

CaGBC Vertical Neighbourhoods Summit

THE FUTURE (OF BUILDINGS) IS CARBON POSITIVE



What is the Cost of Carbon Neutral?

The Financial and Technological Pathway for a 30-Storey High Rise

3.6%

Capital Cost Premium to Achieve
Zero Carbon Ready (TGS Tier 4)

\$5,750

Annual Cost to Purchase
Renewable Energy Certificates

Triple Glazing + Thermal Breaks + Airtight Envelope + Heat Pumps + Peak Electric Boiler

The Pathway to Carbon Positive

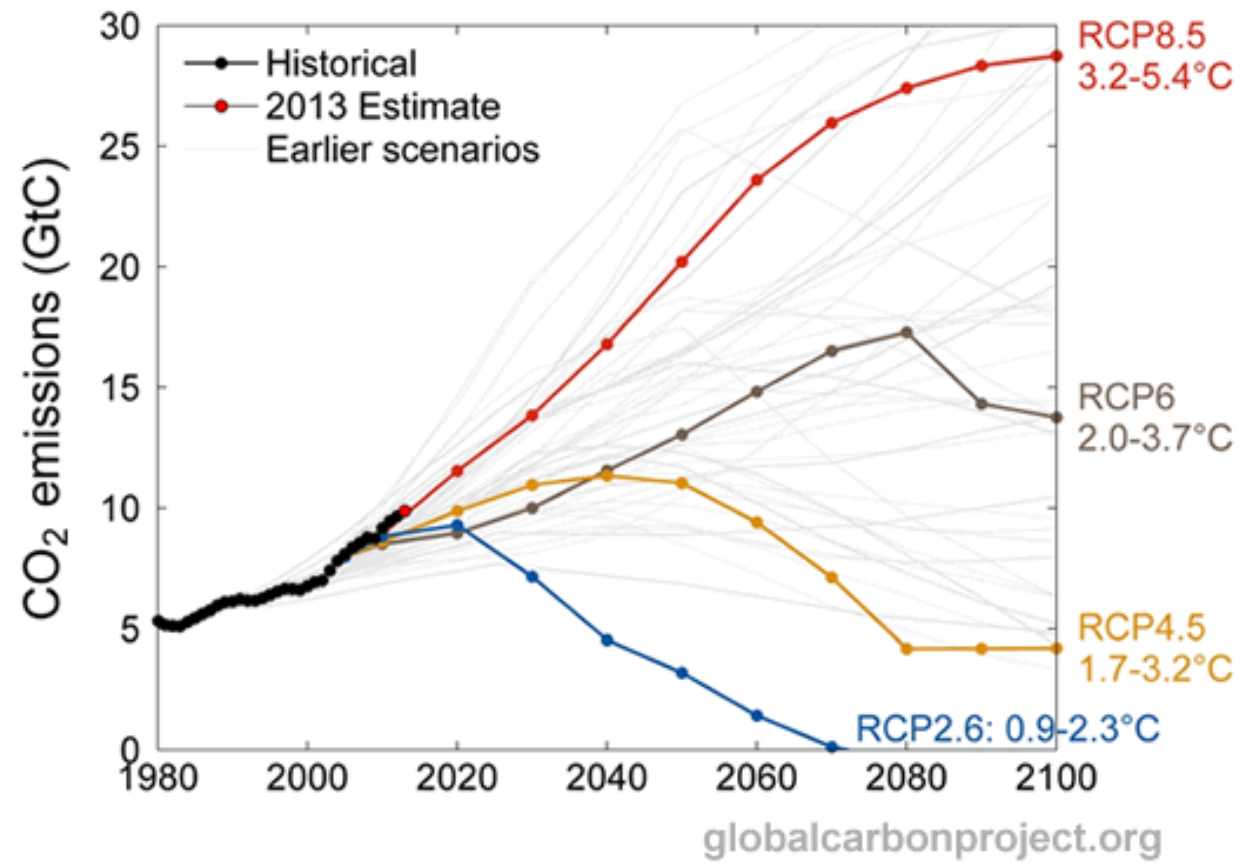
WHAT OTHER QUESTIONS SHOULD WE ASK?



