

Buildings and the Grid: Clipping the Wing of the Falcon Curve

Join Building Energy Exchange and the US Green Building Council (USGBC) for a moderated discussion with regulatory and industry experts exploring how building decarbonization can help address, rather than exacerbate, the current and future challenges facing our grid. This session will explore the emerging grid issues and the various strategies that buildings can deploy to reduce grid demand.

speakers:

Ryan Dougherty, Executive Director, Geothermal Exchange Organization

Laurie Kerr, Principal Climate Advisor, USGBC – Moderator

John Rhodes, Chief Program Officer, NYS Department of Public Service

Zack Semke, Co-Founder and Director, Passive House Accelerator

**be
ex**

building
energy
exchange



31 Chambers Street
New York, NY

Sep 24th, 2026
9:00 am to 11:00 am



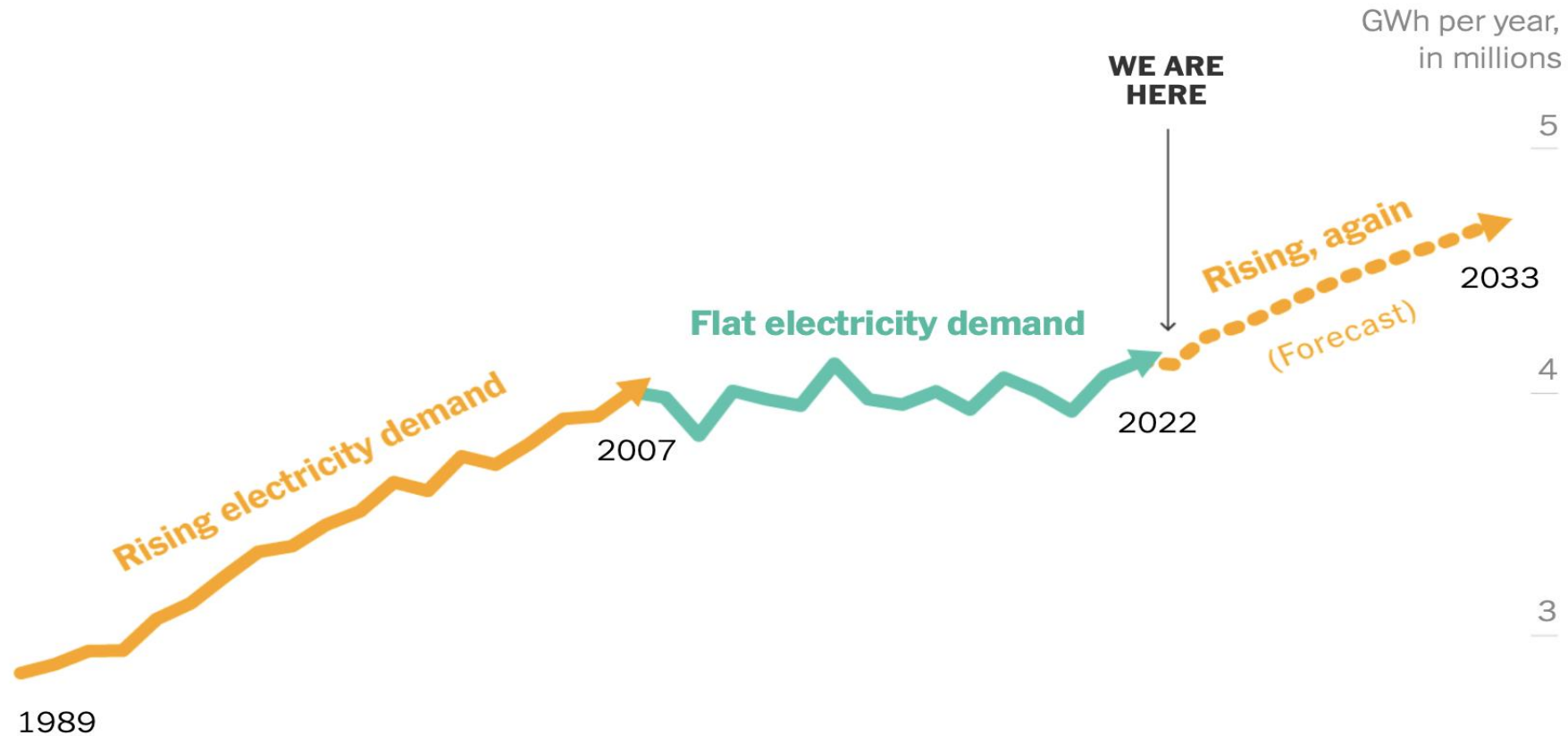
Buildings and the Grid: Clipping the Wings of the Falcon Curve

