



NPCC Distributed Energy Resources/Variable Energy Resources Forum

May 9, 2024, 9:00 a.m. – 12:00 p.m. EDT **Webex Meeting**

Dial-In: 415-655-0003 (USA) / 416-915-6530 (Canada)

Guest Code: 24236164987

Password: Pdve3Fsc@33 (73833372 from phone)

[Webex Link](#)

1.0 Distributed Energy Resources (DER) Variable Energy Resources (VER) Forum Topics

- 1.1 Welcome and Safety Message: Gerry Dunbar, NPCC Director Reliability Standards and Criteria (9:00 am - 9:05 am)
- 1.2 Antitrust Compliance Guidelines, Public Notice, and Meeting Protocols: Ruida Shu, NPCC Manager of Reliability Standards (9:05 am – 9:10 am)
- 1.3 NPCC VER/DER Outreach Efforts – Gerry Dunbar, NPCC Director Reliability Standards and Criteria (9:10 am – 9:15 am)
- 1.4 Regulatory and Policy Innovations for Achieving Building Decarbonization – Huck Montgomery, Director, Policy & Strategy, National Grid (9:15 am – 9:55 am)
- 1.5 NYSERDA: Clean and Resilient Buildings – Susanne DesRoches, Vince President of Clean and Resilient Buildings, New York State Energy Research and Development Authority (NYSEDA) (9:55 am – 10:35 am)

Break (10:35 am – 10:40 am)

- 1.6 New England Environmental Justice and Equity – Conrad Bolston, Senior Counsel for Environmental Justice and Equity, Federal Energy Regulatory Commission (FERC) (10:40 am – 11:20 am)
- 1.7 Grid Planning for Building Electrification: An Update from the ESIG DER Task Force – Obadiah Bartholomy, Manager of Distributed Energy Strategy, Sacramento Municipal Utility District (11:20 am – 12:00 pm)
- 1.8 Closing – Gerry Dunbar



Northeast Power Coordinating Council, Inc. (NPCC)

Antitrust Compliance Guidelines

It is NPCC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. The antitrust laws make it important that meeting participants avoid discussion of topics that could result in charges of anti-competitive behavior, including: restraint of trade and conspiracies to monopolize, unfair or deceptive business acts or practices, price discrimination, division of markets, allocation of production, imposition of boycotts, exclusive dealing arrangements, and any other activity that unreasonably restrains competition.

It is the responsibility of every NPCC participant and employee who may in any way affect NPCC's compliance with the antitrust laws to carry out this commitment.

Participants in NPCC activities (including those participating in its committees, task forces and subgroups) should refrain from discussing the following throughout any meeting or during any breaks (including NPCC meetings, conference calls and informal discussions):

- Industry-related topics considered sensitive or market intelligence in nature that are outside of their committee's scope or assignment, or the published agenda for the meeting;
- Their company's prices for products or services, or prices charged by their competitors;
- Costs, discounts, terms of sale, profit margins or anything else that might affect prices;
- The resale prices their customers should charge for products they sell them;
- Allocating markets, customers, territories or products with their competitors;
- Limiting production;
- Whether or not to deal with any company; and
- Any competitively sensitive information concerning their company or a competitor.

Any decisions or actions by NPCC as a result of such meetings will only be taken in the interest of promoting and maintaining the reliability and adequacy of the bulk power system.

Any NPCC meeting participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NPCC's antitrust compliance policy is implicated in any situation should call NPCC's General Counsel and Corporate Secretary, Mr. Damase Hebert at (646) 737-2335 or dhebert@npcc.org.



Distributed Energy Resources and Variable Energy Resources Forum Disclaimer Statement

1. General

Any information presented [at NPCC forums] is for informational purposes only. NPCC accepts no responsibility for the accuracy of such presentations, or for your reliance on any information contained within the content available through such forums. Discussions represent a wide range of views and interests of the participating individuals and organizations. Statements made during discussions do not necessarily reflect those of NPCC.

2. Vendors

Information presented is for stakeholder informational purposes only and does not imply NPCC's endorsement or approval. NPCC does not promote technology, tools, products, services, or vendors that may be used by entities within the electric industry. Questions or concerns about vendors or the services or products they offer must be directed to the vendor. It is the responsibility of the owner, operator, or the user of the bulk power system to research the services the vendors offer. Those that utilize the services of vendors assume full responsibility for claims directly or indirectly arising thereunder and NPCC is not responsible or liable for any claim or harm, directly or indirectly, that transpires from the use of any information.



Public Announcement

RSC and DER/VER Forum Meetings, WebEx, and Conference calls:

Participants are reminded that this meeting, WebEx, and conference call are public. The access number was posted on the NPCC website and widely distributed. Speakers on the call should keep in mind that the listening audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.



Meeting Logistics

Participants will be muted upon entry, and you are encouraged to use the “Chat” feature of the WebEx if you wish to ask a question. The questions will be answered by the presenter at the end of each presentation. NPCC DER/VER Forum will be recorded, the recording and meeting material will be posted on the DER Forum section of the NPCC website.

Thank you for your cooperation.

NPCC 2024 Outreach Activities

Gerry Dunbar
Director Reliability Standards and
Criteria

May 9, 2024



NPCC, Inc.



NPCC 2024 – 2027 Strategic Plan

Strategic Focus Area

Reliably Integrate Resources Brought Forward by Decarbonization Objectives

2024 NPCC Planned Outreach Activity

- DER/VER Forums --- March, May, August, October
 - Various Decarbonization Topics
- Webinars/Workshops
 - Artificial Intelligence
 - Cold Weather Preparedness
 - EMT Modelling
 - Cyber and Physical Security
- IBR Registration Initiative



IBR Registration Initiative

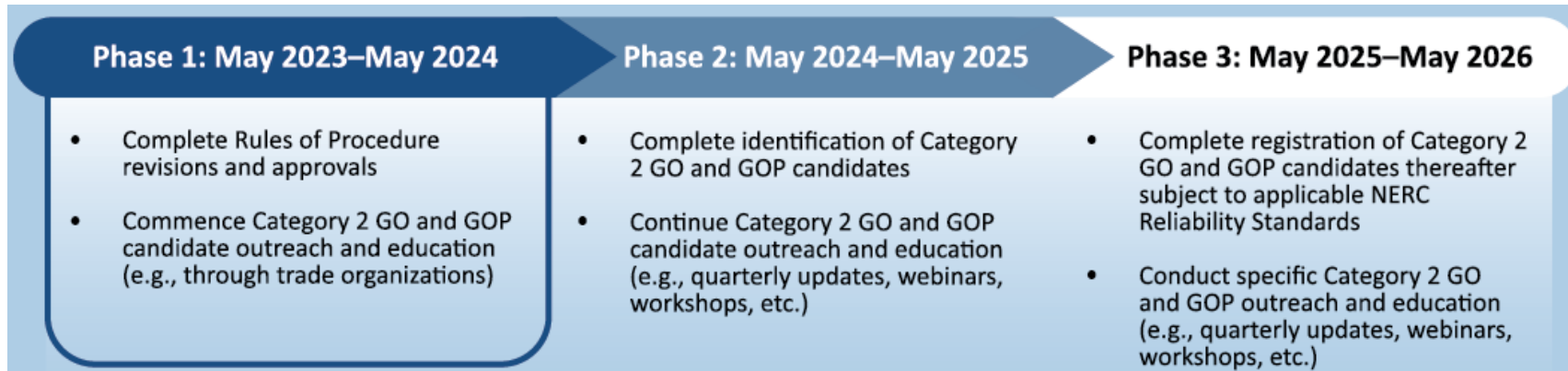
Proposed Revisions to the Rules of Procedure

