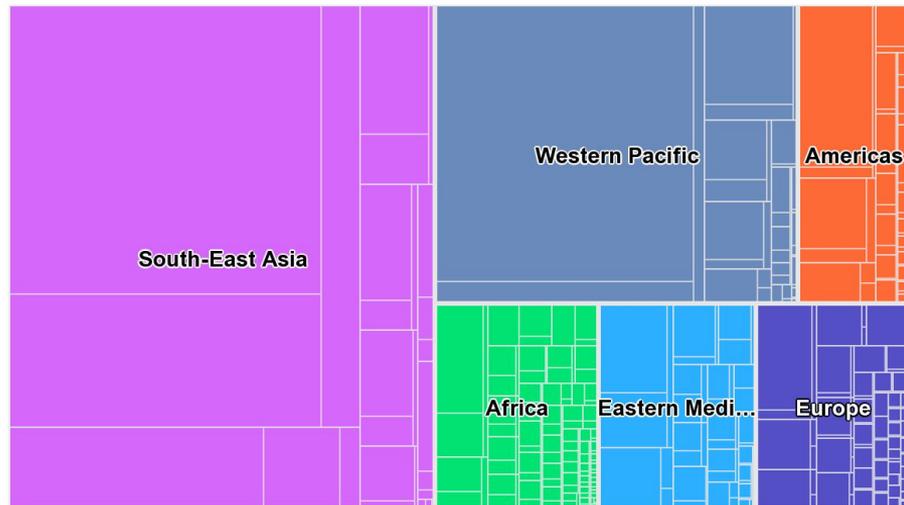
Explore Further

High Priority

Low Priority

Explore Further

Size



Start with high level strategy

Autocase Insights

Location  Boston 

Energy Reduction Analysis

Location: Boston 150,000 ft²

Commercial

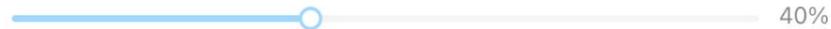
Industrial

Residential

 Baseline annual electricity consumption: **2,425,707 kWh**

 Baseline annual natural gas consumption: **6,224 MMBtu**

 Targeted electricity percent reduction from base case



 Targeted natural gas percent reduction from base case



 Building electricity needs supplied by onsite renewables



 Building natural gas needs supplied by onsite renewables



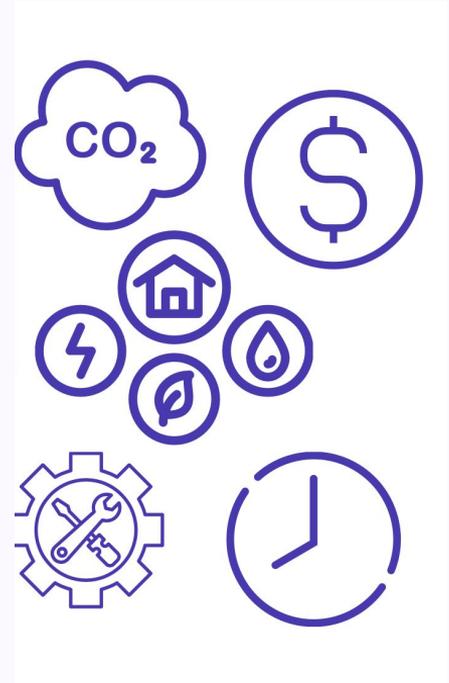
Create a list of all potential decarbonization measures

Energy audits + technical team.

Not always possible → creative solutions.

For each building, you should have the following information on each measure:

- ✓ Impact on energy use for each fuel source
- ✓ When it would be implemented
- ✓ Upfront cost
- ✓ Any maintenance cost impacts
- ✓ Expected utility savings
- ✓ Annual change in CO₂



Retrofit Packages - Hot & Dry Climate Zone | Energy Related Process improvements | 9901 Home Ave, Hanford, California, 93230

