NASEO-NARUC
Grid-interactive Efficient Buildings
State Working Group

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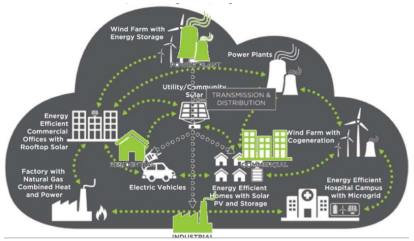
National Association of State Energy Officials

MADRI Working Group
Washington, DC
December 3, 2019

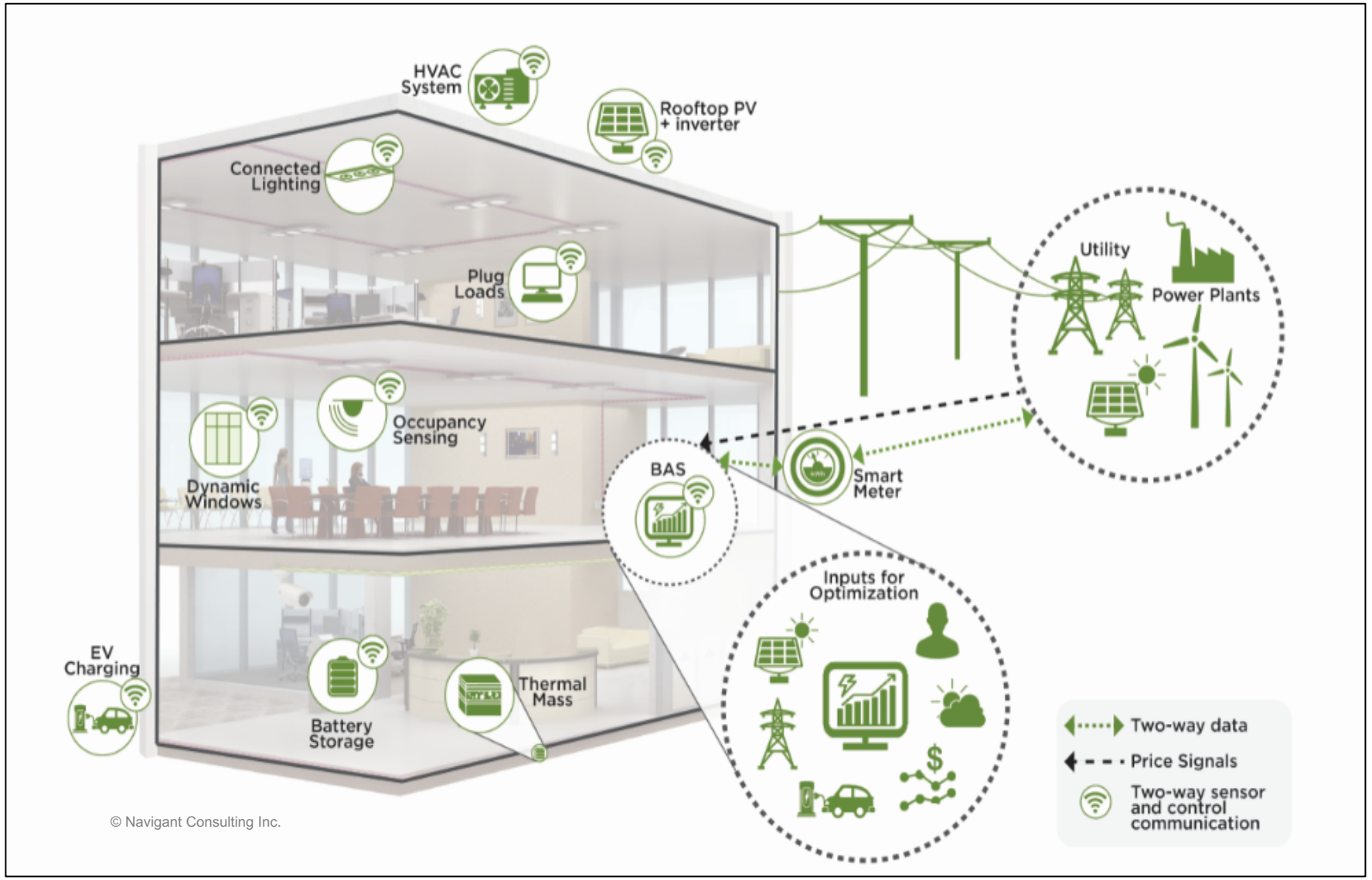
Grid-Interactive Efficient Building Opportunities