- Category 2 Generator Owner and Generator Operator
- Register entities that own and/or operate:
 - Non-BES Inverter Based Resources (IBRs) with aggregate nameplate capacity ≥ 20 MVA connected at a voltage ≥ 60 kV
- Ensures 97.5% of impactful IBRs subject to Reliability Standards



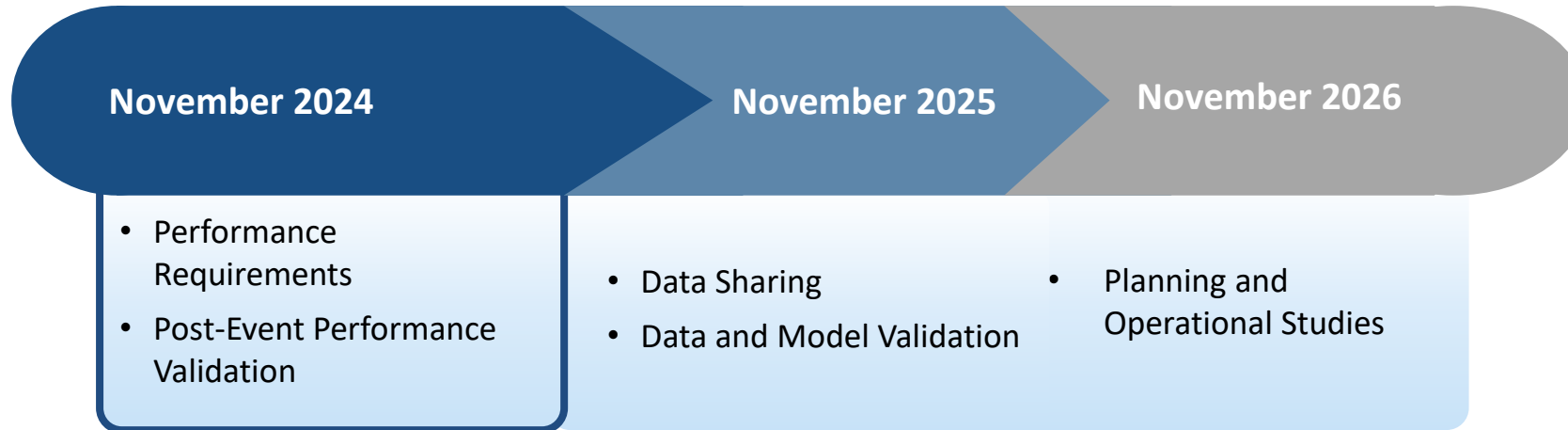
IBR Registration Initiative

IBR Registration Milestones





IBR Registration Initiative
FERC Order 901
Standards Development Work Plan





IBR Registration Initiative

01

Comprehensive Strategy



- NERC website quick reference guide
- Periodic communication updates on NERC website and through the ERO Communications Group

02

Engage Existing Entities



- Solicitation of stakeholder feedback and insight
- Use existing communication channels

03

Educate New Registrations



- Education on NERC and E-ISAC processes
- Encourage participation

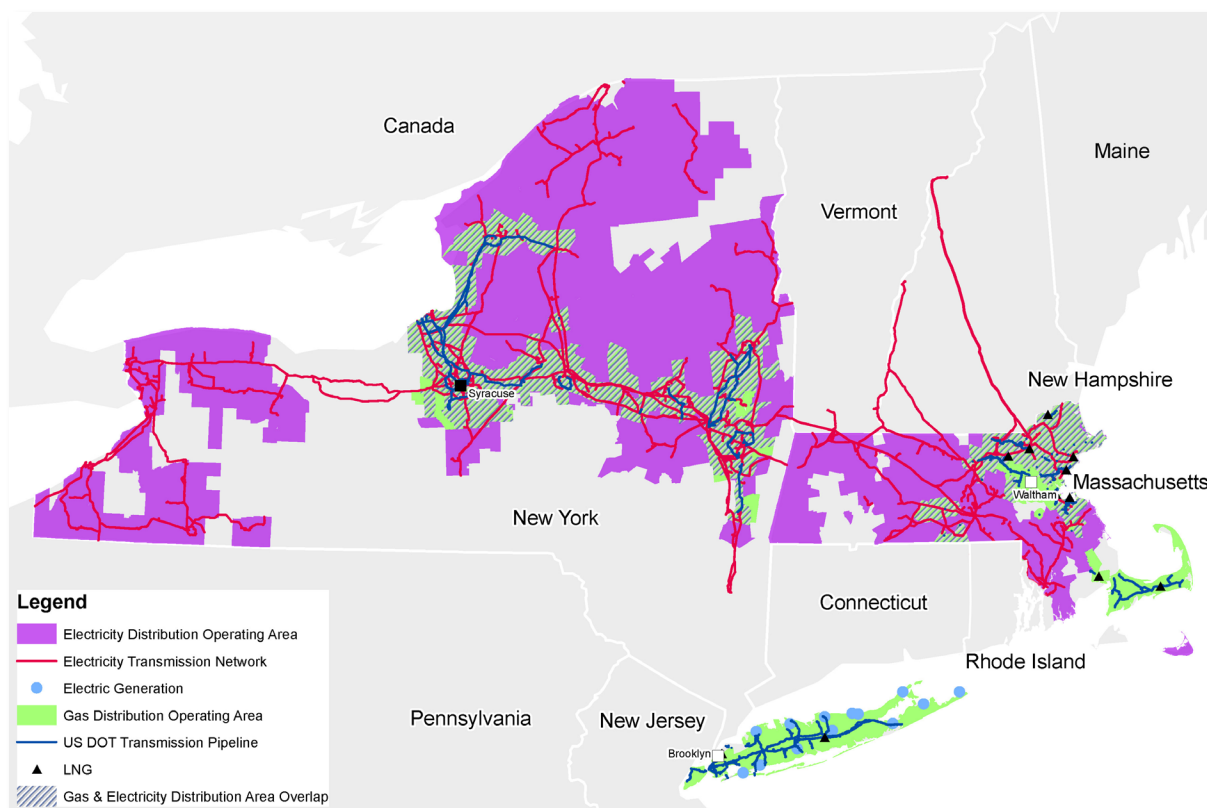
National Grid

*Regulatory & Policy
Innovations for Achieving
Building Decarbonization*



About National Grid

We are one of the largest investor-owned energy companies in the US — serving more than 20 million people throughout New York and Massachusetts.



National Grid

Serving 20 million people

5.3M Residential + 600k Commercial
= 5.9 million customer accounts

Residential & Commercial customers by region:



Gas: .9 million (41%)
Electric: 1.3 million (59%)



Gas: 1.96 million (53%)
Electric: 1.1 million (30%)
Both: .6 million (16 %)

National Grid's Climate Leadership

Our Climate Action Commitments

We commit to reduce absolute Scope 1 and 2 GHG emissions:

80% by 2030
from a 1990 base-year* (SBTi aligned) – our near-term target

90% by 2040
from a 1990 base-year – our medium-term target

Net Zero by 2050
– our long-term target

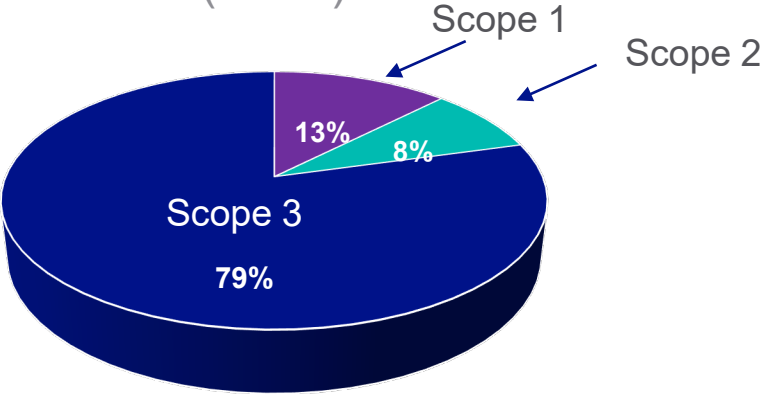
We commit to reduce absolute Scope 3 value chain GHG emissions including sold gas and electricity:

37.5% by 2034
from a 2018 base-year (SBTi aligned)

Net Zero by 2050

* This is equivalent to a 50% absolute reduction from a FY2016 base-year, aligned to the SBTi criteria on more recent baseline years.