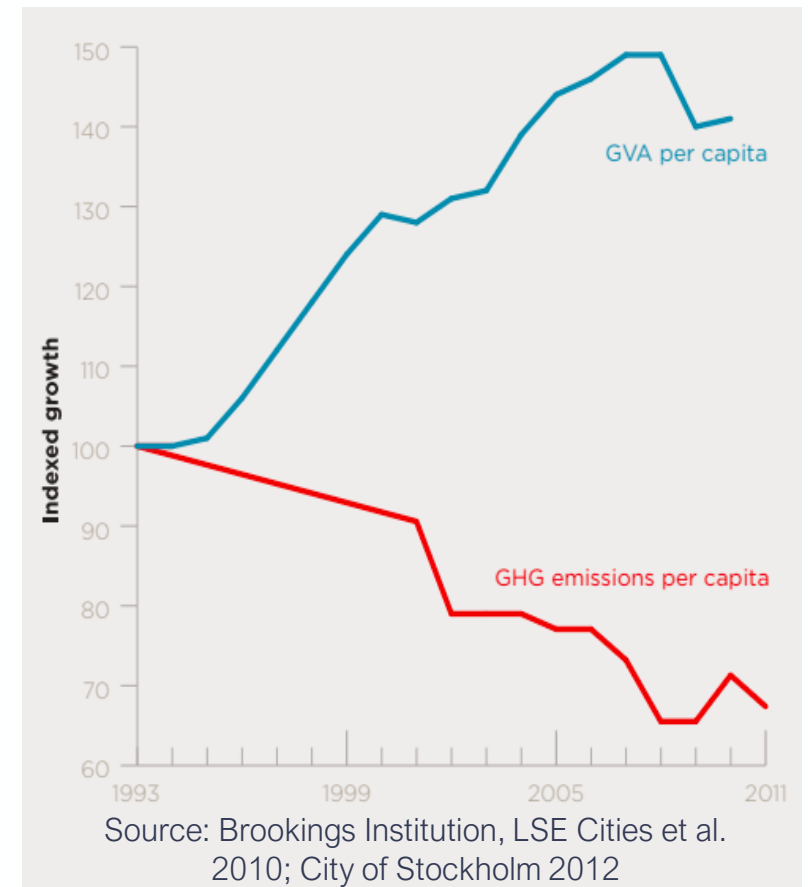
Where do you see yourself in 2030?

What is your destination? How quickly do you want to get there?