- Advancing technologies open opportunities for more flexible building/facility load management:
  - Reduce costs, enhance resilience, reduce emissions
  - Reduce peaks, moderate ramp rates, provide grid services
  - Enhance energy efficiency
  - Integrate distributed and renewable resources

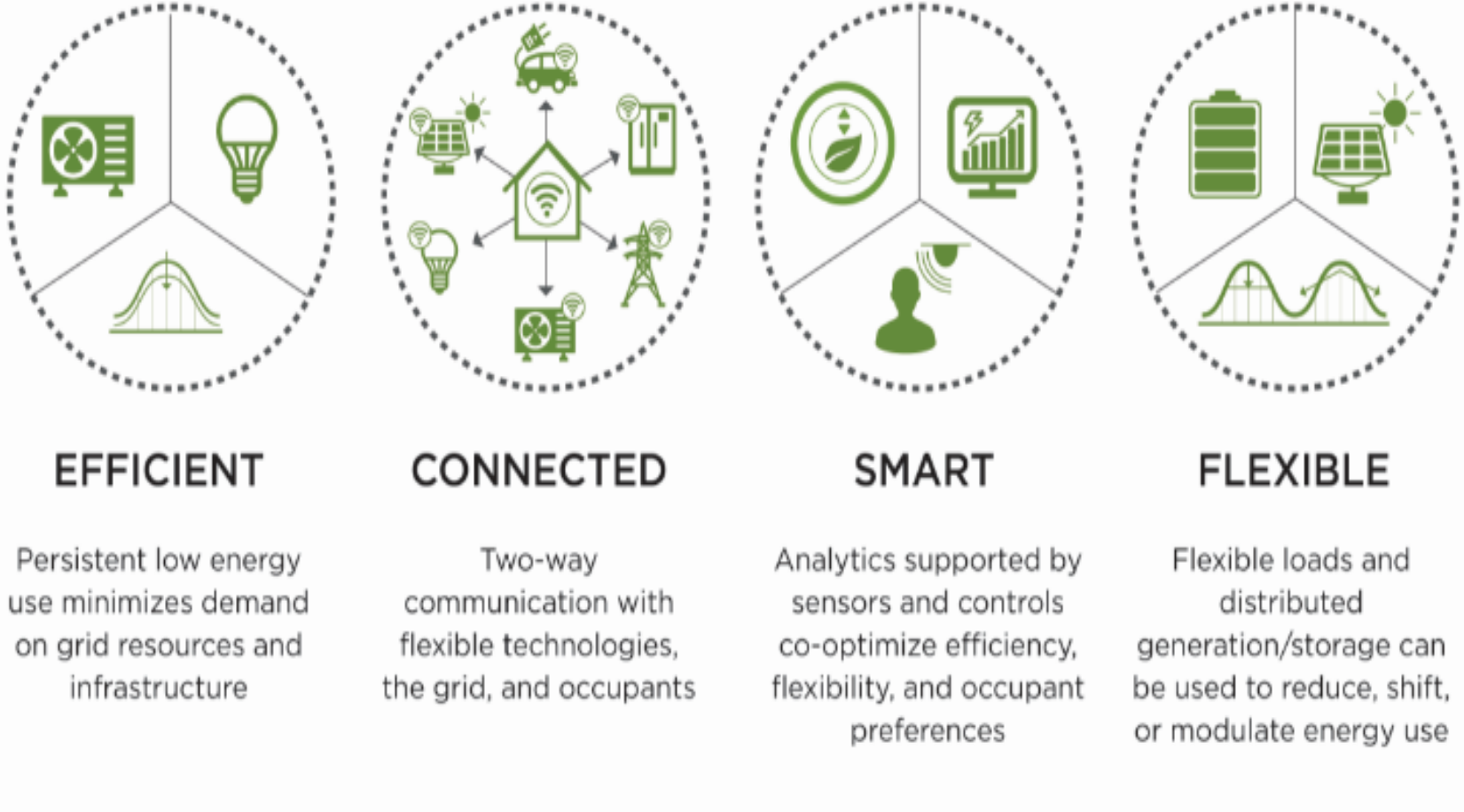


- **How can we optimize facility interactions with the grid?**
- **How can states fashion policies, programs, and regulations to advance such optimization through GEB?**
- **What are roles for states, facility operators, utilities, product and service providers, and others?**

Grid-interactive Efficient Building (GEB)

