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# GEB Capabilities for Community Equity and Resilience Value

CEC IEPR Workshop on Grid-Integrated Efficient Buildings

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Regulatory Assistance Project (RAP)<sup>®</sup>

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# GEB Values Require a Regulation Renovation



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# Status Quo Policies Need to Change



While many technologies and the policies supporting them have served us well in the past ...

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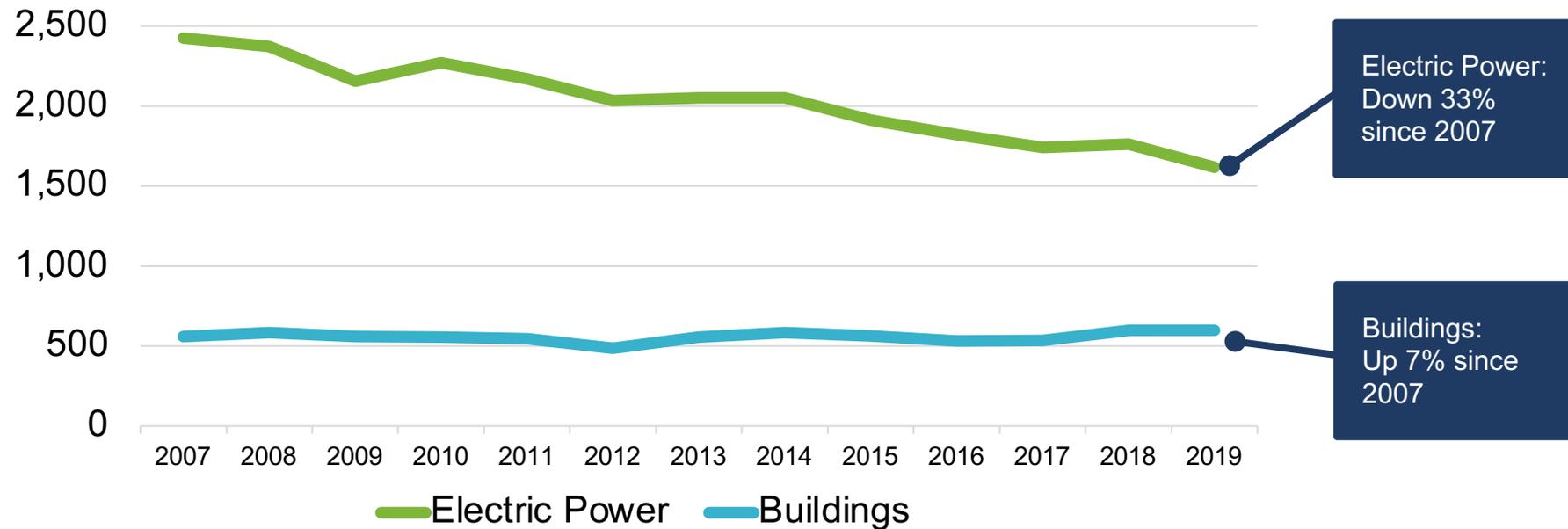
# *Regulation Needs Renovation*



... new policy priorities and technologies are driving a need for change.