Observed Emissions and Future Scenarios



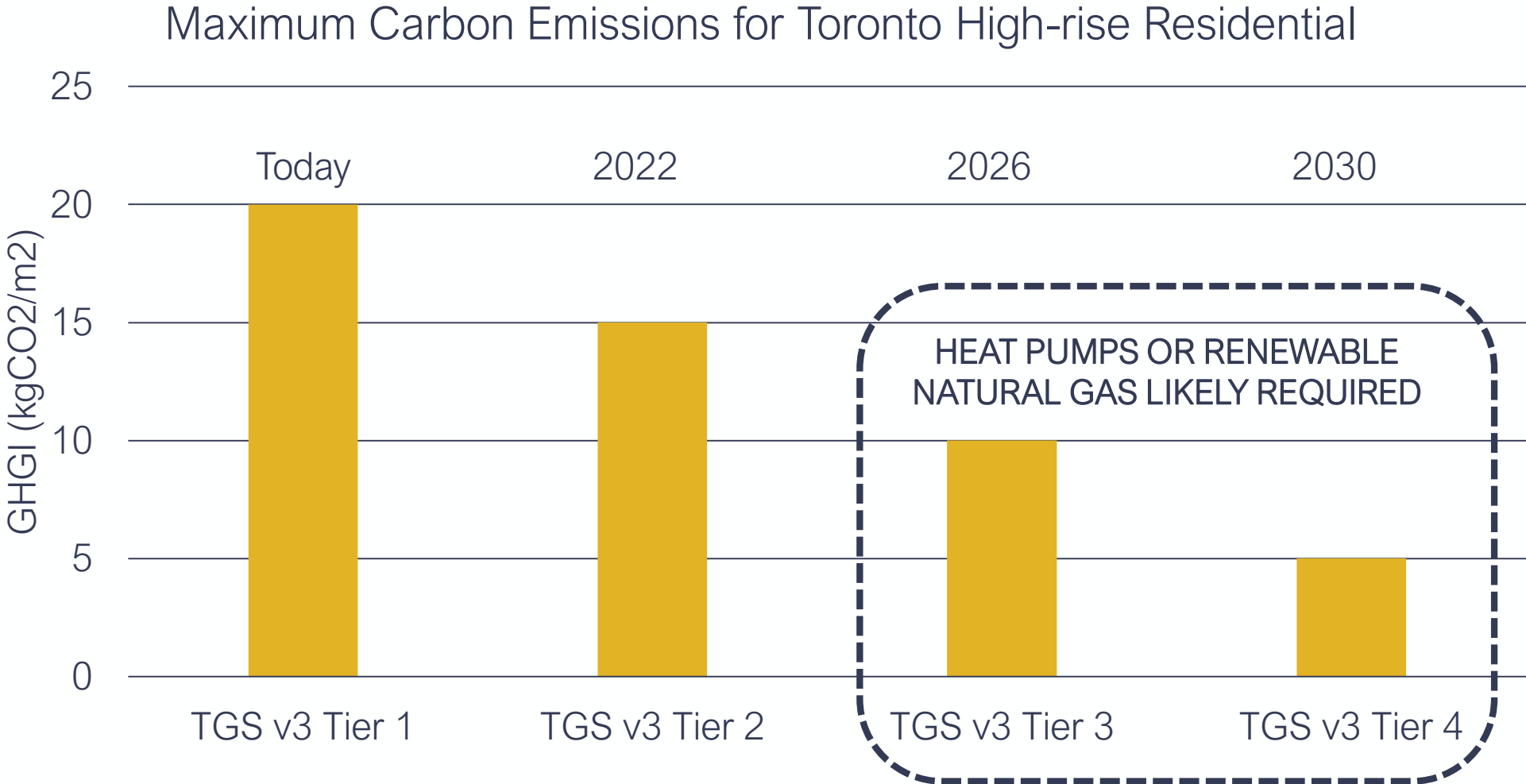
Decoupling Emissions from Economic Growth