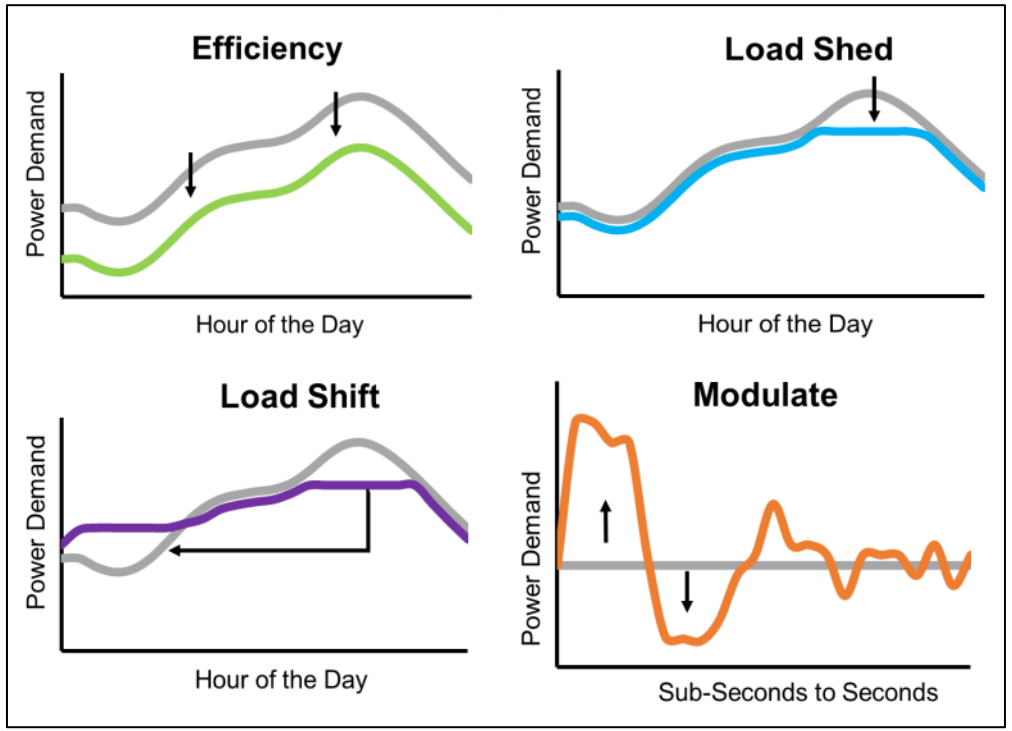


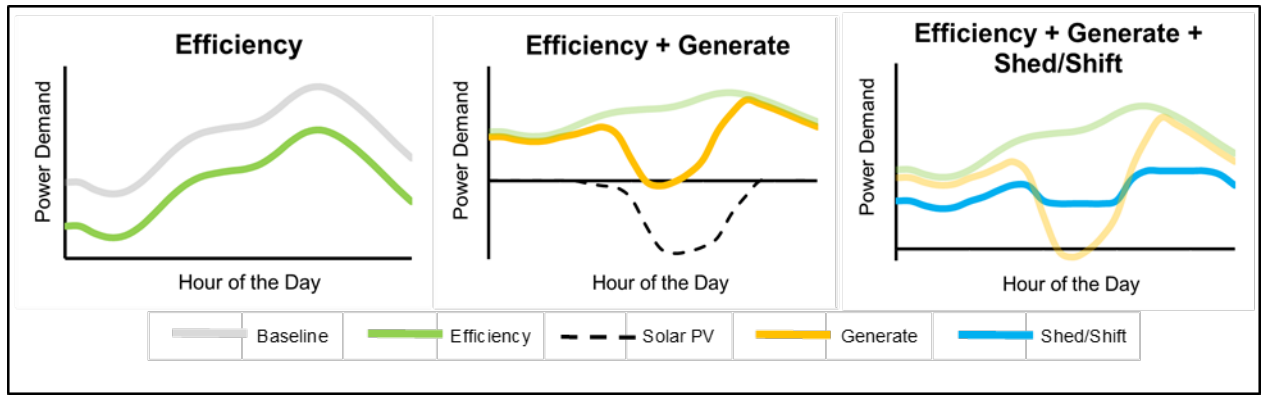
Key Characteristics of GEBs



In reality there is a continuum of capabilities.

Demand Flexibility Provided by GEB





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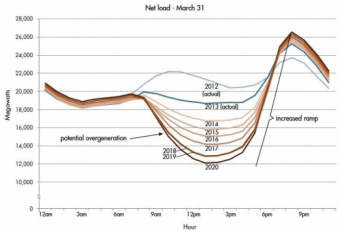
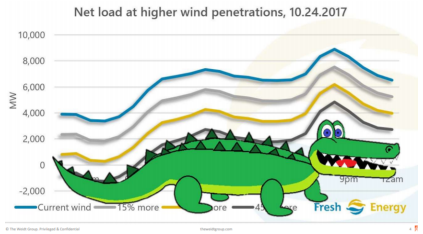
- NASEO-NARUC GEB Working Group
  - Supported by U.S. DOE BTO
  - Inform states about GEB technologies and applications
  - Identify opportunities and impediments
    - Non-technical and technical
  - Identify and express state priorities, concerns, interests
  - Recognize temporal and locational value of EE and other DERs