CLIMATE WEEK NYC 2026

Laurie Kerr, Principal Climate Advisor, USGBC

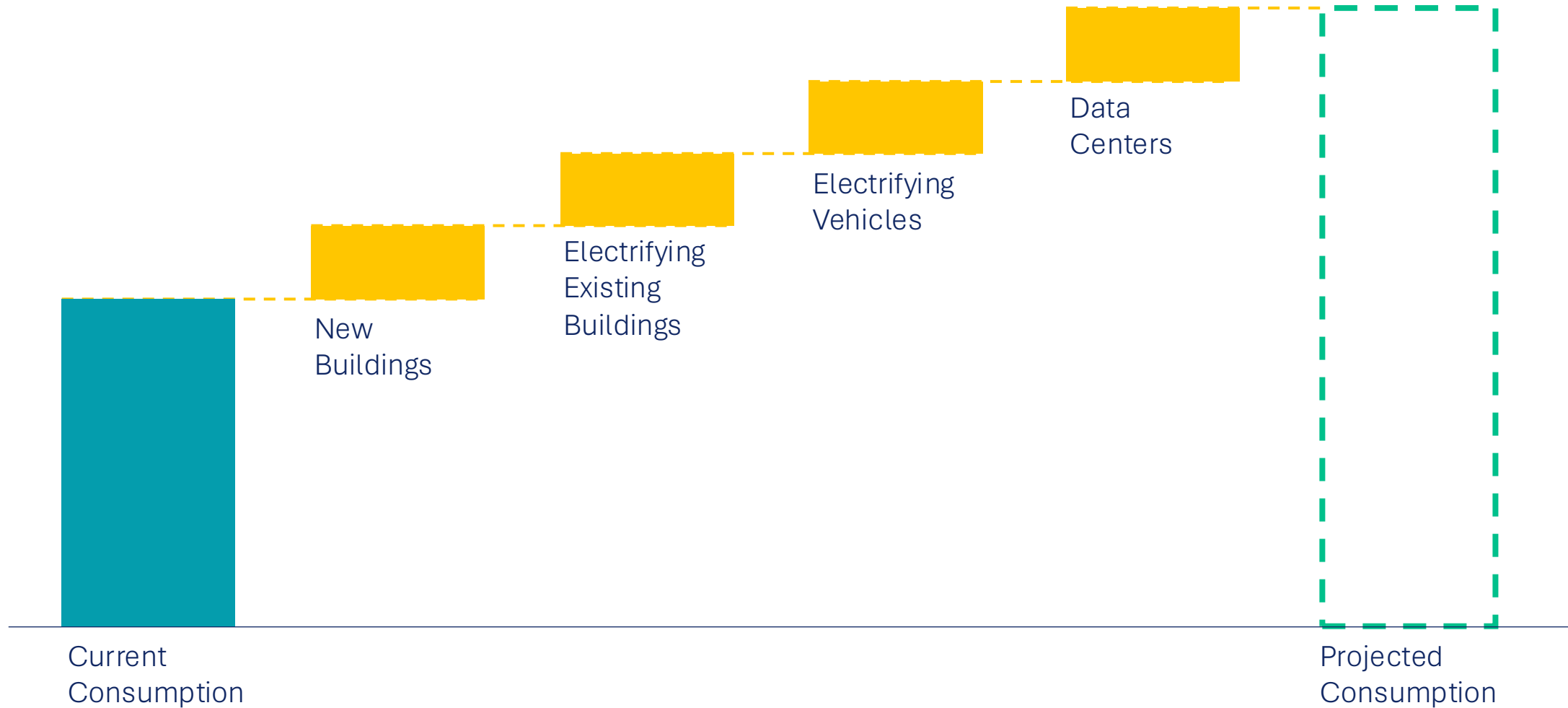


15 years of flat electricity consumption



US Electrical Consumption (New York Times)

Why is it increasing?

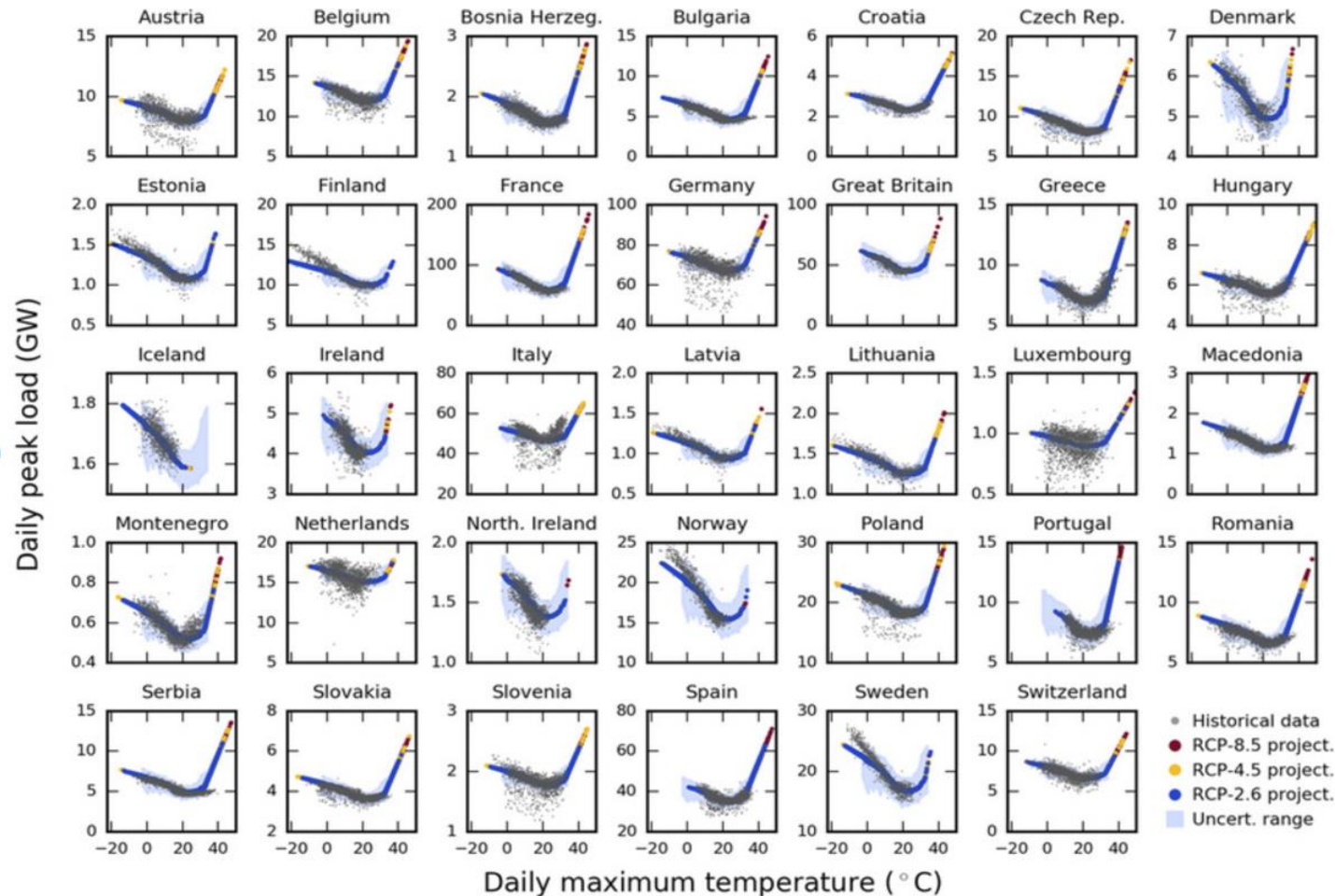


Main Issue:

- Not total consumption, but peak load
- Grid must be built to supply the peak



What causes the peaks? (Buildings)



These are
falcon curves!