Regulatory Forecast

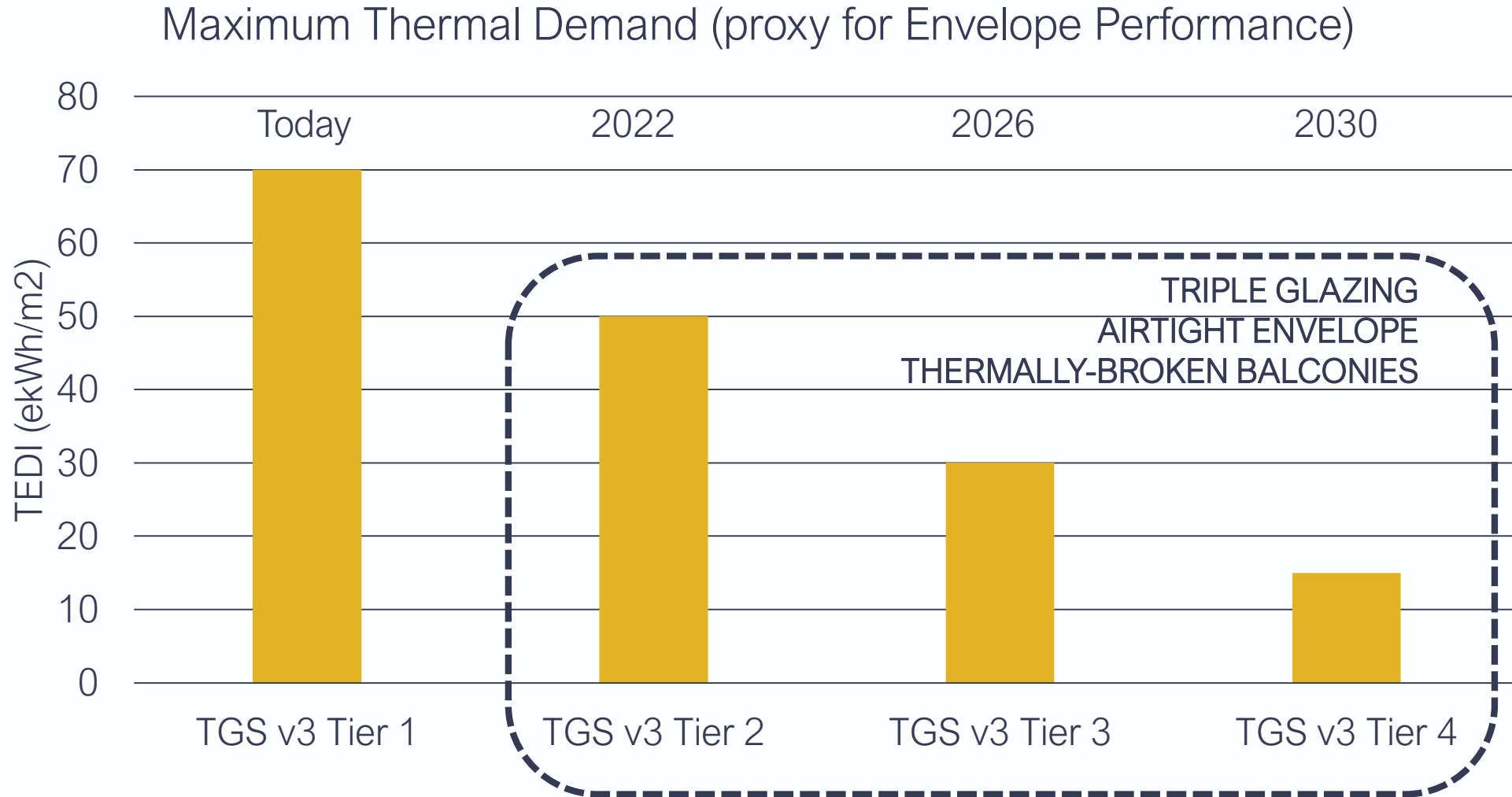
When to start transitioning away from natural gas?





Regulatory Forecast

When to start designing a different envelope?