# Building Emissions Not Declining

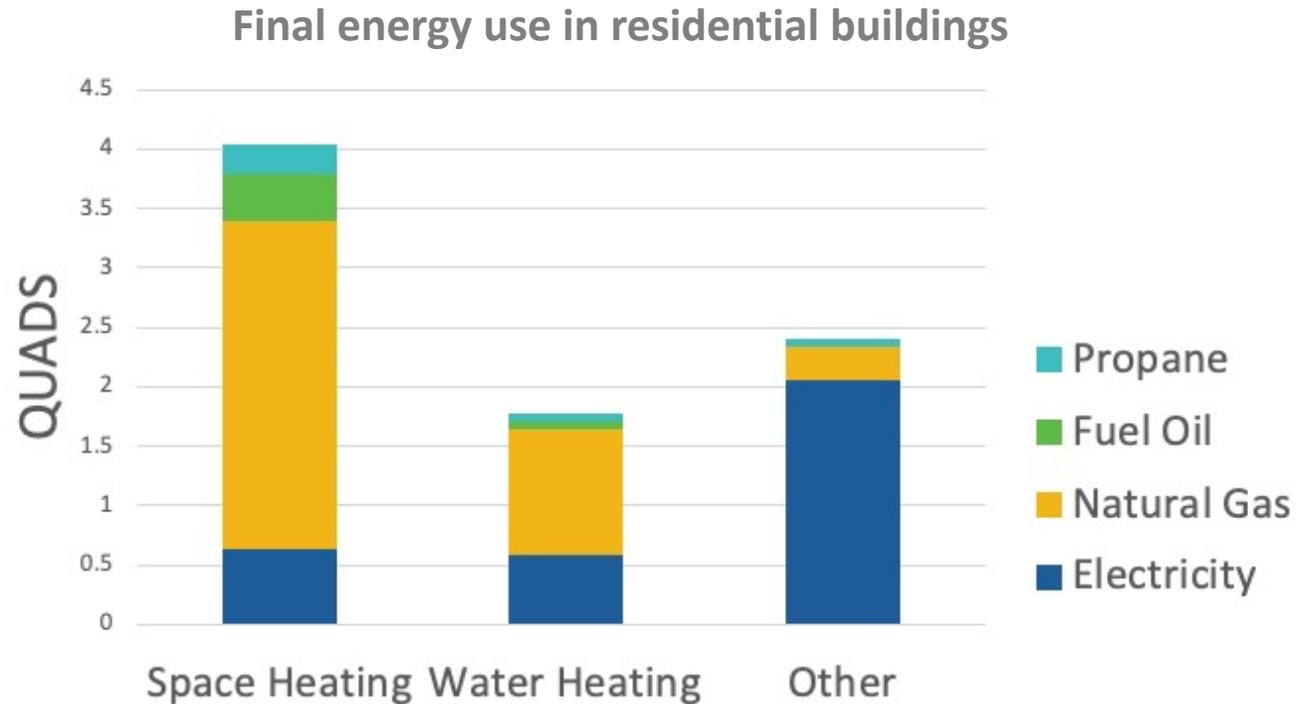
Annual CO<sub>2</sub> emissions from electric power and buildings sectors  
Million metric tons CO<sub>2</sub>, US total, 2007–2019



Source, EIA; Adapted from slides by Rocky Mountain Institute

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# Fossil Fuels Still Dominate Space and Water Heating



Source: [EIA's Residential Consumption Survey \(RECS\) 2015](#)

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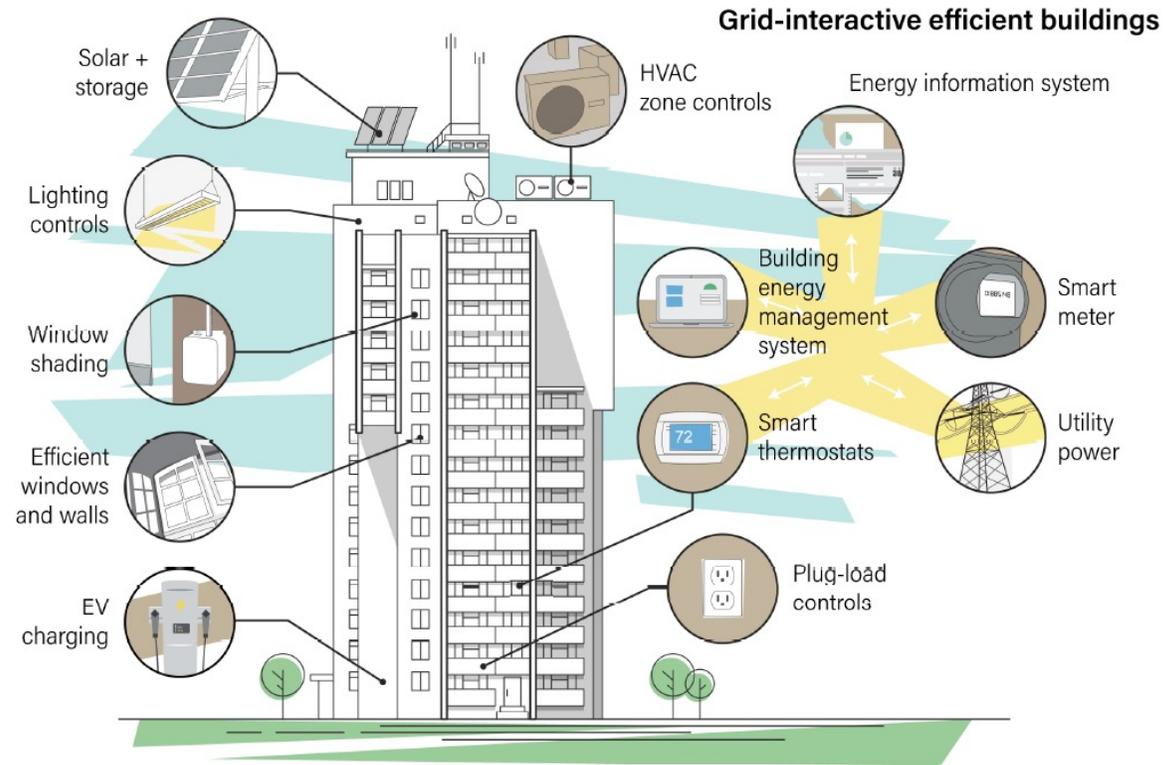
# Building Electrification Capabilities are Under-utilized