**Buildings cause
this problem.**
Can they fix it?

Yes.
By lowering their
peak thermal loads.

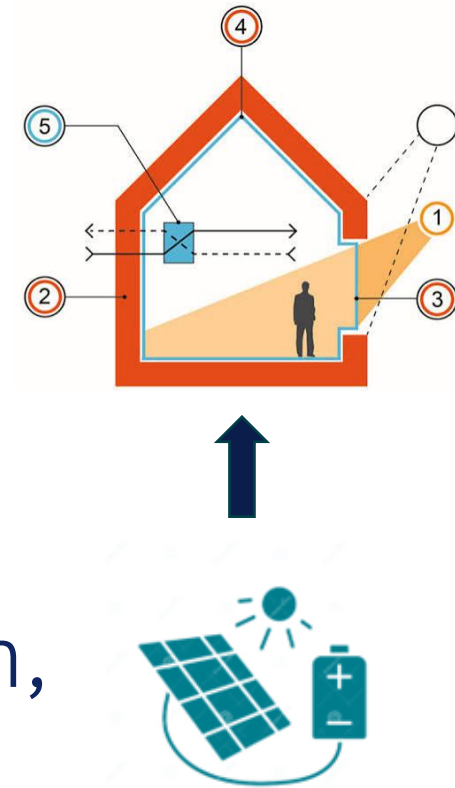
How can buildings reduce peak thermal loads?

1. Better building systems

Envelope, HVAC

2. Add-ons

Energy storage, on-site generation, load curtailment



Building Systems

Strategy

Better envelope

More efficient HVAC

Geothermal

Hybrid

Impact



Add-ons

Strategy

Onsite solar

Energy Storage

Curtailment

Impact



LEED v5 BD+C

encourages many of these strategies

Reduce Peak Thermal Loads (5)	Enhanced Energy Efficiency (10)	Renewable Energy (5)	Grid Interactive (2)	22 credits
• Energy or heat recovery ventilation • Reduced thermal bridging • Peak thermal load reduction	• Prescriptive and performance paths • More focus on plug loads	• Tiers 1, 2, and 3 as in v4.1 • New options: ○ Area based for onsite ○ Located on equity site	• Energy Storage • Demand Response • Power Resiliency	



**Greenbuild
International
Conference + Expo**
by informa •••

FLASH SALE

Use code NYCLIMATE to save \$200 on your conference pass
Offer ends Friday at midnight

USGBC | GBCI

Thank you



Geothermal heating and cooling to reduce peak grid demand at scale

September 24, 2026

Geothermal (ground source) heating and cooling

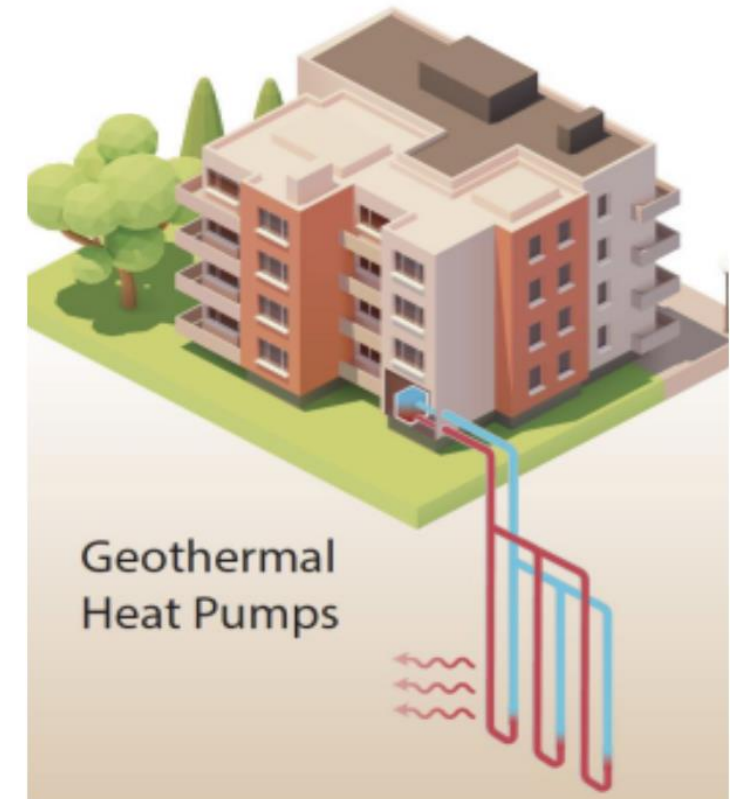
The stable earth temperature makes Geo the most efficient heating and cooling system available

Most common design (shown):

- Vertical boreholes
- Closed-loop: no injection / extraction
- Circulate water w/ non-toxic anti-freeze
- Annual energy load sets number/length of boreholes

Special design, if site conditions allow

- Horizontal loops – need large land areas
- Use of groundwater, surface water, or sewer water
- Thermal energy networks



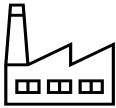
Source: *Pathways to Commercial Liftoff: Geothermal Heating and Cooling*, U.S. Department of Energy