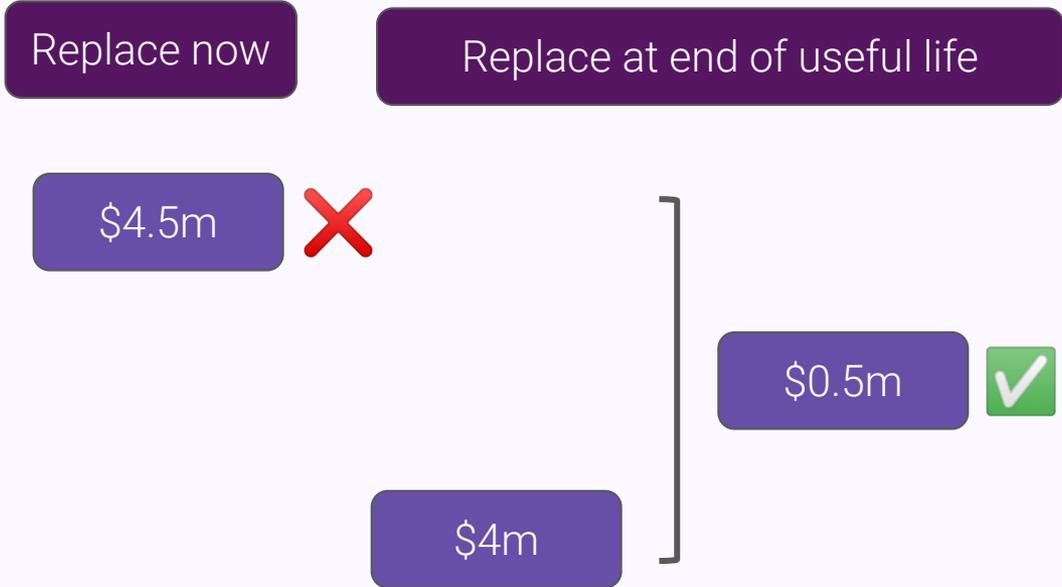

[Edit](#)

Options represent alternatives being explored for a particular measure. Create a new option, or edit previously created ones. If you have created options that require the EnergyPlus simulation engine to run TBD will be displayed until the model has been run. Once run the impact shown in the options table reflects the single measure impact, and synergies of selected measures for a single property are considered in the final roadmap results once all property options are selected.

[← Back](#)

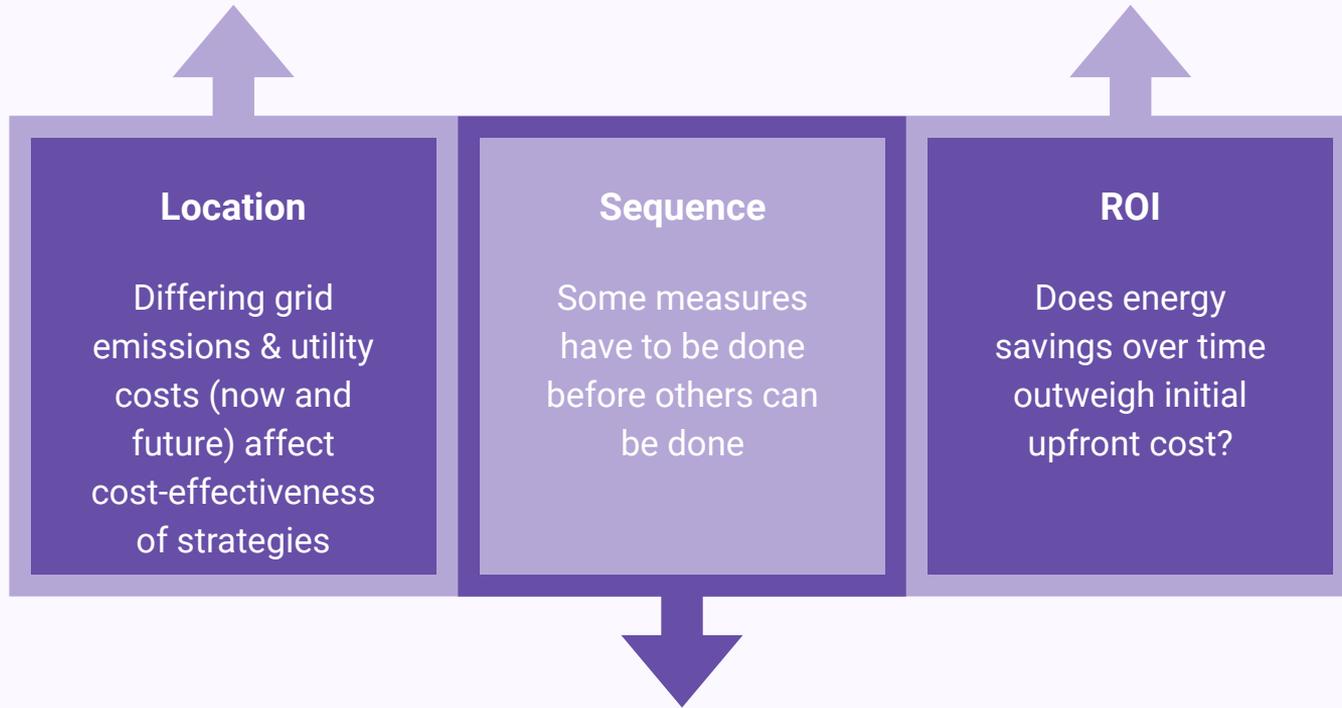
<input type="checkbox"/>	Option Name	Option Type	Energy Type	EUI Amount Saved		Annual Energy Reduction	Year	Capital Cost	
				kBtu/year/ft ²	kBtu/year				
<input type="checkbox"/>	Standard Retrofit	Modification/RetroCommissioning	Electricity	4.26	446,110.98	9 Percent	2027	\$190,490.30	
			Natural Gas	0.60	62,772.30	9 Percent			
<input type="checkbox"/>	Deep Retrofit	Modification/RetroCommissioning	Electricity	8.52	892,221.96	18 Percent	2027	\$433,313.10	
			Natural Gas	1.33	139,494.00	20 Percent			

