ET Summit 2025

Presented by

What are Resilient Buildings and How can Flexible Demand and Distributed Energy Resources Increase Resiliency?

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Energy for What's Ahead®

Agenda

- What is a resilient building?
- Why should buildings support the grid?
- How can buildings support the grid?
- How is the grid transitioning?
- What is the role of codes?
- What is the role of SCE?

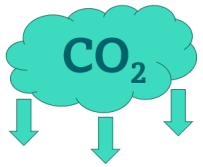
What is a Resilient and Decarbonized Building?

Impacts of Climate Change

- A building that can defend against the *impacts* of climate change such as wildfires, sea level rise, extreme weather, etc.
- Provide reliable power to buildings to keep them safe from the effects of climate change

Causes of Climate Change

- A building that can reduce the *causes* of climate change by reducing GHG emissions
- Integration of buildings with the grid to support the resiliency of a decarbonized grid



Why Should Buildings Support the Grid?

Building upgrades **improve lives** by increasing high-quality jobs, economic security, equity, health, and community resilience

Enable fast, secure, and interactive distributed energy resources like EVs, onsite generation, and storage

Why Should Buildings Support the Grid?

Reduce U.S. building emissions 65% by 2035 and 90% by 2050 vs. 2005 while enabling net-zero emissions economy wide and centering equity and benefits to communities

CROSS-CUTTING GOALS

Equity – Advance energy justice and benefits to disadvantaged communities

Affordability – Reduce energy burden and technology costs so all can benefit

Resilience – Increase the ability of communities to withstand and recover from stresses

STRATEGIC OBJECTIVES

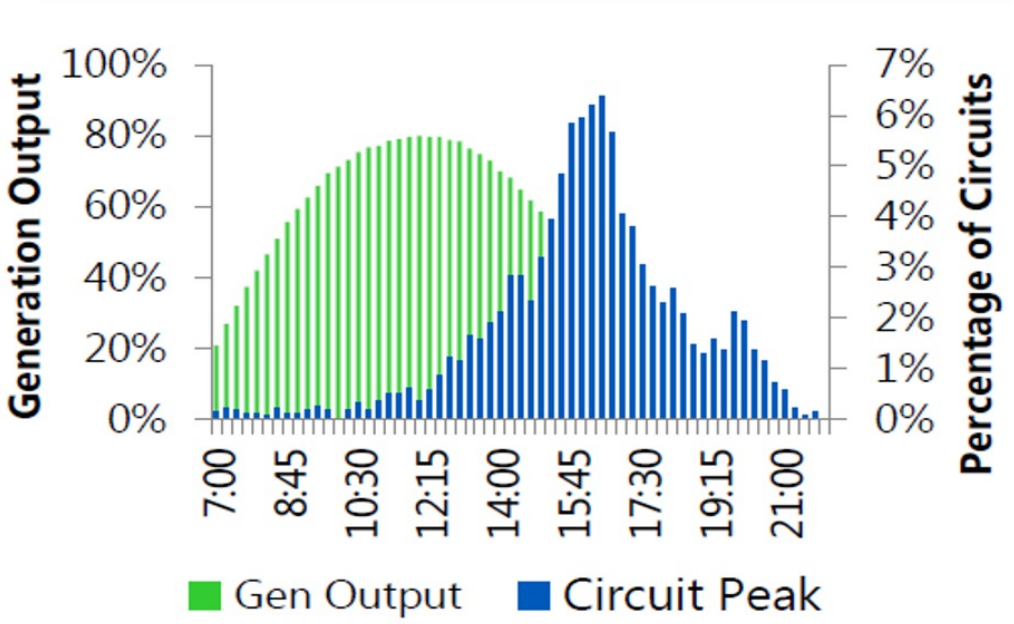
Increase building energy efficiency
Reduce on-site energy use intensity in buildings 35% by 2035 and 50% by 2050 vs. 2005

Accelerate on-site emissions reductions
Reduce on-site GHG emissions in buildings 25% by 2035 and 75% by 2050 vs. 2005

Transform the grid edge
Reduce electrical infrastructure costs by tripling demand flexibility potential by 2050 vs. 2020

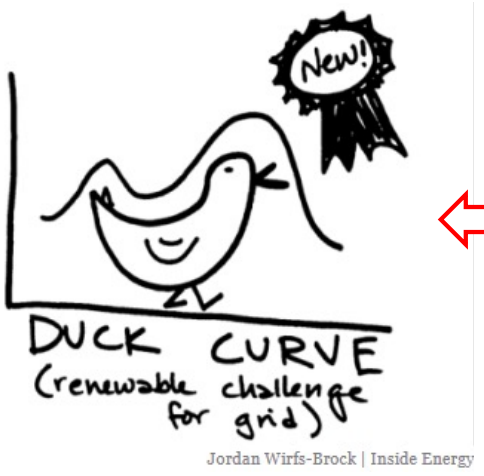
Minimize embodied life cycle emissions
Reduce embodied emissions from building materials and construction 90% by 2050 vs. 2005

Why Should Buildings Support the Grid?