Utilities Need New Ways to Manage Peak Demand

1. Electricity demand is rising – which is a good thing



Data Centers



Manufacturing



Heating and Cooling



Electric Cars

2. New generation cannot meet growing demand fast enough



DIVE BRIEF

Gas turbine supply crunch set to raise prices 195% by 2027: WoodMac



News & Analysis

The gas turbine crunch: Why supply won't meet demand

3. Demand-side resources can deploy quickly to avoid new infrastructure cost across the full grid system:



Generation



Storage

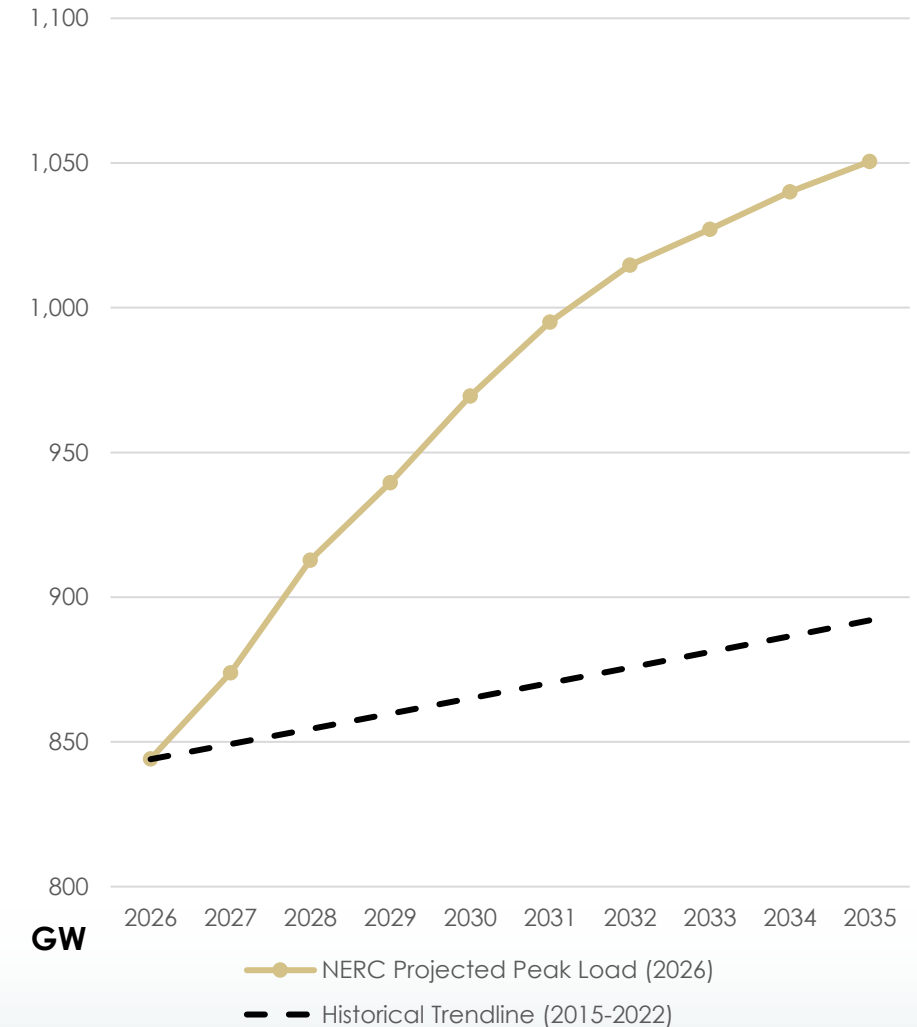


Transmission



Distribution

Projected Electric Demand in the U.S.
(NERC 2026)



Geothermal Heating and Cooling Will Reduce Peak Demand at Scale

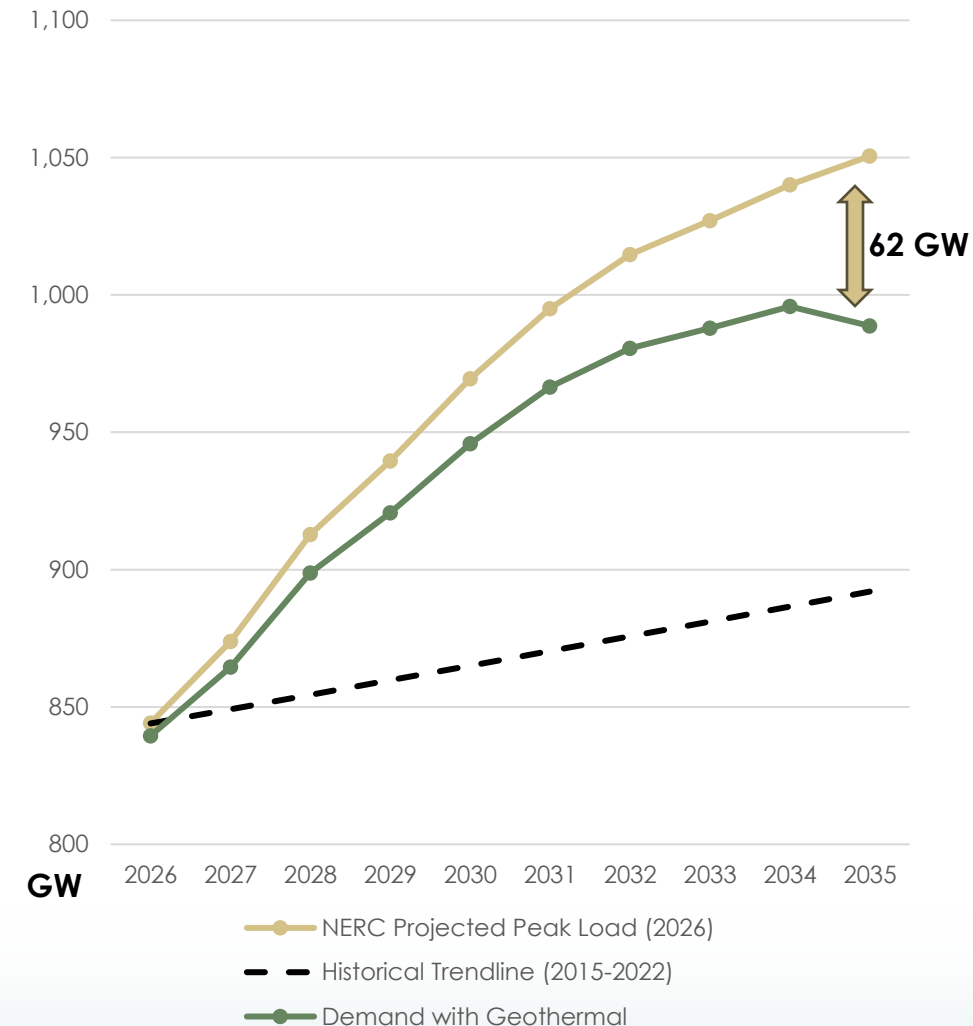
Geothermal reduces building energy use and lowers peak demand when the grid is most stressed