  - Enhance energy system reliability, resilience, and affordability



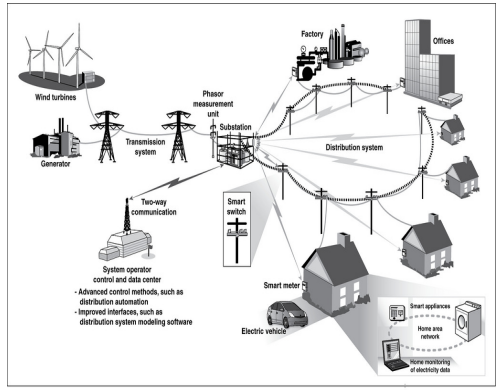
  - **Inform state planning, policy, regulations, and programs**
    - Webinars, briefing papers, calls
    - September 2019 workshop
    - Advance potential roadmaps and pilots
    - National Lab technical assistance



NASEO-NARUC Grid-Interactive Efficient Buildings Working Group

- Working Group co-chairs:
  - Kaci Radcliffe, Oregon Dept. of Energy
  - Hanna Terwilliger, Minnesota PUC staff
- Working Group states:

Colorado	New Jersey
Connecticut	New York
Florida	Oregon
Hawaii	South Carolina
Massachusetts	Tennessee
Michigan	Virginia
Minnesota	Wisconsin



Source: GAO analysis.