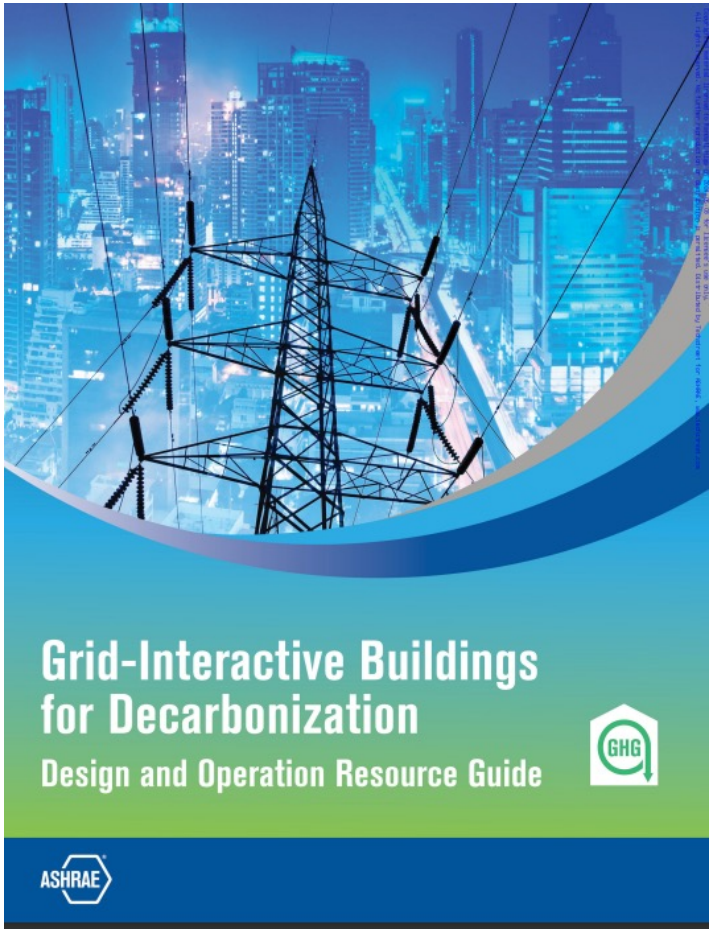
Peak time for distribution circuit load and PV do not typically coincide

The grid needs to accommodate this available power for the benefit of the customer and the grid



Obligatory Duck Curve

How Can Buildings Support the Grid?



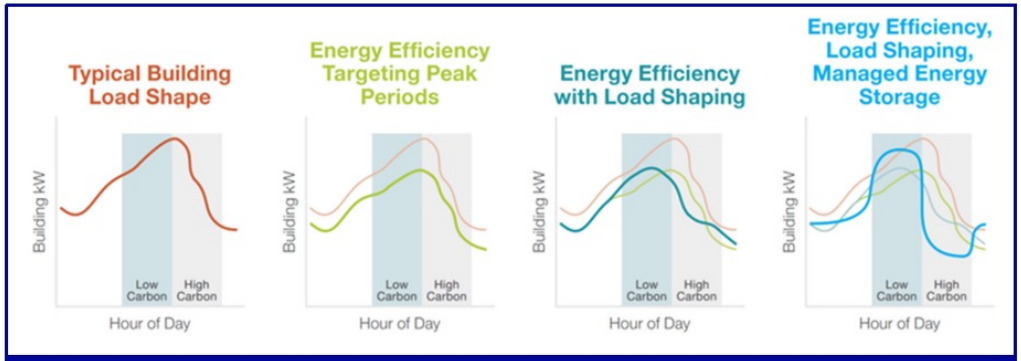


Figure 2.1 Daily load profile impacts of various levels of grid-interactive building design and operation.