With geothermal deployed in 1% of U.S. buildings each year (new build and retrofit), the cumulative impact becomes significant

Peak demand reductions accumulate as additional geothermal systems are installed over time

Geothermal unlocks grid capacity, improves utilization, and drives down electric rates

Projected Electric Demand in the U.S.
(NERC 2026) – with Geothermal



Geothermal Deployment for Grid Benefits

Geothermal could yield 62,000 MW of avoided peak demand by 2035

≈ 50 Vogtle 3/4 reactors (\$30bn each)

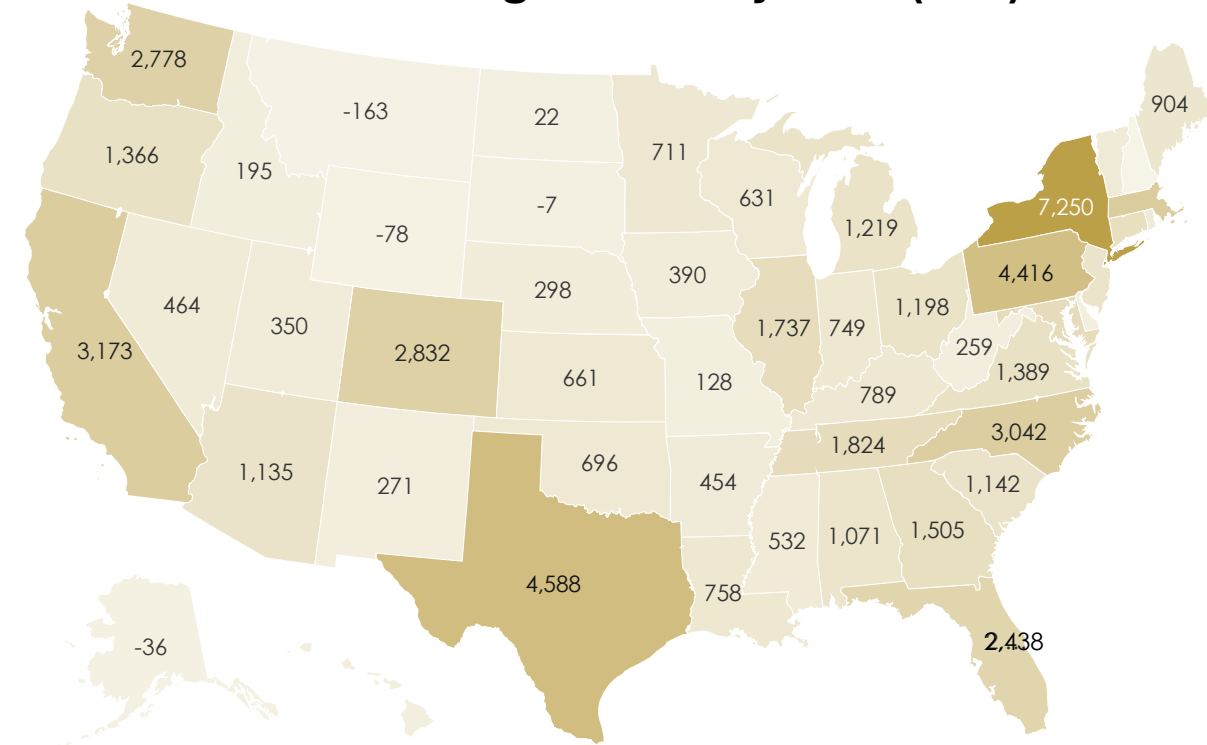
≈ 58% of projected data center demand

≈ The cumulative capacity of all rooftop solar installed in the U.S. today

≈ 3 years of GE's gas turbine production

Up to 130,000 MW of winter peak reduction by 2035 if targeted towards electric heating buildings

Peak Savings in 2035 by State (MW)



Results understate full benefits of geothermal:

- Additional benefits: geothermal hot water, added cooling
- Ground loop last 50+ years – benefits extend well beyond model timeframe, assures same grid performance and consumer affordability for decades to come
- Industry performance data indicates even greater savings
- Supports local jobs, domestic manufacturing, American energy



Current trends in the geothermal industry

- **Accelerating interest in geothermal heating and cooling:**
 - Neighborhood-scale deployment (housing developers, TENs)
 - Innovative policy ideas (e.g. Geothermal RECs)
- Tax credits following H.R. 1:
 - **Commercial (Section 48) investment tax credit: Unchanged**
 - 30% + 10-20% bonus credits; direct pay and transferability remain
 - **Residential (Section 25D) tax credit: expired Dec 31, 2025**
 - Updated tax law to allow for a geothermal leasing model for residential projects – **now eligible for commercial credit via lease**

Policy Actions to Accelerate Geothermal Grid Benefits

Federal

- Section 48 ITC
 - Clarify and simplify domestic content requirements
 - Unlock split ownership

Regulatory / Utility

- Integrate Geo into grid planning – include deployment at scale in IRP and DSP
- Energy efficiency incentives to reflect system benefits – peak reduction benefits of \$2,000/ton, higher in many states
- Geothermal RECs in RPS
- Utility-owned geothermal loops and networks
- Capture and utilize waste heat from data centers