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State interests/needs—

- Want to learn about other states' experience and activities
- Interested in GEB and load flexibility to help meet broader electricity and energy system objectives.
- Recognize that policy and regulatory factors can impede GEB
- Interested in applications for state and local buildings
- Want to understand how to value and assess the performance of GEB
- Indicate interest in expanding traditional energy efficiency programs to include other DERs, load flexibility, and electrification.

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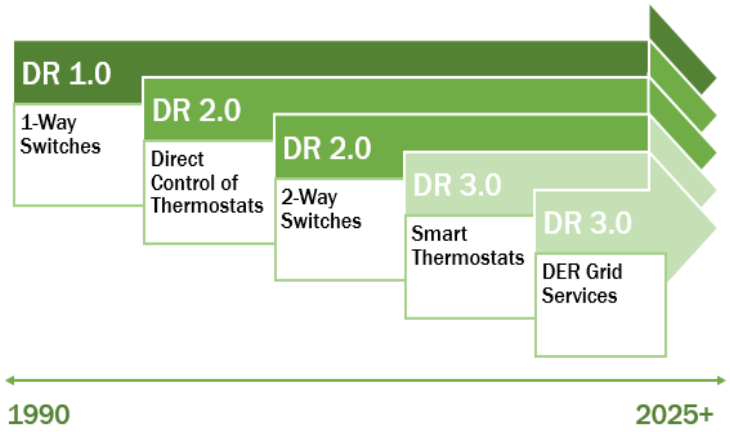
- Technical matters
  - Standards and interoperability
  - Cybersecurity
  - Data availability and customer privacy
  - Valuation of load flexibility (E.g., NYSERDA Value of Distributed Energy Resources)
  - Performance metrics (E.g., GridOptimal)
  - Demonstration and validation (E.g., GSA Proving Ground, DOD ESTCP)
  - Control of load flexibility (utility “dispatch” or building management system)



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- **Policy, regulatory, administrative matters: drivers & impediments**
  - Building owner and customer perspectives
    - Value proposition for owners and occupants—rates, markets, incentives
  - Utility perspectives
    - Incentives, hurdles to using non-utility assets—compensation mechanisms, regs
  - Utility planning and programs
    - Inclusion of DERs, GEBs, load flexibility? Siloed EE, DR, storage, etc. programs
  - Energy service businesses
    - Business models, aggregation
  - Other policy and program considerations
    - State, public building goals; benchmarking, labelling; existing building standards; building energy codes; appliance standards; zoning/land-use;…

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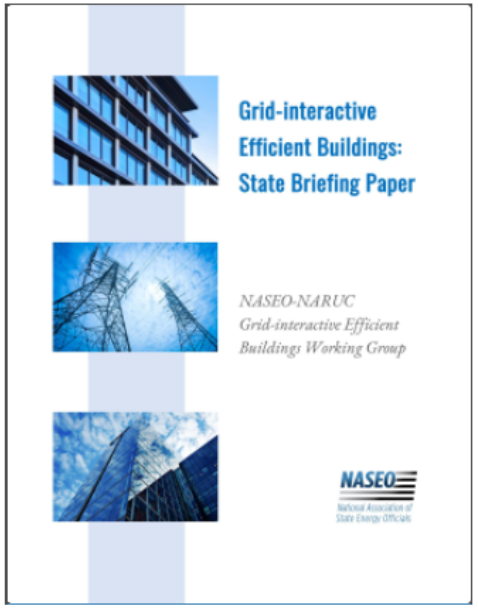
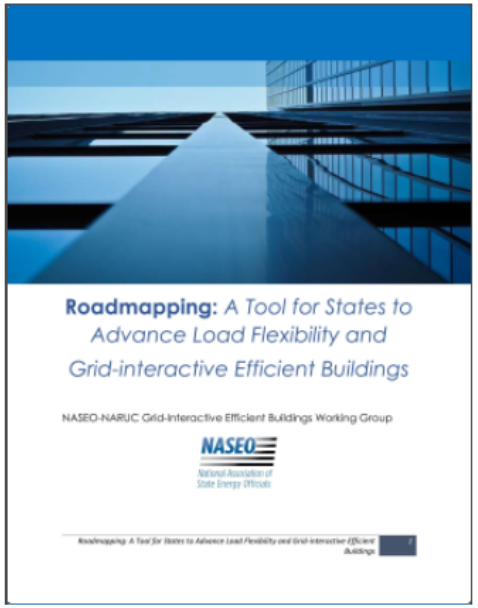
- **Next steps**
  - Webinars, calls, discussion
  - Pairing/grouping states for peer exchanges
  - Technical assistance and resources
  - Encourage roadmapping, planning
  - Encourage pilots





