Grid-Interactive Building Value Streams

**Reduced Carbon Emissions**

Cost Savings

**Resiliency**

Design

Energy efficiency first!

- Review your local grid's marginal carbon emissions forecasts. How do they change over the life of the building?
- Design the building to limit energy use during high carbon hours with efficiency.
- Review available demand response (DR) programs and their requirements.
- Talk to the utility about interconnection.
- Consider energy storage for demand management and resiliency.
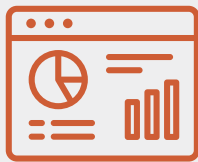
Specifications

Communications and interoperability are key!

- Equipment should have onboard grid-connectivity or be integrated with the building automation system.
- Ensure equipment or the building automation system can receive and act on grid signals (e.g. price, carbon, demand response calls).
- Specify compliance with the latest grid-communications protocols, such as OpenADR, IEEE 2030.5, or IEC 62746-10.
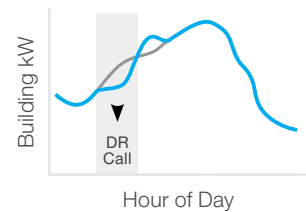- Consider Energy Management Information Systems.
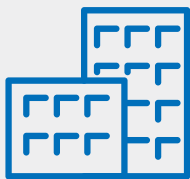
Operations

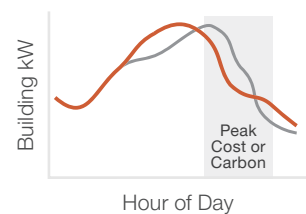**Prioritize automation and occupant comfort!**

- Commission all equipment and controls to ensure automated and correct operational adjustments in response to grid signals (carbon emissions, energy prices, and demand response calls).
- Adjust building operations base on real-time or day-ahead carbon and price signals or DR calls.
- Set reserve capacities for energy storage systems to meet resiliency goals and update seasonally.
- Annually review and update sequence of operations as needed based on changing rates, DR programs, and grid carbon patterns.

Primary Grid-Interactive Actions

Demand Response

Building kW — Hour of Day

DR Call

Load Shaping

Building kW — Hour of Day

Peak Cost or Carbon

Ancillary Services

Voltage — Seconds