National Grid Emissions By Scope (FY22)



Where to Learn More

Our **Climate Transition Plan**:
www.nationalgrid.com/document/146726/download

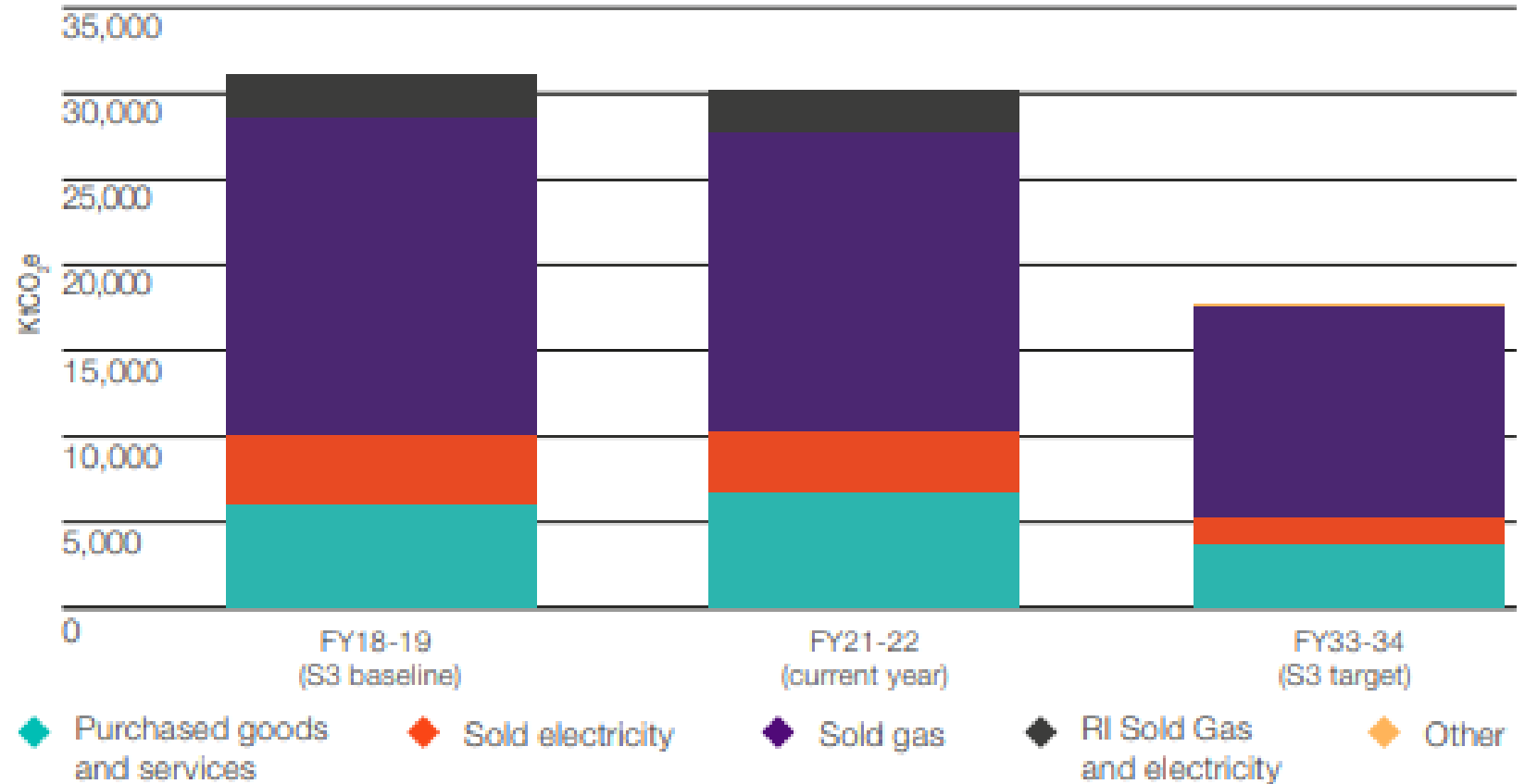
Our **Responsible Business Report**:
<https://www.nationalgrid.com/document/149761/download>

Our **Clean Energy Vision**:
<https://www.nationalgrid.com/document/146251/download>

National Grid's Scope 3 Emissions

Projected Scope 3 emissions to 2034

- **Sold Energy: 78%**
 - *Sold Gas:* 63%
 - *Sold Elec.:* 15%
- **Purchased Goods & Services: 22%**



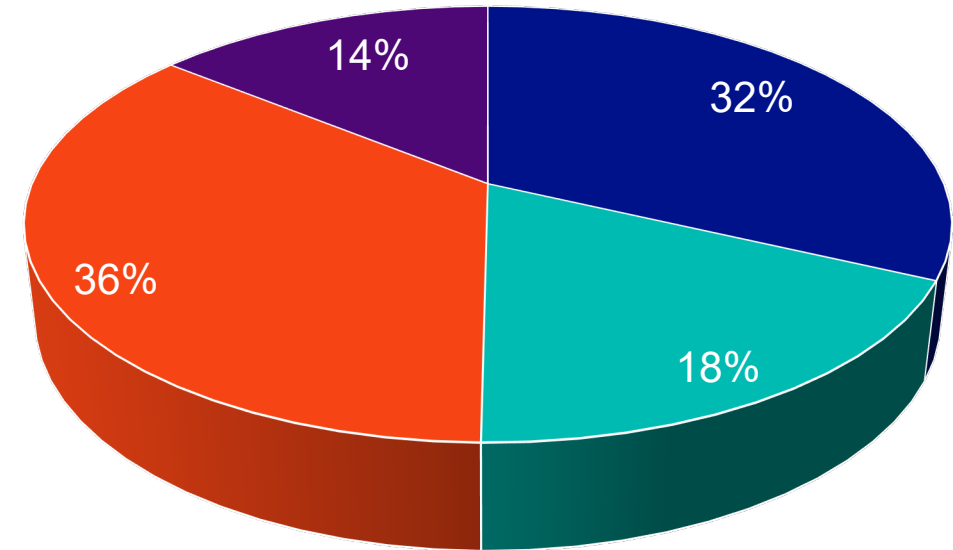
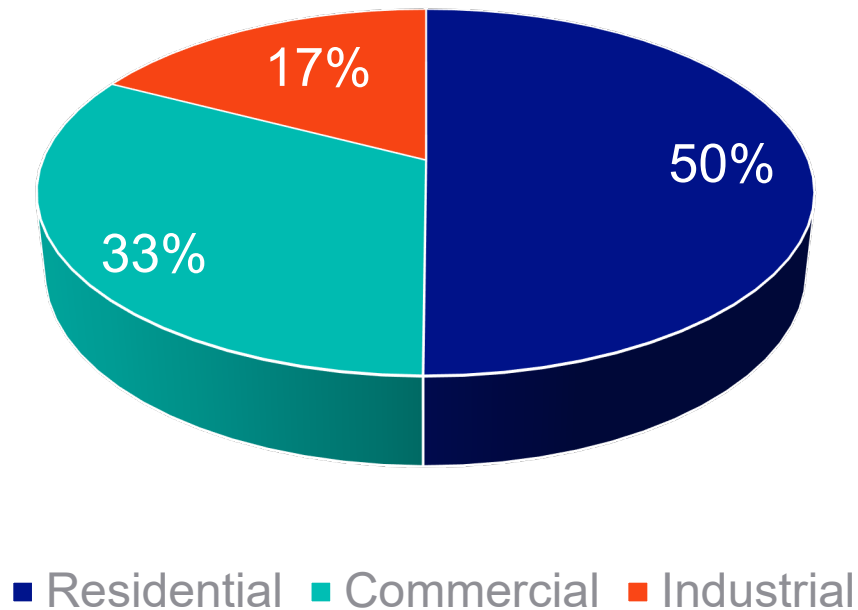
Scope 3 projections are aligned to our clean energy vision for gas and electricity networks.