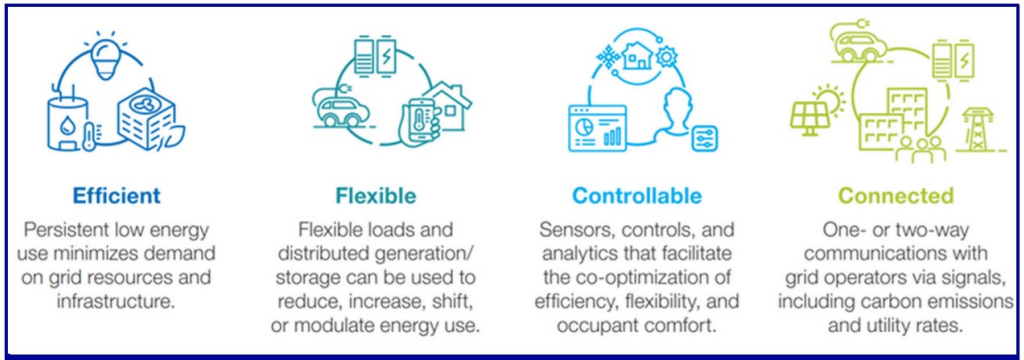
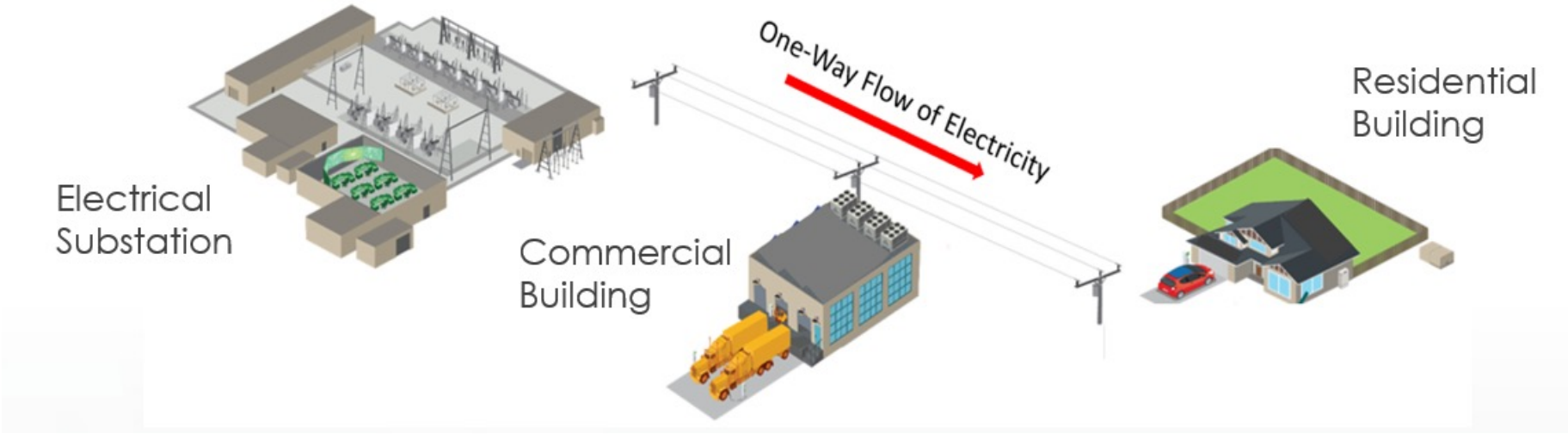


Figure 3.1 Key characteristics of a grid-interactive building.