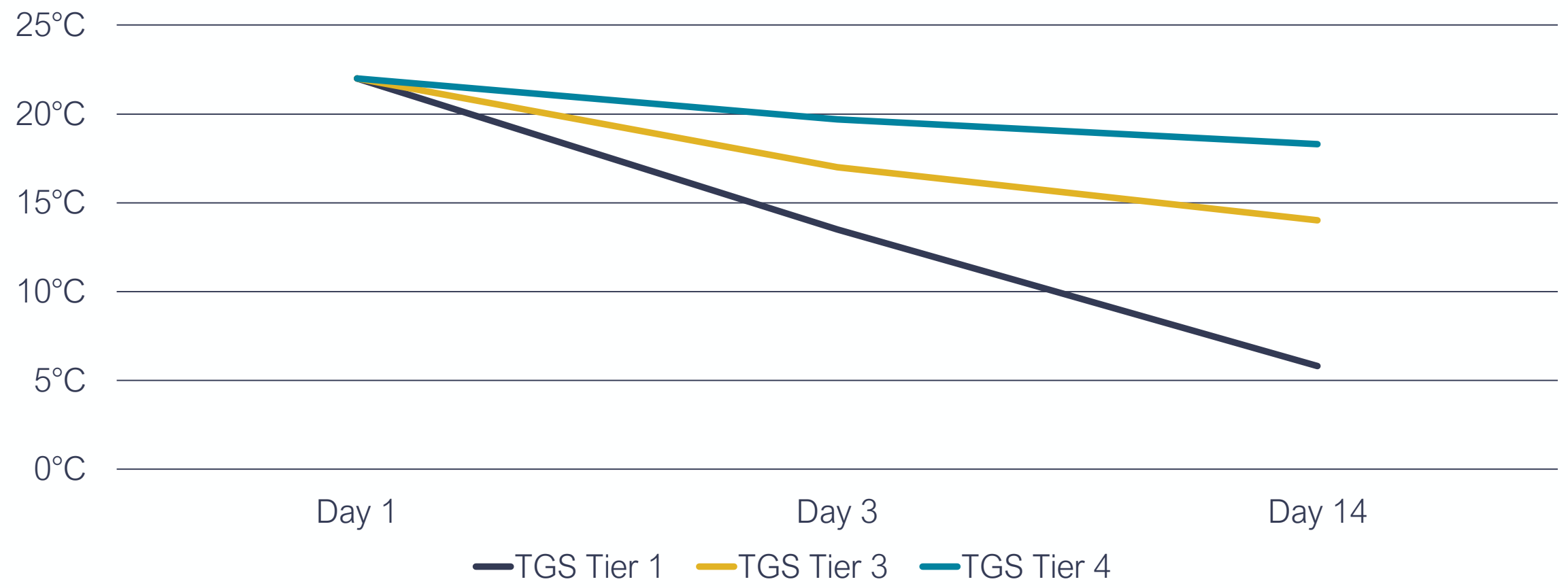




Passive Survivability

How long can people shelter in place?

Indoor Temperature After Winter Power Outage





Designing for Today or Tomorrow?