Scale & Scope of the Challenge

Heating homes & businesses is the largest share of the energy economy

MA & NY Annual Energy Consumption

MA & NY Heat Energy by Sector



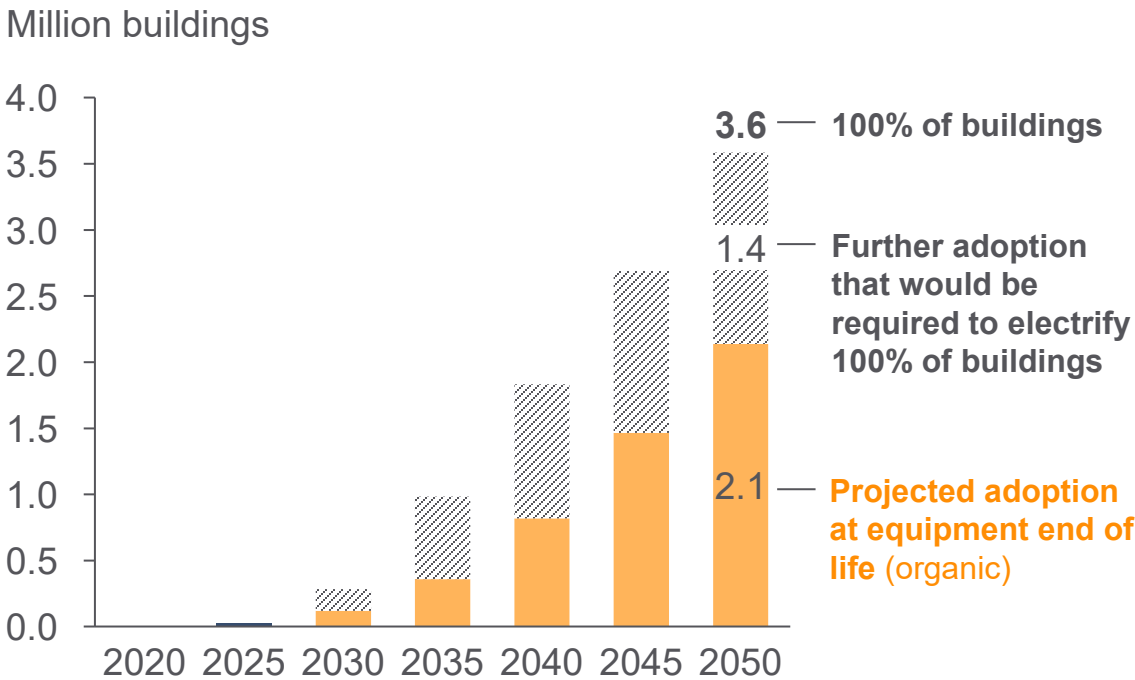
- Gas (thermal)
- Electricity (net non transport)
- Transportation (net)
- Non-gas/non electric thermal (net)

Key Barriers to Gas Decarbonization

- Customer demand for gas is currently growing
- Customer adoption of electric heat and energy efficiency is not growing fast enough
- Significant expansion of electric infrastructure is needed to meet incremental demand for electrified heat
- Regulatory frameworks are not coordinated or optimized for decarbonization, largely dealing separately with the gas, electric, and transportation energy systems when we know these systems must become increasingly integrated.
- The benefits of climate action accrue globally and over decades or centuries, while the costs are borne largely by individual families and businesses today, putting pressure on energy affordability at a time when many are already struggling.
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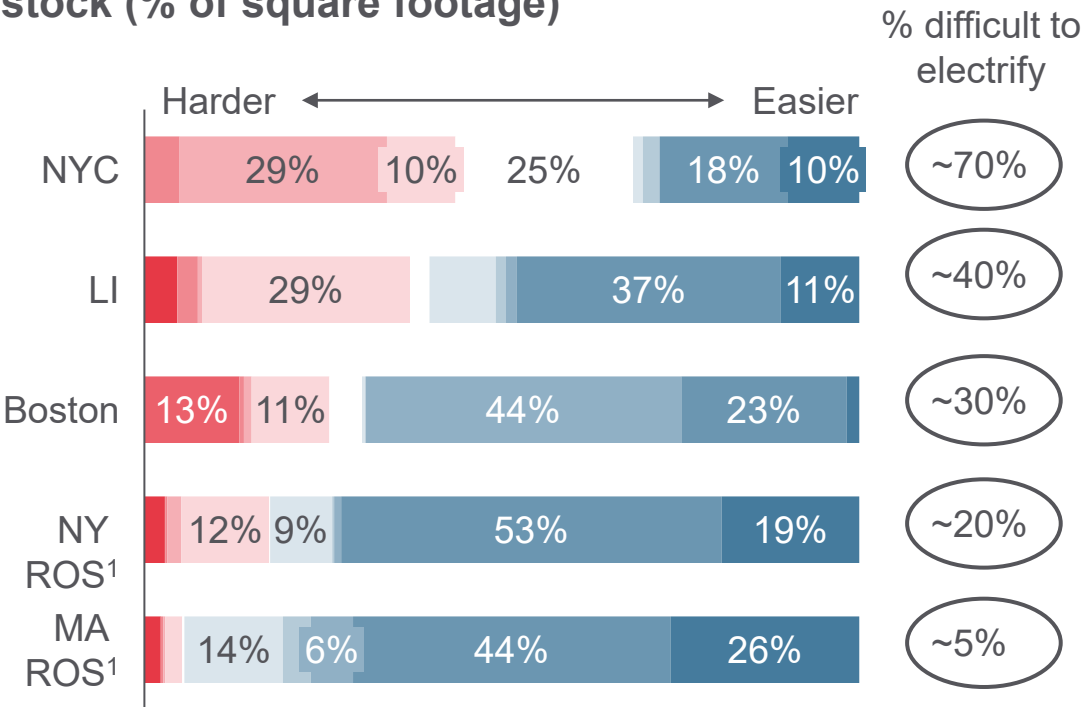
Customer adoption rates and building limitations, particularly in urban areas

Cumulative buildings (in NGUSA territory) adopting heat pumps in an all Electric pathway



At normal levels of heating equipment turnover, the Northeast cannot electrify everything by 2050. Adoption rates at historical levels imply a **40-50% shortfall**.