Grid-Interactive Efficient Buildings

U.S. General Services Administration | Center for Emerging Building Technologies | Proving Ground Program (GPG)
U.S. Department of Energy | High Impact Technology Innovation Catalyst (HIT)

GSA | U.S. DEPARTMENT OF ENERGY

ROCKY MOUNTAIN INSTITUTE | nbi new buildings institute

The Value of Grid-Interactive Buildings to Building Owners

Getting to Zero Forum
zLab Workshop Summary

November 13th, 2019

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REPORT/PAPER

Value Potential for Grid-Interactive Efficient Buildings in the GSA Portfolio: A Cost-Benefit Analysis

2019 | By Cara Carmichael, Matt Jungclaus, Phil Keuhn, Kinga Porst Hydras

DOWNLOAD

Grid-Interactive Efficient Building Utility Programs: State of the Market

Christopher Perry, Hannah Bastian, and Dan York

October 2019

An ACEEE White Paper

Grid-Interactive Efficient Buildings

Information Sheet

Colorado

Xcel Energy®

Community Energy Storage Project in Stapleton Neighborhood

Project overview

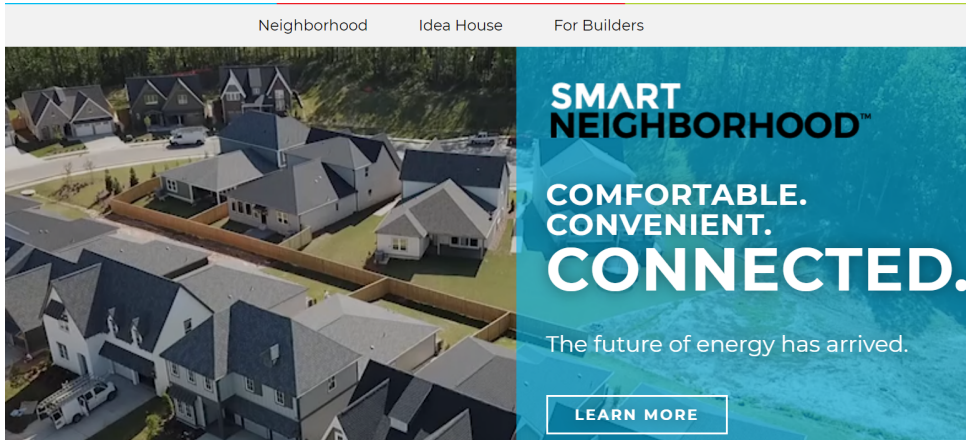
As the demand for solar energy at our customers' home and businesses increases, Xcel Energy is examining how battery storage can help integrate higher concentrations of photovoltaic (PV) solar energy on our system. As part of an energy storage demonstration project, Xcel Energy is installing six customer batteries and six larger grid batteries in Denver's Stapleton neighborhood. The batteries will operate to manage solar integration and also support other areas of the grid.

This pilot project is one of two approved in March 2016 by the Colorado Public Utilities Commission (PUC) under the company's Innovative Clean Technology (ICT) Program.