Options & timing



Step 5. Create a prioritized action plan to decarbonize

Things to consider



Energy Efficiency Measures									
Measure	Property Name	Apply To Roadmap	Option	Type	Net Savings (\$)	CO2 Saved	\$ per kBtu Saved	Capital Cost	Application Year
Retrofit Packages - Cold Climate Zone	403 Polczinski Cir, Oconto Falls, Wisconsin, 54154	<input type="checkbox"/>	Standard Retrofit	Modification/RetroCommissioning	-\$36,920.10	314.62	\$0.03	\$186,620.49	2026
		<input checked="" type="checkbox"/>	Deep Retrofit	Modification/RetroCommissioning	-\$86,404.23	756.97	\$0.03	\$406,812.92	2026
On-site Solar	921 W. Thatcher Boulevard, Safford, Arizona, 85546	<input checked="" type="checkbox"/>	80% on-site solar	Addition	\$200,593.39	332.60	\$0.00	\$118,424.00	2027
EBCx - Hot & Dry Climate Zone	921 W. Thatcher Boulevard, Safford, Arizona, 85546	<input checked="" type="checkbox"/>	Existing Building Commissioning (EBCx)	Modification/RetroCommissioning	\$95,164.29	157.85	\$0.00	\$18,355.72	2025
On-site Solar	194 Red Eye Ln, Defuniak Springs, Florida, 32433	<input type="checkbox"/>	50% on-site solar	Addition	\$48,329.56	97.73	\$0.00	\$21,210.00	2027
		<input checked="" type="checkbox"/>	80% on-site solar	Addition	\$103,729.11	195.46	\$0.00	\$35,350.00	2027
EBCx - Hot & Humid Climate Zone	100 Piper Cir, Princeton, Louisiana, 71067	<input checked="" type="checkbox"/>	Existing Building Commissioning (EBCx)	Modification/RetroCommissioning	\$66,086.60	196.73	\$0.01	\$36,107.87	2025
On-site Solar	308 Byers Avenue, Hot Sulphur Springs, CO 80451	<input checked="" type="checkbox"/>	50% on-site solar	Addition	\$113,561.69	656.48	\$0.00	\$263,601.00	2027
		<input type="checkbox"/>	25% on-site solar	Addition	\$24,480.83	177.74	\$0.00	\$87,867.00	2028
EBCx - Marine Climate Zone	15870 Pedrioli Dr, Brookings, Oregon, 97415	<input checked="" type="checkbox"/>	Existing Building Commissioning (EBCx)	Modification/RetroCommissioning	\$34,184.08	60.86	\$0.01	\$21,597.08	2025
On-site Solar	15870 Pedrioli Dr, Brookings, Oregon, 97415	<input checked="" type="checkbox"/>	50% on-site solar	Addition	\$127,014.46	164.94	\$0.00	\$139,336.00	2027
On-site Solar	15870 Pedrioli Dr, Brookings, Oregon, 97415	<input type="checkbox"/>	25% on-site solar	Addition	\$24,480.83	177.74	\$0.00	\$87,867.00	2028