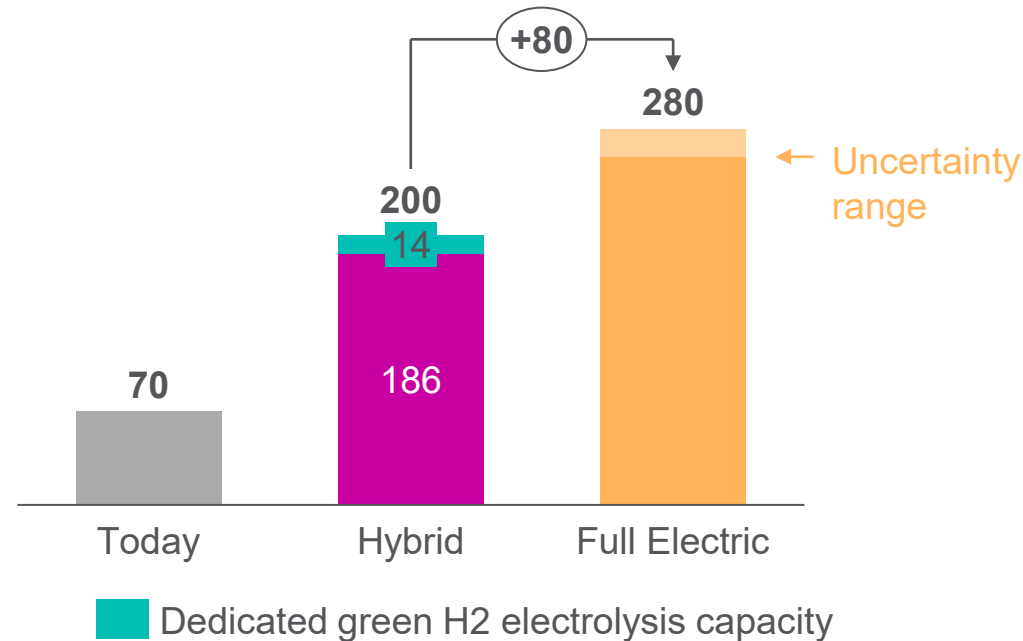
“Ease of Electrification” for US Northeast building stock (% of square footage)



US Northeast **building stock presents challenges to electrification**, particularly in urban areas where National Grid operate gas networks

Electric infrastructure requirements for decarbonization:

2050 NYISO/ISO-NE installed electric capacity for economy-wide load (GW)



Hybrid requires less new electric infrastructure, even when taking into account green hydrogen production. Hybrid avoids nearly **~80 GW** of new generation and transmission versus a **Full Electric** future, more than today's NYISO/ISO-NE generation fleet. **~50 GW** of this avoided capacity would be in NYISO.

Our Clean Energy Vision for Fossil-Free Heat

Our Clean Energy Vision is our plan to achieve the fair, affordable, clean energy transition for all our customers and communities.

It is rooted in a strategy that:

- Drives down energy use through efficiency and demand response, helping to reduce costs and maintain customer affordability.
- Advances smart electrification and builds the smarter, stronger, cleaner electric network of the future.
- Right sizes and decarbonizes the existing pipeline network, making it both leaner and cleaner.

Pillar one

Energy efficiency in buildings



We will continue to provide programs for our customers to accelerate energy efficiency improvements to buildings, including deep retrofits and measures that reduce peak gas and electric demand; and support more rigorous building codes for new buildings.

Pillar two

100% fossil-free gas network



We will eliminate fossil fuels from our existing gas network no later than 2050 by delivering renewable natural gas and green hydrogen to our customers.

Pillar three

Hybrid electric-gas heating systems



We will support our customers by providing them strategies and tools to capture and maximize the benefits of pairing electric heat pumps with their gas appliance.

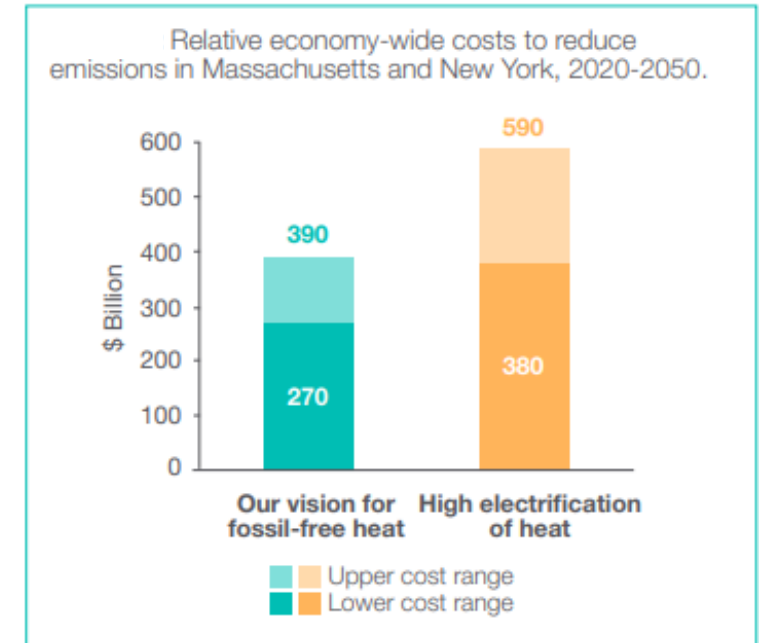
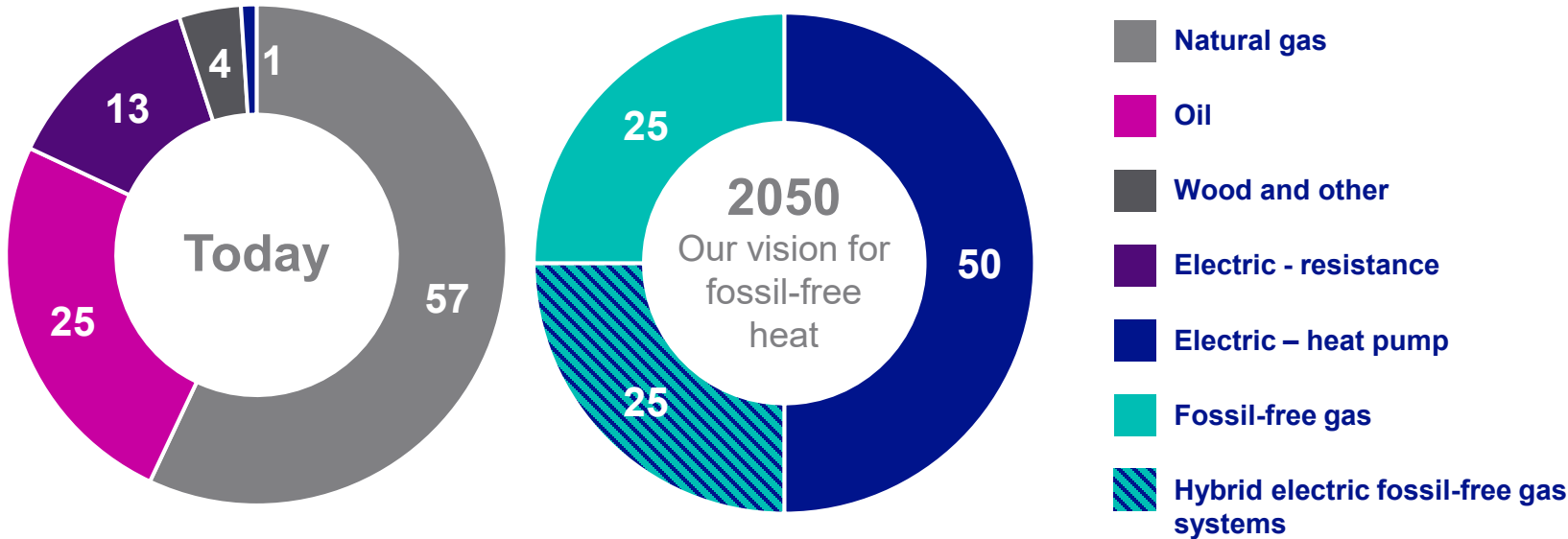
Pillar four

Targeted electrification and networked geothermal



We will support cost-effective targeted electrification on our gas network, including piloting new solutions like networked geothermal. We will support customers who heat with oil and propane with strategies and tools to convert to heat pumps.