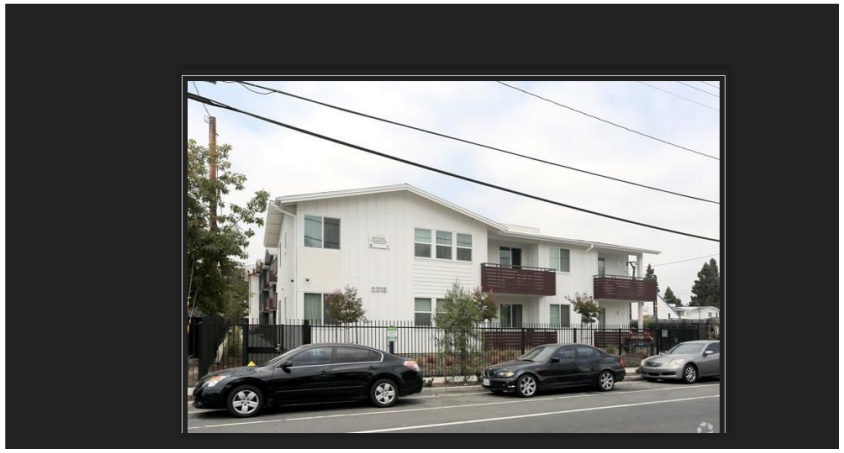
Xcel Energy is particularly interested in learning about how battery storage can help:

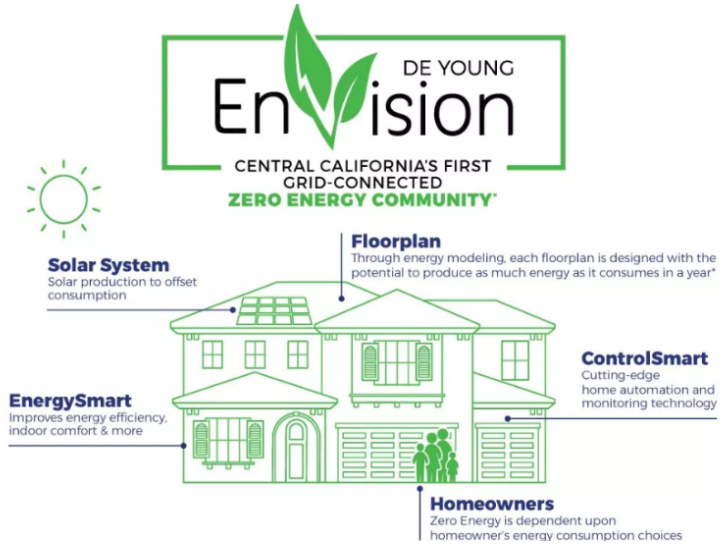
- Increase the ability to accommodate more solar energy on our system
- Manage grid issues such as voltage regulation and peak demand

Representative photo simulation of the battery storage unit installations near 33rd Avenue and Alton Court. Please note that the final configuration and design may be subject to change due to engineering or other factors.



Enabling Clean Energy in Disadvantaged Communities using Integrated PV+Storage - Willowbrook





Grid-Interactive Efficient Buildings

COLORADO
Energy Office

The Colorado Residential Retrofit Energy District ("Colorado RRED")

Project Overview

CEO-- along with the National Renewable Energy Laboratory, the Rocky Mountain Institute and Xcel Energy-- is proposing to scope, construct, study and evaluate a residential energy district through building retrofits. An energy district is a system of interconnected buildings that incorporates distributed energy resources, energy-efficient technologies, energy storage, and advanced building controls to optimize energy load and performance. Energy districts have the opportunity to provide greater demand-side management (DSM) and system benefits than individual measures, such as distributing load across an extended time period, mitigating grid constraints, and increasing system reliability and resiliency.

gtm: Solar Grid Edge Storage Wind Trending Podcasts Downloads

ENERGY STORAGE

Batteries vs. Blackouts: 1,100 Homes Powered Through Vermont Outage With Storage

Utility Green Mountain Power's pilot programs paid off with clean, distributed backup power amid a statewide outage.

JULIAN SPECTOR | NOVEMBER 07, 2019

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NASEO-NARUC Grid-Interactive Efficient Buildings Working Group

https://naseo.org/issues/buildings/naseo-naruc-geb-working-group

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