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📍 Info & Energy Profile

📄 Property Measures

📊 Results

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📊 Property Results

View Settings:

kBtu

kWh

📊 Chart View

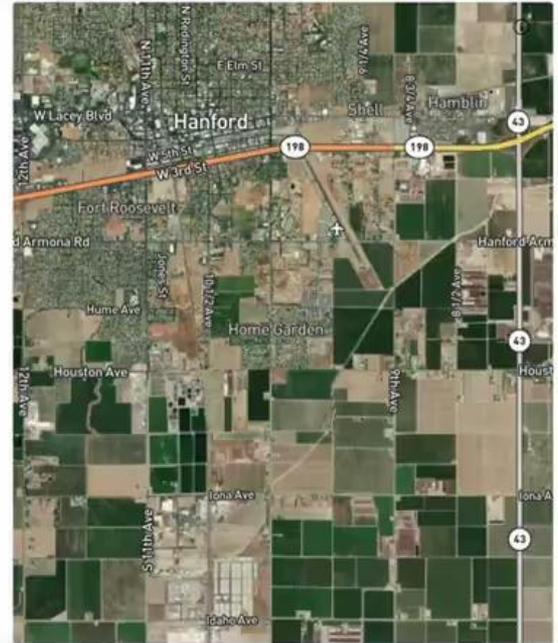
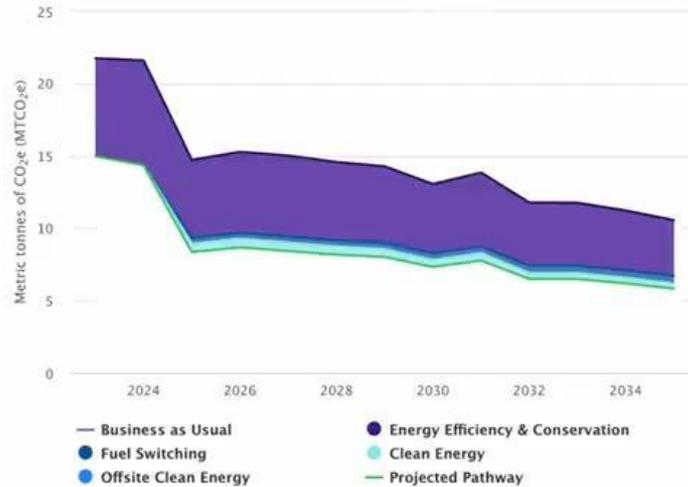
📄 Table View

Decarbonization Pathway

By Measure Type

By Scope

Decarbonization Roadmap



Step 6. Implement & adapt the plan



Get buy-in for your capital plan

Build the business case so it's part of the capital plan and budget for each property.

Work with your building managers, facilities teams, and consultant teams to put the plan into action.

Update and adapt

- As you implement measures, check it off your decarbonization plan.
- If things change, reassess your plan.
 - Budgets, acquisitions, dispositions, delays, utility rates, emission factors.
- Make sure you're still going to meet your goal.

Step 7. Track and report progress



Track

Use tracking tools to help see how you're performing against your intended goals

Report

GRI, SBT, SASB, TCFD, CDP, GRESB

Communicate

Share successes and be honest about areas for improvement

Step 8. Repeat



STEP 01

Identify risks of *not* decarbonizing



STEP 02

Quantify baseline emissions



STEP 03

Set SMART carbon reduction targets



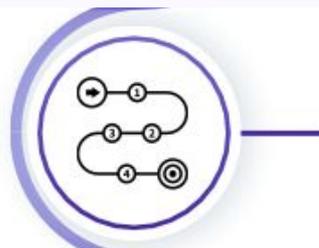
STEP 04

Identify CO2 reduction measures



STEP 05

Create a prioritized action plan to decarbonize



STEP 06

Implement & adapt the plan



STEP 07

Track, report, and communicate



STEP 08

Repeat



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Questions:

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