Our vision for fossil-free heat by 2050



We can't achieve this by ourselves – we are:

Working with policymakers and regulators to realize this ambition

Engaging with all stakeholders and interested parties to seek support for our Vision

Necessary Policy & Regulatory Innovations - 1

Frameworks to enable an orderly transition to clean energy

- Integrated Energy Planning: Considering and incorporating critical interactions between the gas, electric, and customer energy systems into utility planning processes can help advance decarbonization goals at the lowest achievable cost and with the greatest and most equitable benefits for customers.
- Policy and regulatory changes to encourage gas system alternatives: Existing statutory and regulatory requirements for service line extensions and the provision of service may present barriers to cost-effective electrification, and modifications must only be considered if adequate care is taken to mitigate cost and feasibility risks and avoid unreasonably disrupting customer choice.
- Non-Pipeline Alternatives (NPA): Establishing standard, effective means of reallocating funding for customer-adopted solutions (e.g., heat pumps) can reduce emissions, gas system costs, and customer risk by avoiding unnecessary infrastructure spending .
- Procedures for Targeted Electrification: New policies to fairly and equitably target high-value segments of the gas system for electrification, including through Utility Thermal Energy Networks (UTENs), can empower customers and protect customer choice while optimizing emissions reductions and costs.

Necessary Policy & Regulatory Innovations - 2

Ensuring long-term energy affordability

- Equitable depreciation: Addressing the pace at which gas utilities recover costs for new and existing assets can be a powerful tool for reducing future bill impacts as utilization of the gas network evolves.
- Cross-utility cost coordination: Coordination among gas and electric utilities is essential to ensure costs associated with meeting today's gas demand are not borne disproportionately by gas customers who are unable to electrify.
- Optimizing Decarbonization Programs for Affordability: Emerging policies such as New York Cap & Invest and Massachusetts' Clean Heat Standard can support affordability through gradual implementation and tailoring cost impacts and revenue reinvestments to customer circumstances.

Necessary Policy & Regulatory Innovations - 3

Scaling efficiency and electrification to equitably reduce customer gas demand

- Developing new sources of program funding: While the current approach of customer-funded Demand Side Management (DSM) programs worked well in the past, new sources of funding will be necessary to enable the levels of demand reduction required to achieve decarbonization targets.
- Enhancing program design and implementation to ensure equity and balance customer bill impact with emissions reductions: New frameworks for setting program targets, innovations on program delivery, and an ongoing focus on ensuring low-income customers and those in Environmental Justice/Disadvantaged Communities can access DSM programs will enable greater emissions reductions and a more equitable transition.

Necessary Policy & Regulatory Innovations - 4

Enabling procurement and integration of clean alternative fuels

- Gas Utility Decarbonization Performance Standard: Programs to require gas utilities to reduce emissions from customer fuel consumption over time, including through the procurement of clean alternative fuels, will support decarbonization of difficult-to-electrify buildings and industry and complement electrification.
- Accurate GHG Accounting: Evidence-based GHG accounting frameworks, including methods that consider lifecycle emissions impacts, must be embedded in all decarbonization policies to maximize emissions reductions and avoid unintended consequences like GHG “leakage,” where policies shift emissions to other sectors or jurisdictions instead of reducing them.
- Support for pilots and demonstrations: Enhanced support for Research, Development, and Demonstration (RD&D) for alternative fuels is necessary to understand the value and role of alternative fuels in an orderly gas system transition and is essential for any CLCPA-compliant future.

National Grid Partnership with RMI

New joint research paper on gas decarbonization opportunities

Key Findings:

1. Current NPA projects reflect diverse energy policy goals and energy system characteristics, necessitating unique solutions to meet each jurisdiction's energy needs.
2. There's no one-size-fits-all cost-benefit analysis for utilities to apply to NPAs to analyze impacts on consumers, on meeting emissions goals, and on achieving other societal goals.
3. There's a range of criteria to weigh when prioritizing NPAs, including gas asset risk and hydraulic feasibility, electric capacity, benefit-cost criteria, customer propensity for new technology adoption, and community factors.
4. NPA projects can be funded through a series of different sources while protecting ratepayers' long-term affordability, including federal, state, and local funding, and electric and gas rates.
5. To conduct IEP that achieves net-zero goals as cost-effectively and equitably as possible, regulatory support is needed to enable cross-utility data sharing and decision-making, and to invest in new tools and capabilities.
6. Utility and municipality partnership may be a key element of NPA projects and localized IEP to ensure alignment, build community support, and incorporate local priorities in project planning.
7. Individual customer persuasion to reach 100% participation is not a scalable NPA strategy.
8. Policy change will be needed to evolve the utility business model and obligation to serve, while retaining the opportunity for cost recovery as part of a transition away from gas.

Next Steps

Key Regulatory & Policy Proceedings in NY & MA

New York

- Gas Planning Procedures docket
- Gas transition legislation (NY HEAT/AGTA)
- 2040 Zero-Emissions Grid & Grid of the Future dockets
- New York Cap & Invest (NCYI)
- Transportation Low-Carbon Fuels Standard (LCFS) legislation

Massachusetts

- 20-80 “Future of Gas” docket
 - Gas utility Climate Compliance Plans (CCP)
- Clean Heat Standard (CHS) rulemaking
- GHG reporting rulemaking
- Renewable Heat Standard legislation
- Electric Sector Modernization Plans (ESMP)

Huck Montgomery
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NPCC BUILDING DECARBONIZATION FORUM

NYSERDA: Clean and Resilient Buildings

May 9, 2024

Susanne DesRoches

VP, Clean and Resilient Buildings
New York State Research and Development Authority

- New York State's Nation-Leading Climate Plan:
 - New York State's nation-leading climate agenda is the most aggressive climate and clean energy initiative in the nation.
 - Calls for an orderly and just transition to clean energy that creates jobs and continues fostering a green economy.
 - Enshrined into law through the Climate Leadership and Community Protection Act, New York is on a path to achieve its mandated goal of a zero-emission electricity sector by 2040, including 70 percent renewable energy generation by 2030, and to reach economy wide carbon neutrality.
 - Under the Climate Act, New York will build on this progress and reduce greenhouse gas emissions by 85 percent from 1990 levels by 2050, while ensuring that at least 35 percent, with a goal of 40 percent, of the benefits of clean energy investments are directed to disadvantaged communities.

Buildings Context in the Clean Energy Transition



Context and Scale of Transformation:

- Emissions from **buildings today account for roughly 40% of GhG emissions** in NYS, driven by fossil fuel-based space and hot water heating.
- **Decarbonizing buildings at scale** will be essential to meet the State's mandate to reduce GhG emissions 85% by 2050.
- This is a **once-in-a-lifetime opportunity** to modernize our buildings to make them safer, healthier, more comfortable, affordable, and resilient.
- In 2030:
 - **All new sales** of single-family and low-rise residential heating systems are heat pumps.
 - **1-2M homes** are electrified with heat pumps (requiring us to reach 200k units/year from ~20k units/year today).

How NYSERDA drives outcomes towards these goals:

We are focused on the following interventions to drive specific outcomes:

- **Range of market acceleration activities:**
 - Purposeful demonstrations, product development support, decision-quality data, support for neighborhood-scale decarbonization.
 - Supply chain development, contractor training, workforce development.
 - Financing solutions to reduce pre-development and first-cost risks to attract private capital.
- **Energy codes and standards** to send a clear signal to the market.
- **Support for efficient decarbonization** focused on disadvantaged communities and low to moderate income New Yorkers.