- Efficient, clean, and controllable – cost-effective electric end-use technologies installed in US buildings will produce benefits:

- Cost savings
- Grid flexibility
- Lower emissions



# Commercial Building Capabilities are Under-utilized



Source: ACEEE "Grid-interactive Efficient Building Programs: State of the Market," November 2019

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# The Challenge

- Can regulatory frameworks evolve to enable greater electrification and support GEB capabilities?
- Barriers exist in both regulation and policy:
  - Will hard-to-serve consumers benefit?
  - What should energy efficiency policy & programs look like?
  - Should fossil gas systems continue to expand?
  - How will customers and utilities benefit from flexible building loads?

# Renovating Regulation to Electrify Buildings: A Guide for the Handy Regulator

By Jessica Shipley, Dr. Asa Hopkins, Kenji Takahashi and David Farnsworth



- Equitable building electrification
- Load flexibility and grid interactive buildings
- Rate design
- Energy Efficiency Policy and Programs
- Building codes, performance standards
- Gas utility network extension policies

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**My Focus Today is on  
Community Value:**

**Community Equity and  
Resiliency Values are  
Largely Ignored while  
Distribution and Wholesale Grid Values  
are Emphasized**

# 2

## Achieving Community Equity Value



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# Ensure Access to Equitable Building Electrification and GEB

- Goal: ensure that all consumers get access to the benefits of building electrification
- Persistent barriers exist throughout energy regulatory structures
  - The “...and equity” problem
  - Regulators could benefit from additional knowledge and insight into hard-to-reach communities
  - PUC processes are not historically accessible to non-experts



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# Focus on Equity Value Means ...

- Get a better handle on how well existing programs and policies are working
- Reassess and improve programs regularly
- Improve opportunities for meaningful engagement in policymaking and regulation
- Intentionally design more effective building electrification programs to recognize the needs of a diverse public

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# Appreciating Community Equity Value Requires Listening from the Start and Throughout

- Schedule variable times of day, and days of the week for public input
- Meeting locations in a variety of spots, including urban and rural
- Support funding for community-based organizations and leaders
- Create materials in laypersons' terms, and translated into languages found in the communities

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## **Resiliency Value is in the Eye of the Beholder: What is Community Resilience Value?**



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# Resilience

**The ability of energy systems & operations to minimize service interruptions during extraordinary events and threats**

- Robustness against threats and disruptions
- Ability to recover from disruptions
- Ability to continue operations during extraordinary events, threats and disruptions
- Ability to adapt operations and modify the system to continue service

# Resilience definitions – Scale matters: Whose resilience? Whose perspective?

## Customer Resilience

Customer ability to operate and maintain essential functions when grid is down

- Residential
- Commercial
- Industrial
- Essential services:  
Hospitals,  
police,  
military

## Grid Recovery

Ability to recover from major event:

- Black Start
- Storm
- Cyber event
- Failure
- Physical attack

## Grid Ability to Withstand Events

Reliability metrics in a major event, e.g., resilience through an event

- Measure without major event exclusions
- Measure “all-in”
- Measure just during major events