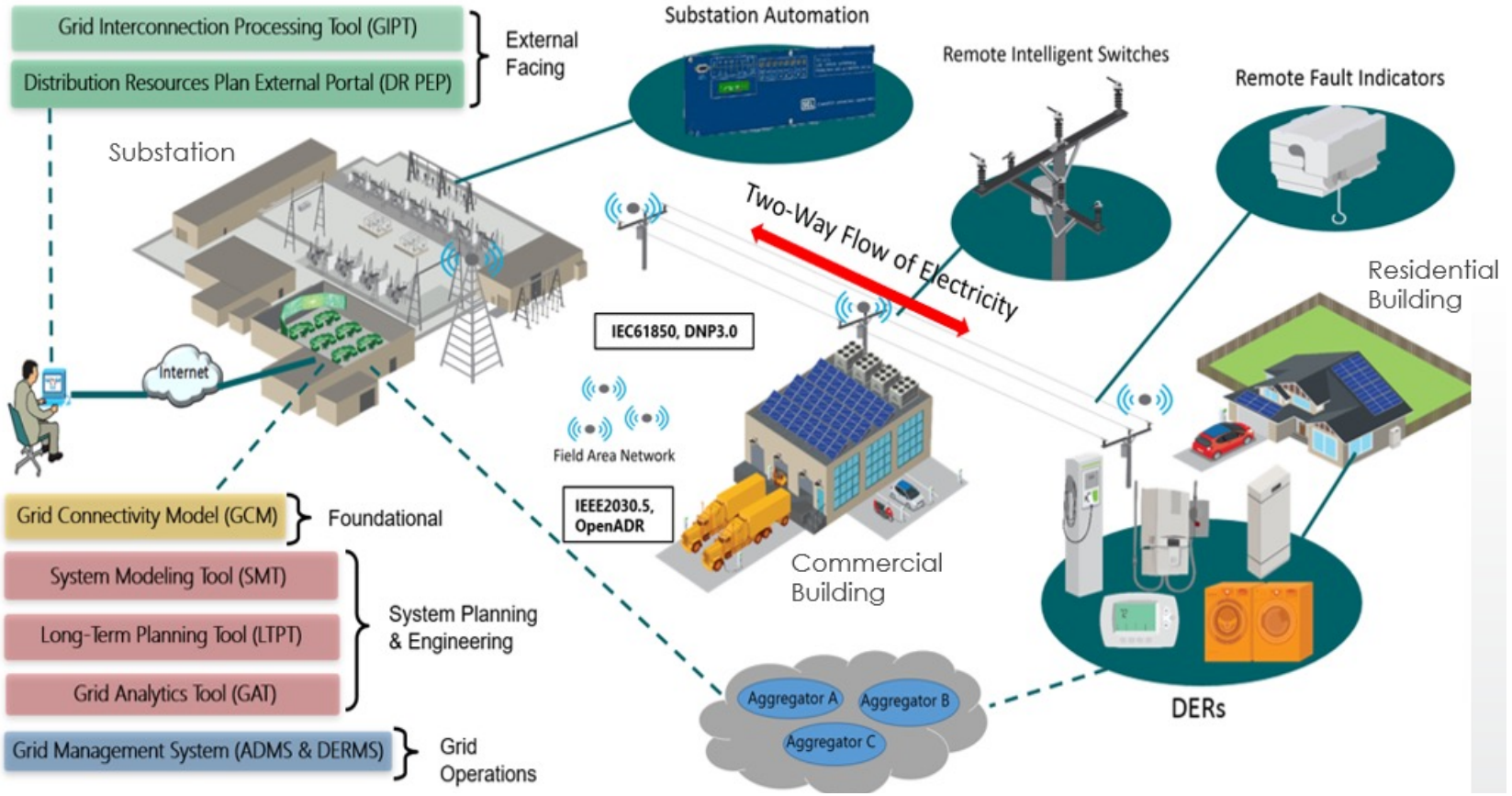
How is the Grid Transitioning?

"Traditional" Electric Grid Intersection with Buildings



How is the Grid Transitioning?

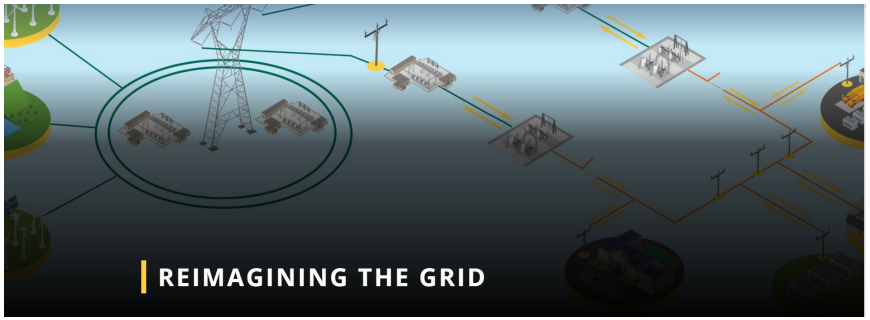
Future Electric Grid Intersection with Buildings with Distribution Energy Resources (DERs)



What is the Role of Codes?