Carbon Neutral Buildings Roadmap

A guiding framework and general solution set for the critical work that must be undertaken to modernize New York State's building stock while reducing their use of fossil fuels.

Attributes of a Carbon Neutral Building

These attributes focus upon the building, the impact of that building on the electric grid, and the value of infrastructure as an investment. A carbon neutral building in New York should focus on the following attributes:



Maximizes **energy efficiency**, especially to reduce thermal needs.



No fossil fuel combustion for building services or other appliances onsite (all-electric end uses).*



Produces or procures **zero-emission electricity** consistent with the Climate Act.



Designed with flexible loads and real-time control strategies and/or storage that can respond to grid conditions.



Features **resiliency measures** that protect buildings and occupants.



Designed and operated with the **health, wellness, comfort, and productivity** of occupants as a priority.

THE FUTURE OF BUILDINGS

New York's Carbon Neutral Buildings Roadmap Executive Summary

DECEMBER 2022



- **FlexTech:** Technical assistance that shares 50% of costs for energy/emission reduction studies. Includes energy, indoor air quality, and electrification studies across all sectors: Commercial, Industrial, Agricultural & Multi-Family Buildings.
- **Strategic Energy Management:** Self-Paced training and technical support with Coach/Consultant to help your staff develop a plan and pipeline of commercial/industrial projects.
- **On-site Energy Manager:** Supports the addition of staff or consultants to engage in developing a plan and pipeline of commercial/industrial projects across a campus or portfolio.



Residential Programs

- **Buildings of Excellence (BOE) Competition:** Supports the design, construction, and operation of carbon neutral multifamily buildings, including affordable housing. BOE has awarded \$58M since 2019.
- **Comfort Home:** Pilot program that provides incentives to homeowners in select markets toward “seal and insulate packages” and offers bonus incentive for heat pump installation. Anticipated to serve over 3,000 homes in 2024.
- **EmPower+:** No-cost and discounted energy efficiency and electrification solutions that will help income eligible New Yorkers save energy and money, increase comfort, and upgrade their homes. In 2023, served over 22,000 LMI customers, reducing over 40,000 metric tons of CO2.
- **Affordable Housing Partnership:** Multi-year partnerships with NYS HCR and NYC HPD to integrate decarbonization technical assistance support and incentives directly into regulated affordable housing finance processes, while supporting guidelines and training among housing agency staff to position the agencies as leaders in making efficient, electrified housing their standard practice.



Buildings of Excellence

- Launched **BUILDINGS OF EXCELLENCE** (All Electric, High-Performing Buildings) to get the industry comfortable with passive house and all-electric
- Provided cost and feasibility information to market.
- Demos have driven and supported regulatory changes:
 - Zero emission new construction (NYC LL154, NYS Zero Emissions New Construction)
 - 2024 Energy Code update



Clean Heat For All

- Launched **CLEAN HEAT FOR ALL**, a technology prize to advance innovation for a packaged window-mounted heat pump.
- Developed partnership with NYCHA and NYPA to test, assess, and scale adoption of heat pump.
- NYCHA has committed to purchase and install 30,000 units.



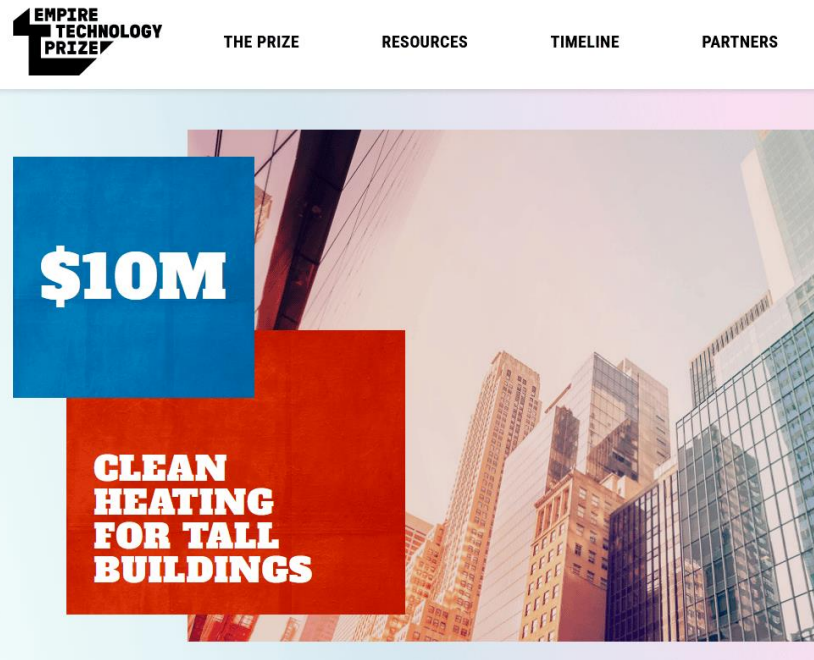
Commercial and Institutional Programs

- **Clean Green Schools:** Funding for under-resourced public schools to decarbonize building portfolio and improve indoor air quality. Program Budget \$59M available state-wide + \$100M added in 2024.
- **Clean Green Campuses:** Program and membership network to advance clean energy across New York's colleges and universities. Helps colleges reduce campus emissions, provides access to funding opportunities and resources, recognizes clean energy achievements.
- **Environmental Bond Act for Public Buildings:** Minimum \$400M for public buildings. Allocation \$200M public campuses: SUNY, CUNY, \$100M public schools, \$100M other. (DEC website)
- **Empire Building Challenge (EBC):** Competitive funding for demo projects that illustrate repeatable pathways to phase out fossil fuel use and increase efficiency of existing large commercial and multifamily buildings. EBC partners have committed to decarbonize over 125 million square feet and over 1,500 units of affordable housing.