# Resilience definitions: Scale(s) of focus & measurement: Goals, criteria, metrics

## Customer

### Residence

- House with battery and switch

### Businesses

- Buildings

### Industrial/military facility

## Grid

### Transmission

### Distribution

### Both?

### Generation

- (EFORd)

### Whole grid, which grid(s)?

## Microgrids

Microgrids fully grid connected

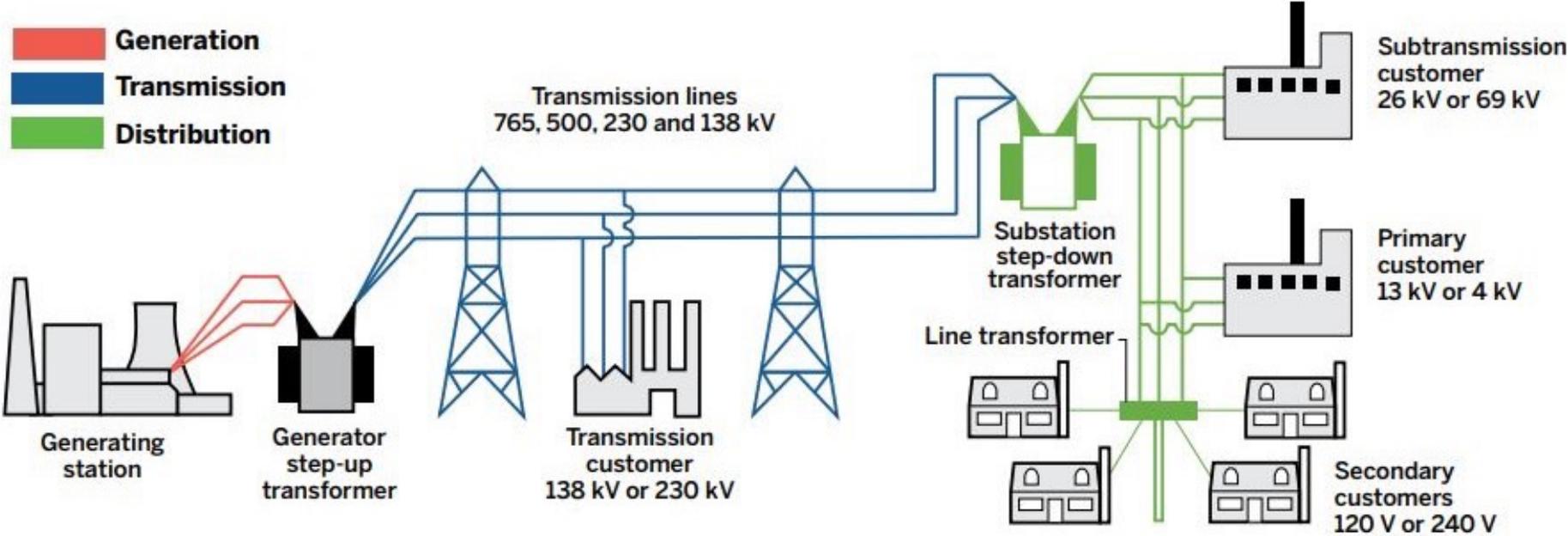
Microgrids that can island

- Campuses

Operationally independent

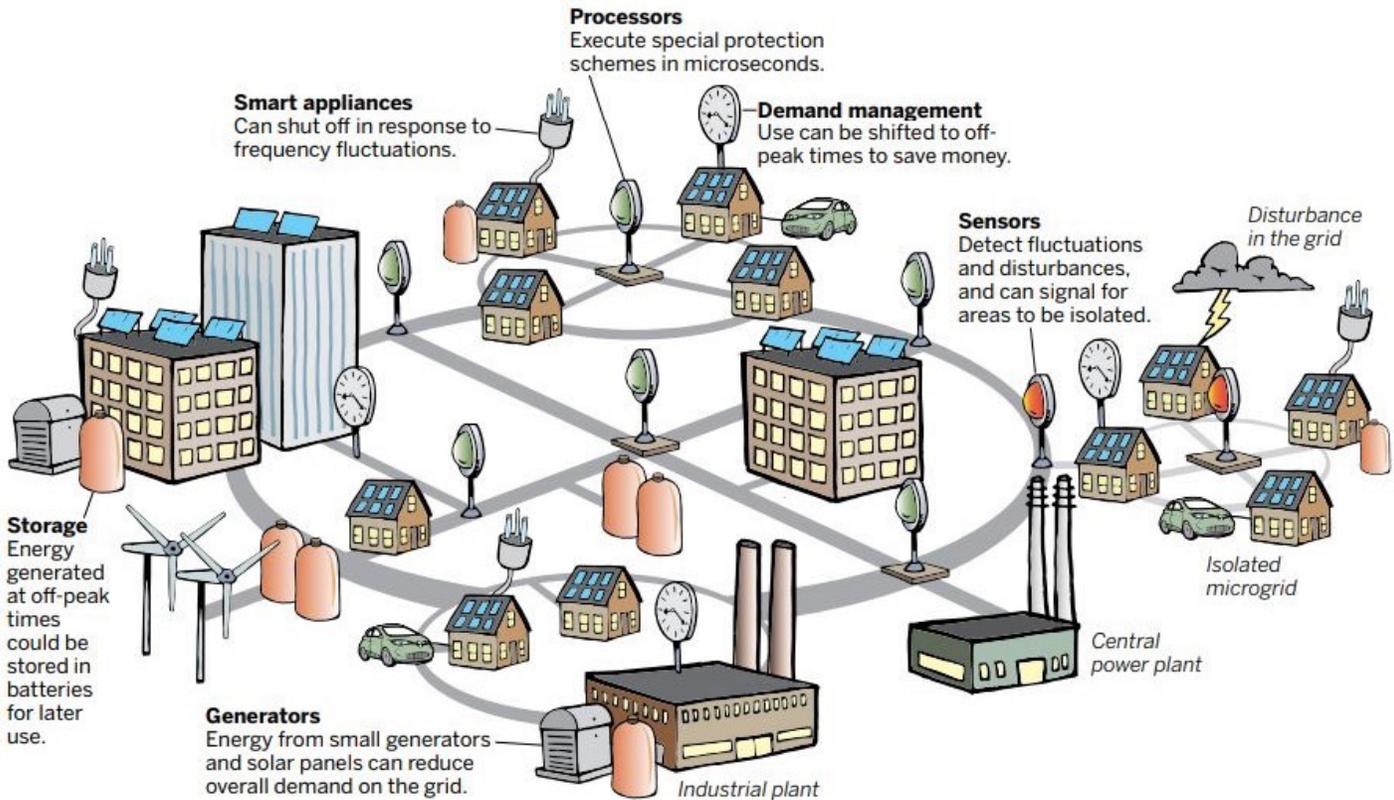
- Backup/standby

# We Focus too Much on the Antiquated Grid



Source: Adapted from U.S.-Canada Power System Outage Task Force. (2004). *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*

# Even When We Shift our Focus to the Grid of the Future, We Tend to Leave out Community Value



Source: Adapted from U.S. Department of Energy. (2015). *United States Electricity Industry Primer*

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# What Community Resilience Values Can GEB Help Provide?

- Centers of Energy Resilience within each Community to Ensure Access to Essential Services During Disruptions and Recovery
- Local Economic Integration and Resilience to Provide Local Jobs and Income
- Local Energy Integration and Resilience to Coordinate Local Energy Resources for Local Benefit

# 4 Takeaways



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# Regulation Requires a Renovation

- Regulatory frameworks need to evolve to enable the benefits of grid-integrated efficient buildings
- Community Equity Value and Community Resiliency Value are often ignored
  - Make regulatory forums more accessible
  - Provide direct funding for community-based organizations
  - Aggressively seek community-driven input from the start and throughout

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# More Info

➤ Renovating Regulation Paper:

<https://www.raonline.org/knowledge-center/renovating-regulation-electrify-buildings-guide-handy-regulator/>

➤ Renovating Regulation Webinar:

<https://www.raonline.org/event/renovating-regulation-to-electrify-buildings-a-guide-for-the-handy-regulator/>

➤ RAP Beneficial Electrification Papers:

<https://www.raonline.org/knowledge-center/beneficial-electrification-ensuring-electrification-public-interest/>

# About RAP

The Regulatory Assistance Project (RAP)<sup>®</sup> is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at [raponline.org](https://raponline.org)