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Grid-Interactive Efficient Buildings

IEPR Commissioner Workshop
October 5, 2021
GEBs Grid Value Proposition

Leverage Grid-Interactive Efficient Buildings (GEBs)

1) Shed load
2) Shift load
3) Regulate frequency
4) Control voltage

Optimized Grid Planning & Operations

Will GEBs perform as promised?
GHG Policies Are Evolving

2006
- Assembly Bill 32
- 1990 levels by 2020

2016
- Senate Bill 32
- 40% below 1990 levels by 2030

2018
- Executive Order B-55-18
- Carbon Neutrality by 2045
Customer Programs Are Evolving

Outreach and Education

Workforce Development

Financing, Incentives, and Rates

Energy for What’s Ahead™
Energy Code Is Evolving

WHAT’S NEW FOR 2022?

The proposed 2022 Energy Code update focuses on four key areas in new construction of homes and businesses:

- Encouraging electric heat pump technology and use
- Establishing electric-ready requirements when natural gas is installed
- Expanding solar photovoltaic (PV) system and battery storage standards
- Strengthening ventilation standards to improve indoor air quality
Load Profiles Are Evolving

- **Energy-efficient windows**: Insulate and reduce noise.
- **Solar panels**: Let homeowners produce their own power.
- **Ceiling fans**: Help circulate air.
- **Heat pump dryers**: Are 40%-50% more efficient than gas dryers.
- **Induction stoves**: Are safer and healthier to use and keep kitchens cool.
- **Home appliances**: Use smart technology to increase energy efficiency and reduce costs.
- **Heat pump HVAC systems**: Replace both gas furnaces and air conditioners.
- **Heat pump water heaters**: Pull heat from the air to heat the water.
- **Batteries**: Store energy for later use.
- **Electric vehicles**: Can run off electricity generated at home.

High levels of insulation minimize the effect of outside temperatures on indoor air.
Grid Planning/Operation Are Evolving

- Grid Interconnection Processing Tool (GIPT)
- Distribution Resources Plan External Portal (DR PEP)
- Substation Automation
- Remote Intelligent Switches
- Remote Fault Indicators
- Field Area Network
- IEC 61850, DNP3.0
- IEEE 2030.5, OpenADR
- Grid Connectivity Model (GCM)
- System Modeling Tool (SMT)
- Long-Term Planning Tool (LTP1)
- Grid Analytics Tool (GAT)
- Grid Management System (ADMS & DERMS)
Grid Capabilities Are Evolving
Moving Forward

- Refine our forward radar
- Accelerate critical technologies
- Future-proof current grid initiatives
- Engage stakeholders
- Implement required changes to planning processes