Financing

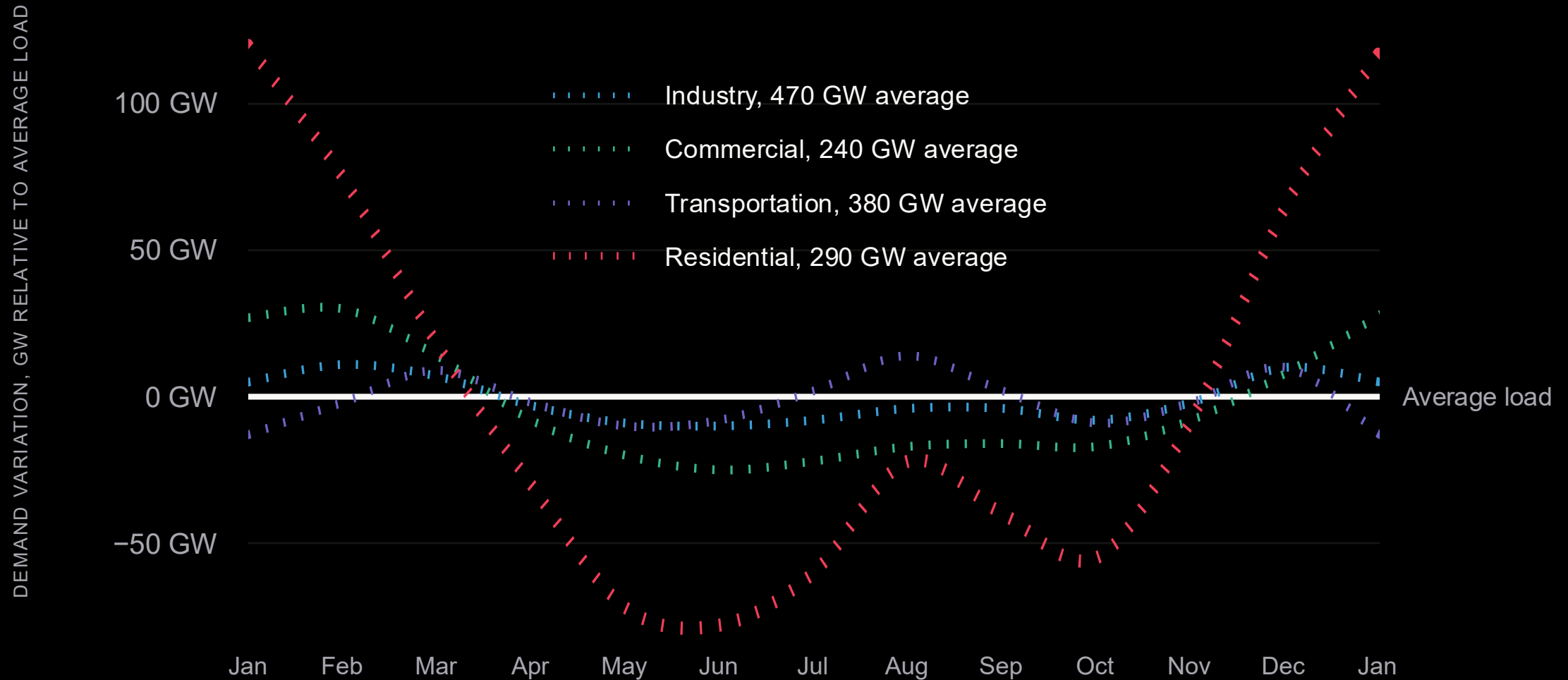
- Geothermal leasing
- Preferential financing terms

State/Local

- Workforce development incentives for geothermal training programs
- License reciprocity with nearby states
- Streamline local permitting
- Deploy in schools (to reduce operating costs)
- Grants for municipality feasibility studies

The Falcon Curve

Yearly electrified demand variation by US sector, modeled as if loads were almost completely electrified