Making sure your asset is still an asset



MAXIMUM
TEMPERATURE

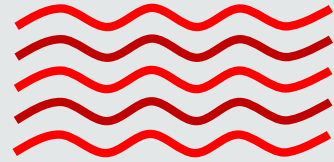
44°

Celsius

2050

37°

2000-2014



EXTENDED
HEAT WAVES

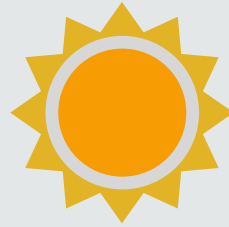
2.5

Per Year

2050

0

2000-2014



HOT DAYS
ABOVE 30

66

2050

20

2000-2014



MAX DAILY
RAINFALL

166

Millimeters

2050

66

2000-2014



DAYS WITH
HUMIDEX > 40

39

Days

2050

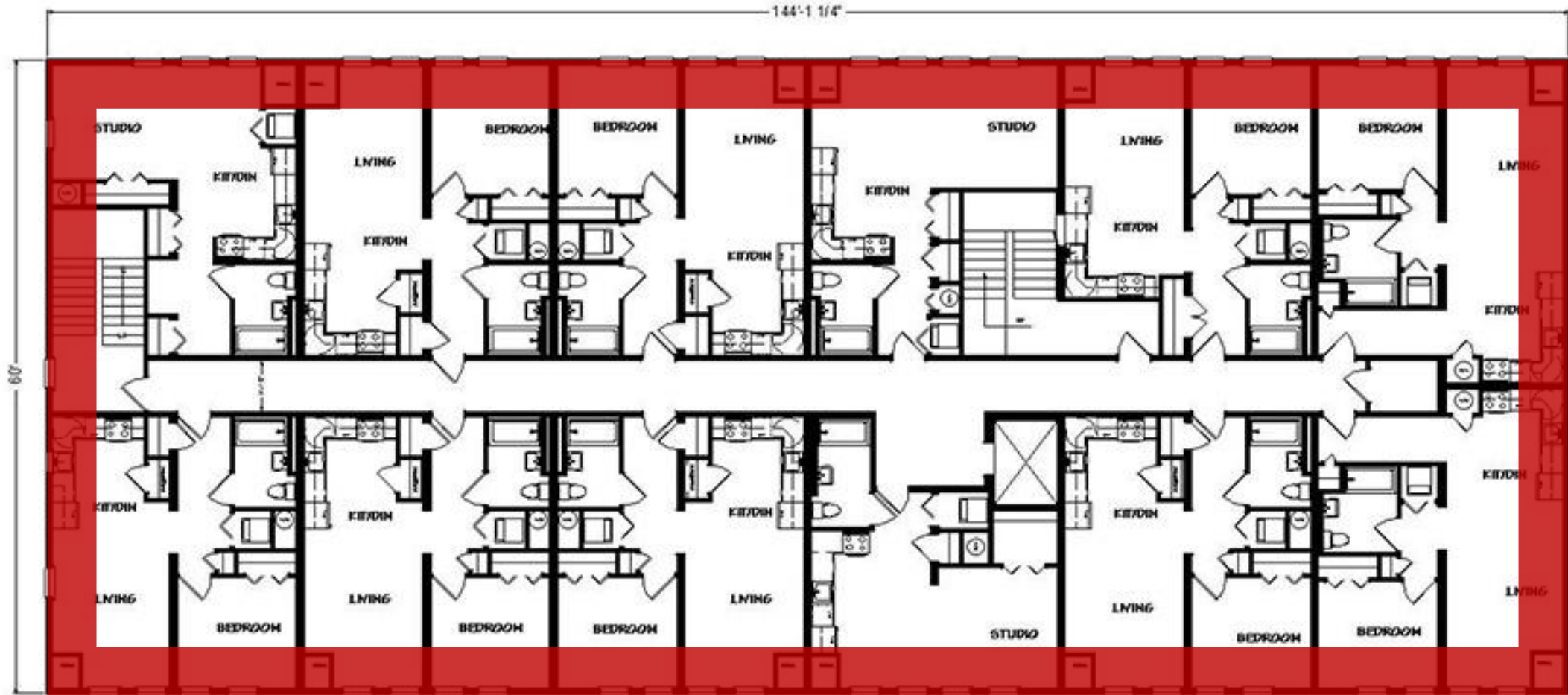
9

2000-2014



Net Livable Area

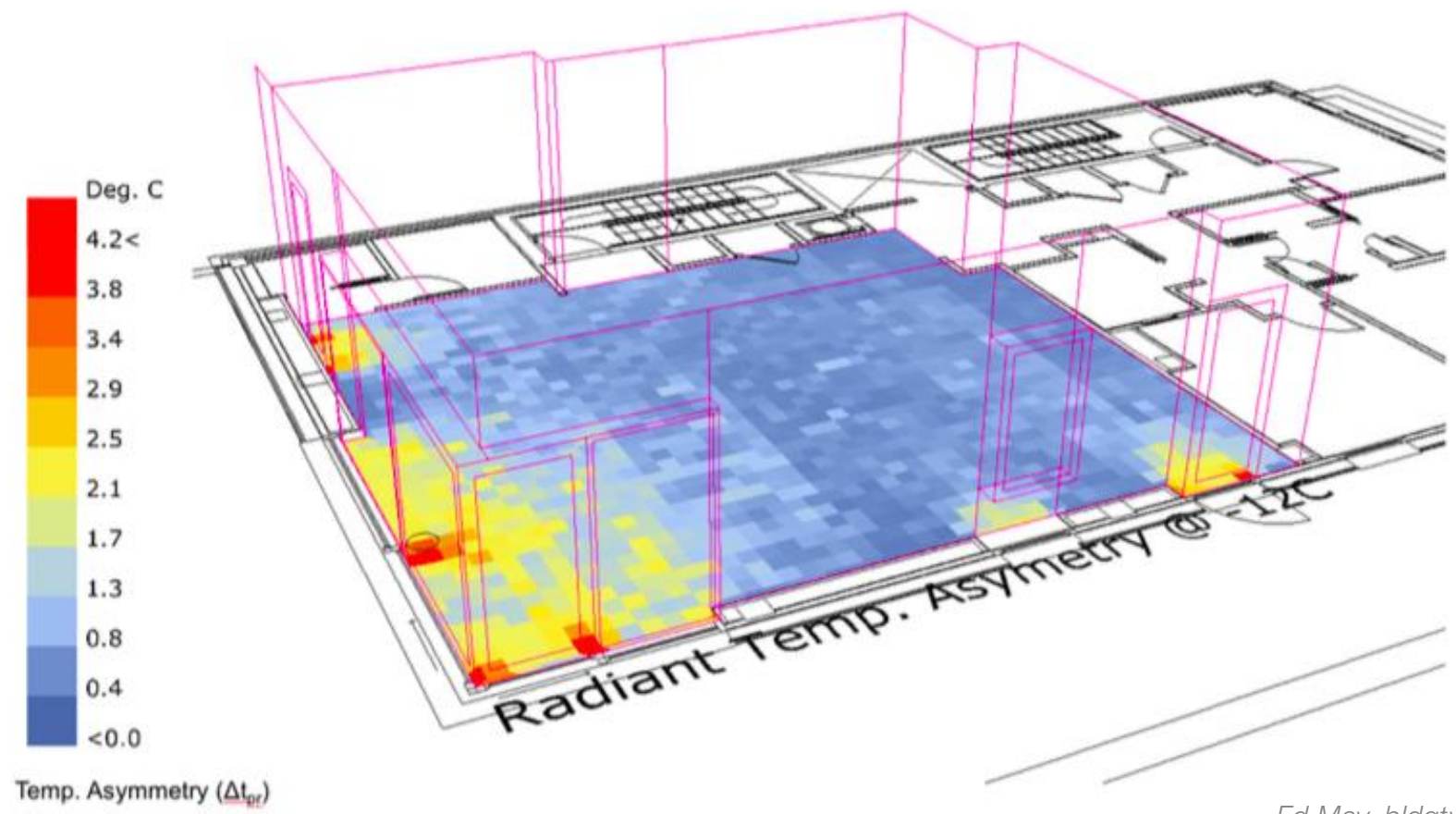
How much of your unit can you comfortably occupy?