- Building energy codes purpose and scope are expanding beyond “traditional” energy efficiency to address CO_2 reduction and facilitate the grid’s transition
- To achieve this, building codes need to address:
  - Electrification/Electrification-ready
  - On-site generation
  - Energy storage
  - Load shifting/reduction capabilities
  - Controls that can optimize the operation of building systems in communication with the grid, pricing signals, and carbon emissions

What is the Role of SCE?



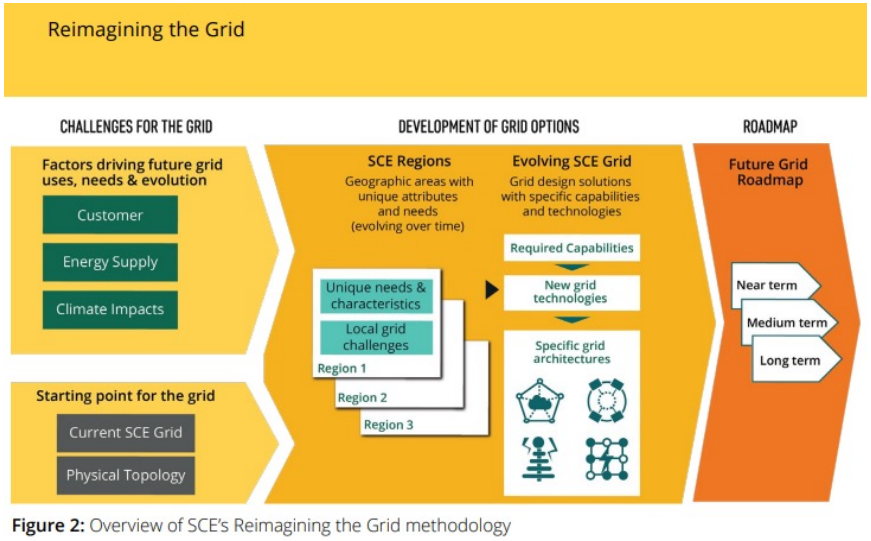
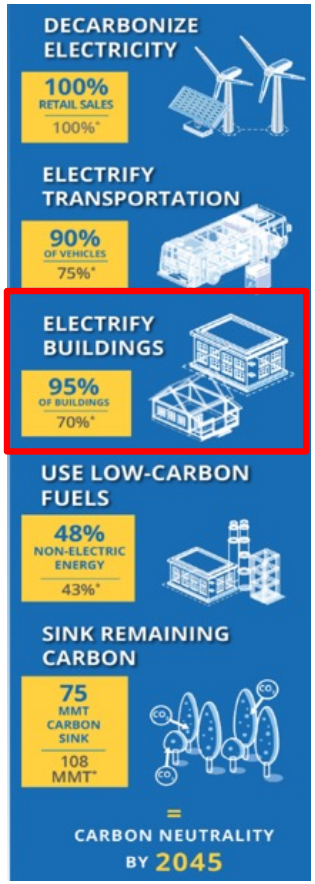
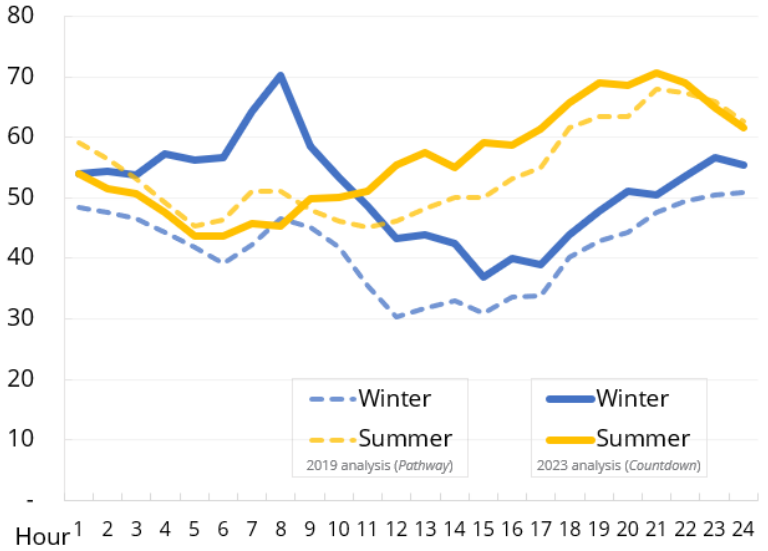


Figure 2: Overview of SCE's Reimagining the Grid methodology



2045 CAISO peak load day forecast, gigawatts (GW)



Thank You!

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