Passive Buildings Bending the Curve

Annual load shape, schematic · Same building, same climate, different envelope

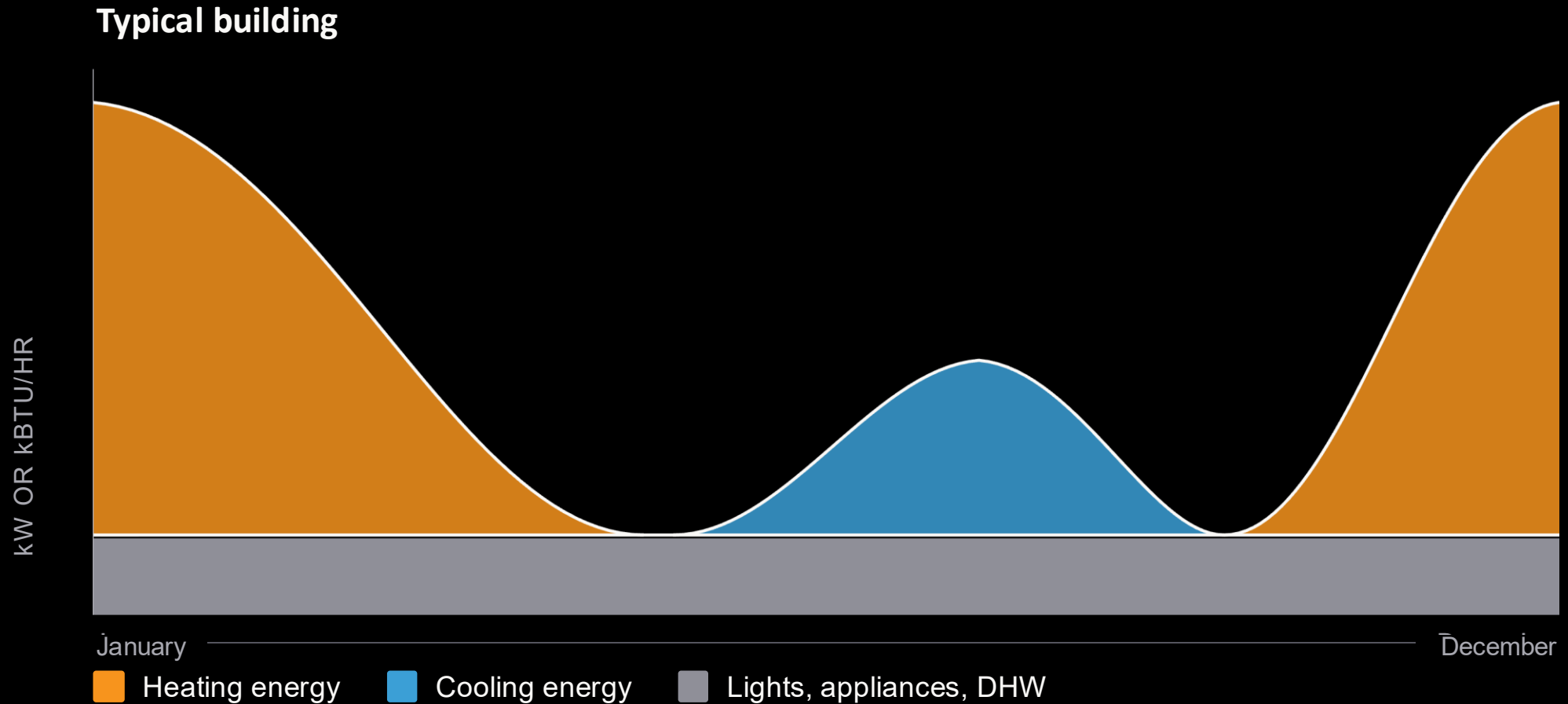


Chart concept: **Lisa White, Phius**

Schematic, not to scale original diagram © Phius



Passive Buildings Bending the Curve

Annual load shape, schematic · Same building, same climate, different envelope

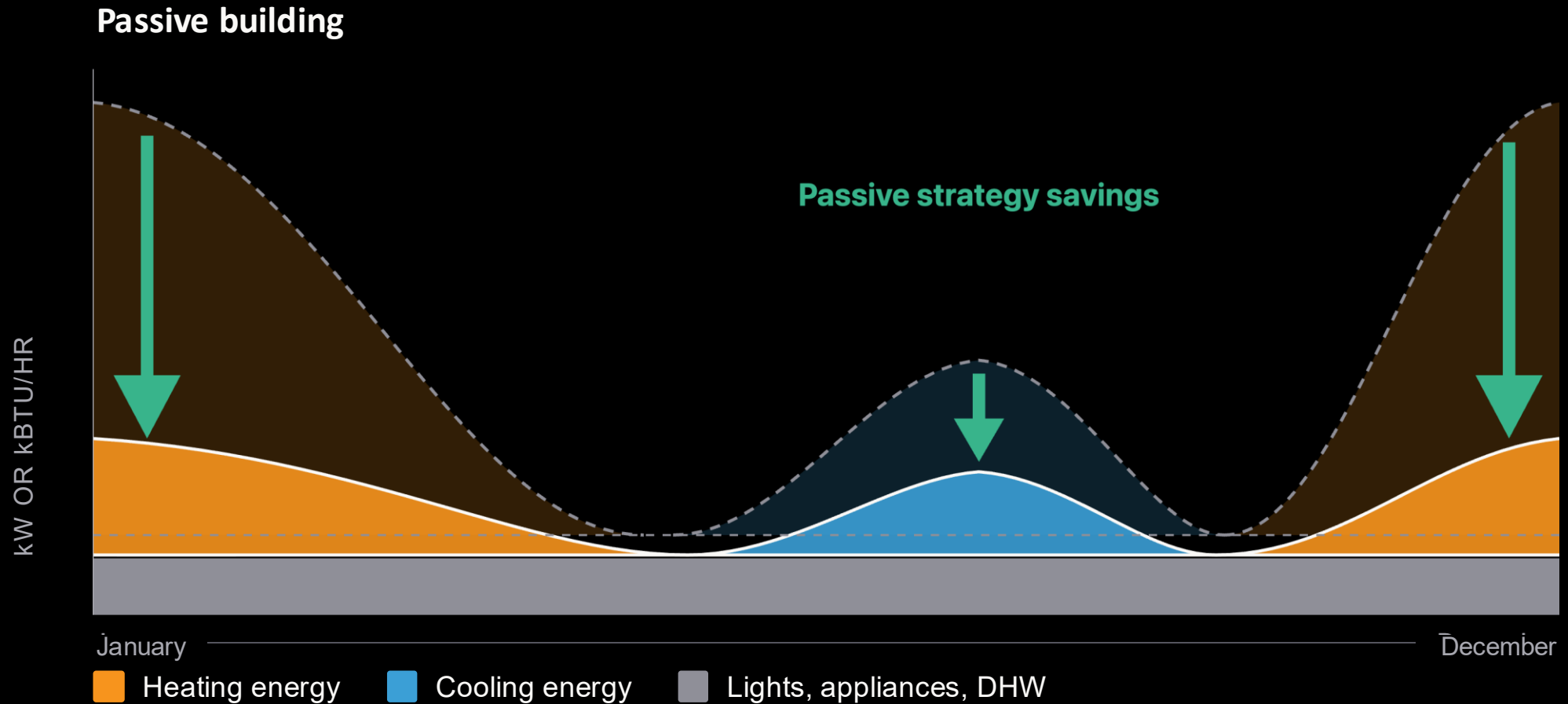


Chart concept: **Lisa White, Phius**

Schematic, not to scale original diagram © Phius



Site Energy Use NYC Buildings 2019

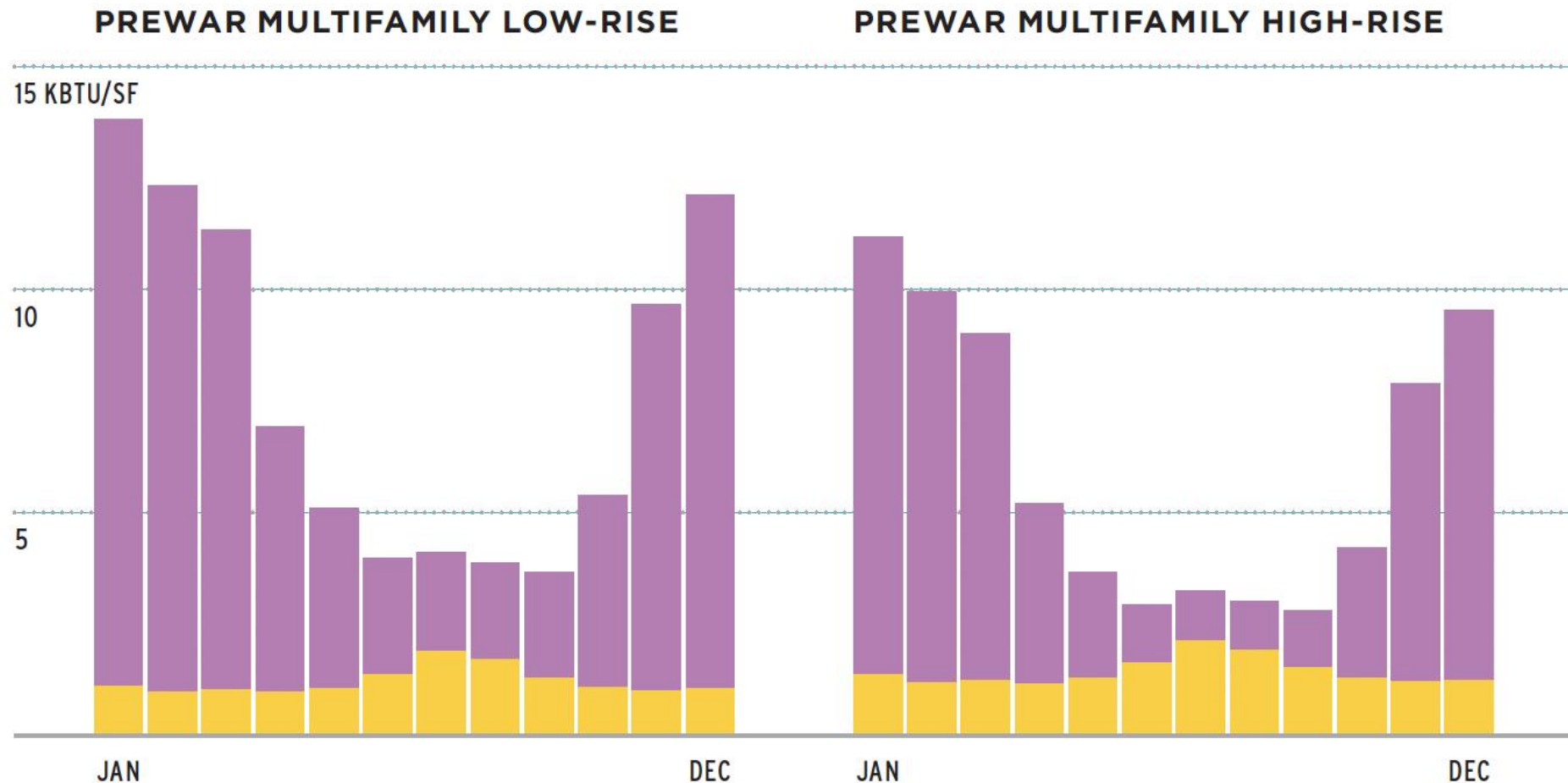


Chart: **Urban Green Council**

"GRID READY Powering NYC's All-Electric Buildings, 2021"

Rubin Hall NYU



Rubin Hall Retrofit