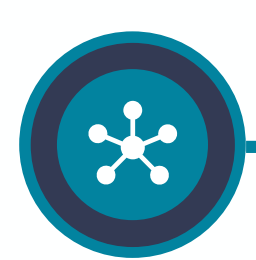


New Tools to Evaluate Comfort

Surface Temperatures and Temperature Differences

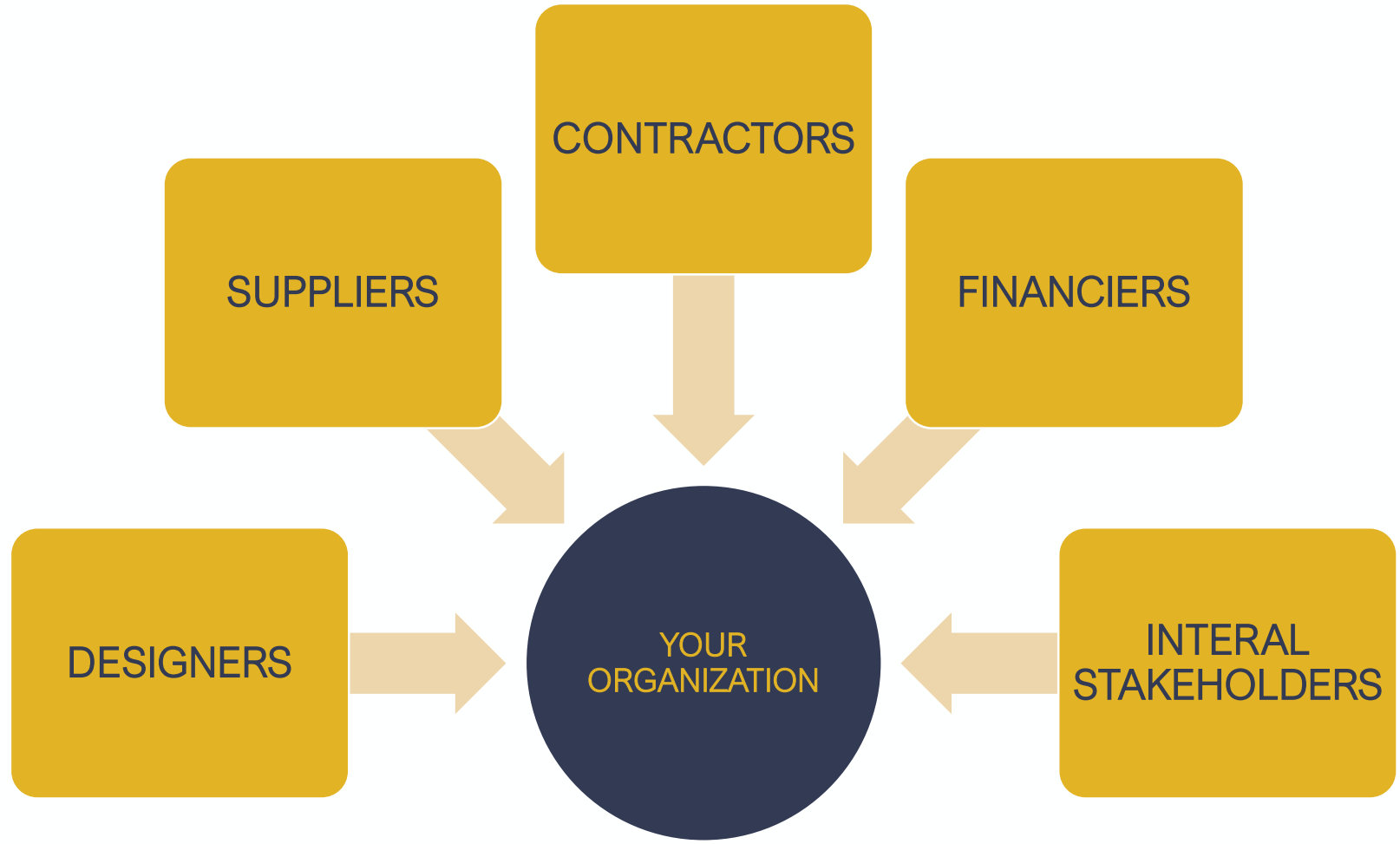


Ed May, bldgtyp



Supply Chain and Collaborators

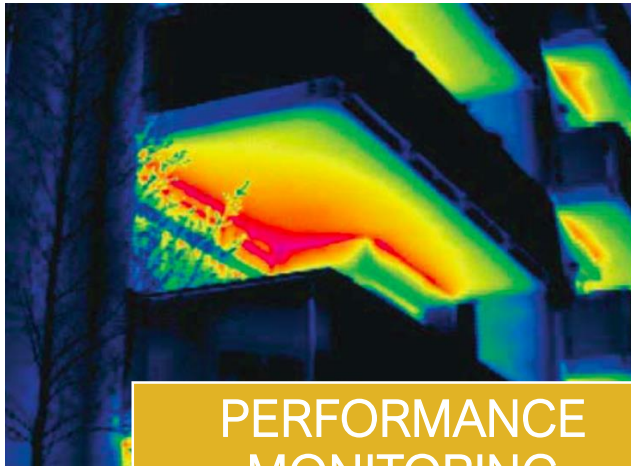
How are you preparing for change? How are they?



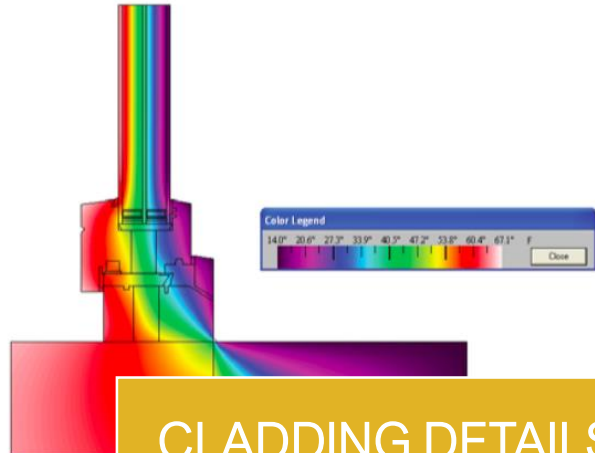


Cumulative Learning and Tactical Interventions

3 Simple Things You Can Do Today to Make Better Decisions Tomorrow



PERFORMANCE MONITORING



CLADDING DETAILS



AIR-TIGHTNESS



Life Cycle Costing and Asset Renewal

Are you Future-Proofing your Capital Planning Process?

- *Over a 30-year life of an asset, how many times will you renew the HVAC equipment and the envelope?*
- *Is it more cost-effective to build to Code today and invest a lot more later, or future-proof some systems now and make smaller operational adjustments in the future?*

**HEALTHY
LOW-CARBON
CIRCULAR**

PURPOSE
BUILDING