FX Collaborative
Steven Winter Associates
PHI EnerPHit
New York, New York



IMAGE: FX Collaborative

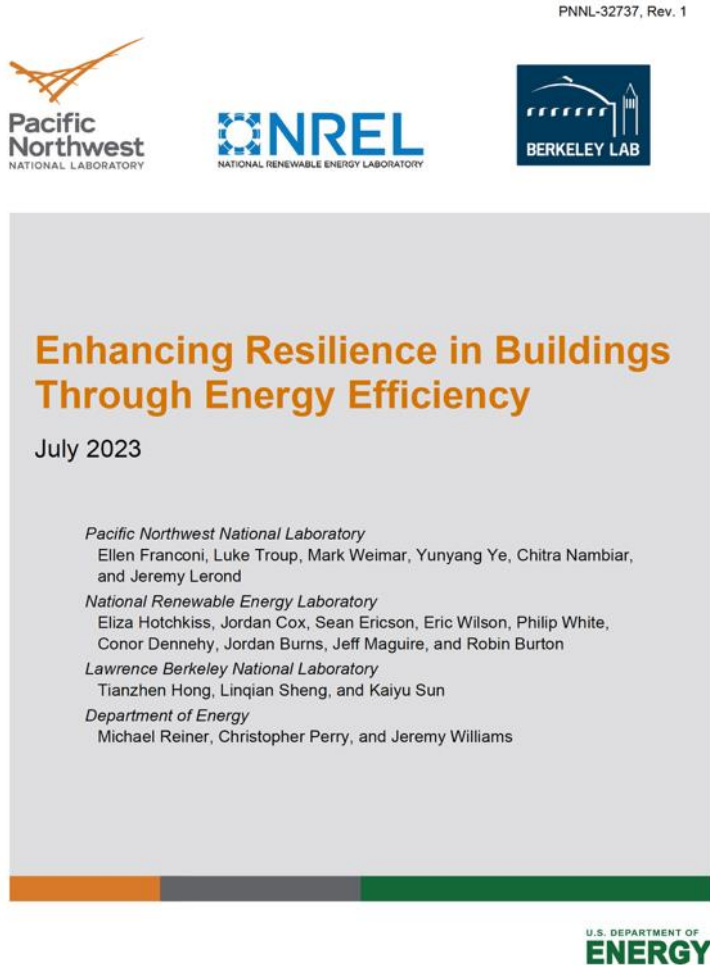
Hotel Marcel



Hotel Marcel
Becker + Becker Associates
Consigli Construction
PHI EnerPHit
New Haven, Connecticut



Passive Survivability



Excess deaths reduced **per extreme event**
if avg multifamily building were Phius:

Houston — Cold: **47%** Heat: **45%**

Atlanta — Cold: **29%** Heat: **36%**

Los Angeles — Cold: **39%** Heat: **26%**

Detroit — Cold: **34%** Heat: **20%**

Minneapolis — Cold: **38%** Heat: **24%**

Smoke Resilience



Buildings and the Grid: Clipping the Wing of the Falcon Curve

be
ex

building
energy
exchange