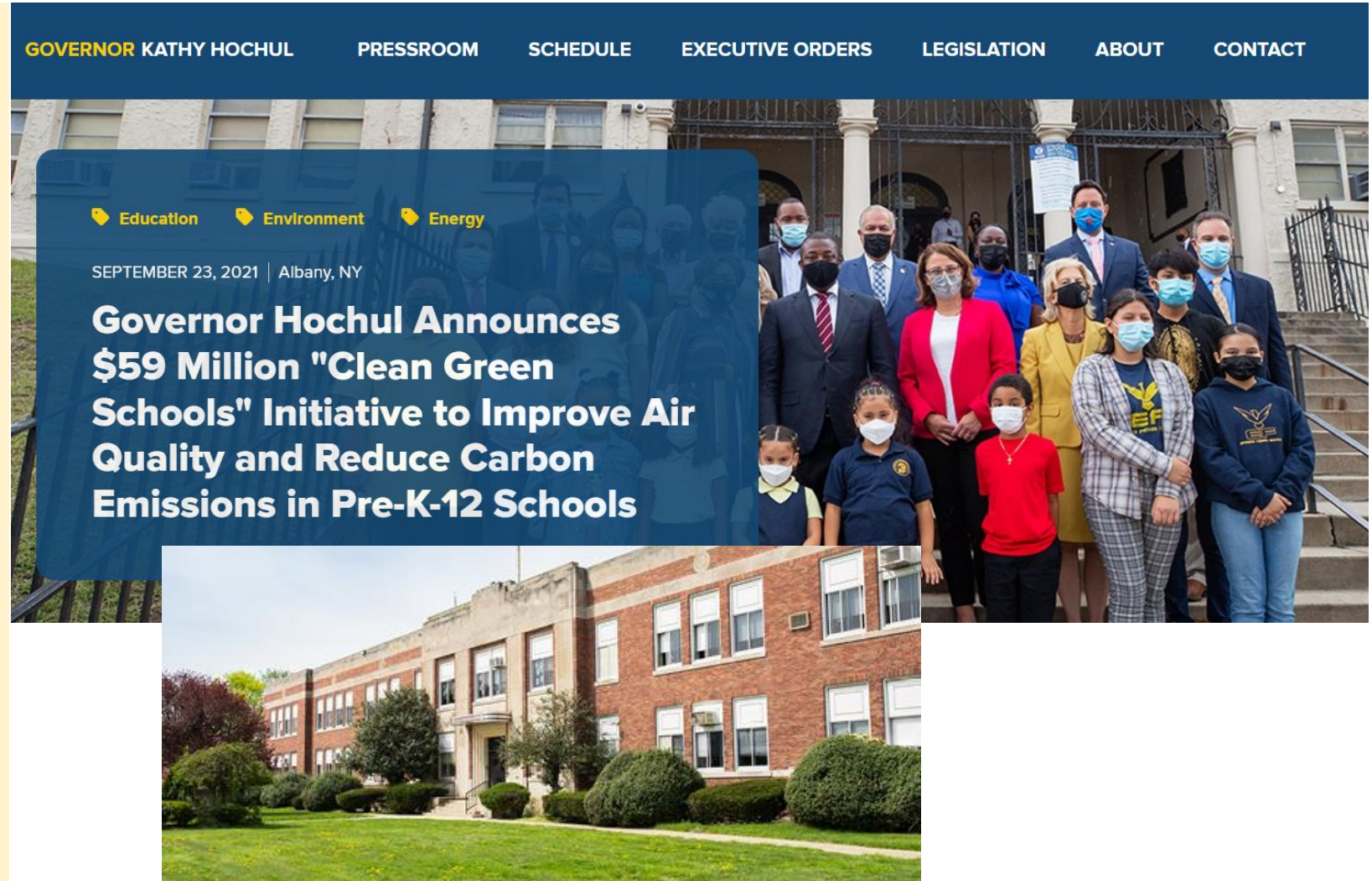


Empire Building Challenge/Empire Tech Prize

- Partnership w/ leading real estate firms, engineers, and manufacturers to demonstrate scalable low-carbon retrofits for the ~3B SF of multifamily & commercial office buildings in NYS
- Accelerates private sector investment in carbon reduction via peer learning
- Send a clear demand signal for new product development by manufacturers
- Creates data & resources enabling replication of successful retrofit strategies



- Aims to advance clean energy and energy efficiency solutions that will improve indoor air quality and reduce emissions
- More than 500 public and private Pre-K-12 schools in disadvantaged communities across the state
- Provides a range of tools, including benchmarking, energy management, indoor air quality assessments, commissioning support, student engagement in clean energy, and professional development opportunities around clean energy and sustainability
- Includes two rounds of competitive incentives for clean building improvements in schools



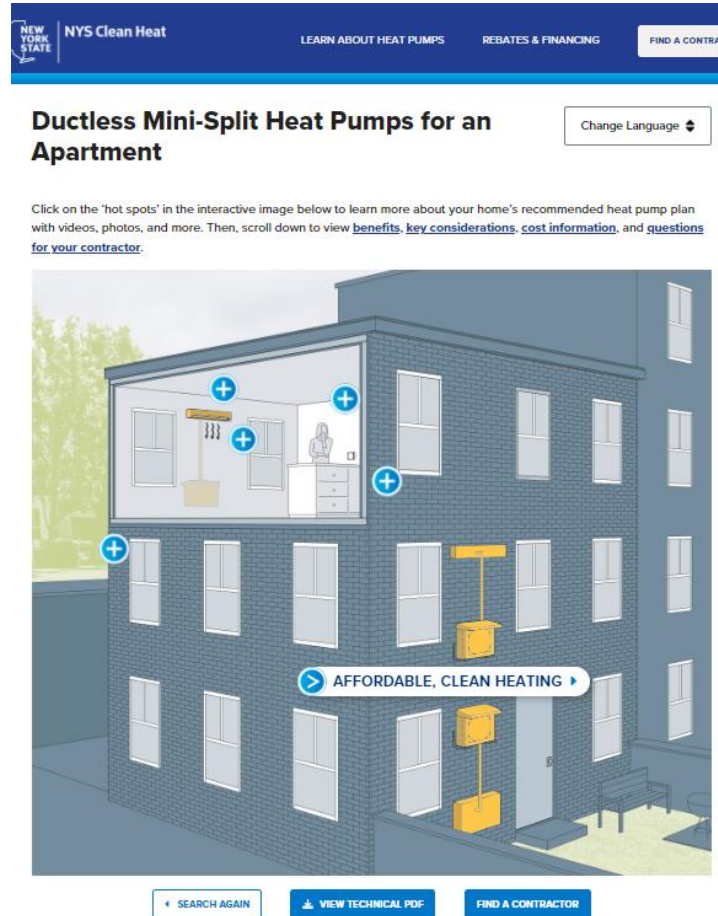
Consolidated Funding Application 2024

- **Building Cleaner Communities Competition:** 60 projects have been awarded \$70M in incentives since 2018. Additional \$10M available in the current round.
- **Commercial Industrial Carbon Challenge:** Competition for grant funding to support high impact emission reduction projects from large energy users:
 - Process emission reductions, beneficial electrification, low-carbon fuel conversion, carbon capture, utilization and storage, energy efficiency, on-site renewables, awards ranging from \$500,000 to \$5 million.



Clean Heat Connect & Heat Pump Planning Tool

- Trade ally network of 9 manufacturers and 13 distributors, covering 123 distributor locations and representing >80% of the HVAC supplier market for residential-sized equipment in NYS.
- Network consists of manufacturers and distributors who are dedicated to expanding heat pump adoption in homes.
- It leverages the distributors' influence with their loyal contractor base to deploy critical tools, training, and resources.



<https://cleanheat.ny.gov/planner/>

Clean Heat Connect

Installer Reference Materials

Review these resources to select the right heat pump for the job and install it for efficient operation and customer satisfaction.

- [Heat Pump Home Runs](#)
- [IRA – 25C Tax Credit Guide](#)
- [Air Source Heat Pump: Efficiency Ratings Explained – DOE Appendix M1](#)
- [NYSEDA Workforce Development Opportunities](#)
- [Green Jobs - Green New York Financing](#)
- [Heat Pump Planner](#)
- [Don't Oversize](#)
- [Installer's Guide to Assessing Residential Electrical Service](#)
- [Project Pricing Checklist](#)
- [NEEP – Cold Climate Sizing Support Tools](#)
- [NEEP – Sizing and Selection ASHP in Cold Climates](#)
- [NEEP – Installing ASHPs in Cold Climates Guides](#)
- [ASHP Commissioning Checklist](#)
- [Snow Deflector Products](#)
- [Flare Fitting](#)

<https://cleanheatconnect.ny.gov/installer-reference-materials/>

Experience Clean Heat

- Public/private partnership to build awareness of heat pump technologies and help consumers gain first-hand experience with heat pumps and actively take part in spreading the word that heat pumps work via social media campaigns.
- Local businesses and governments who have put heat pumps in public spaces share their experience to help dispel myths and build confidence in the technology.
- A variety of tactical approaches customized to each business type are currently being tested.

EXPERIENCE CLEAN HEAT

Active Site Participants

1. Artisanal Brew Works
Saratoga Springs
artisanalbrewworks.com

2. The Sweetish Chef
Ballston Spa
sweetish-chef.com

3. Tree Huggers
Ballston Spa
treehuggerschildrensapparel.com

4. Sustainable Sundry
Ballston Spa
sustainablesundry.com

5. Vischer Ferry General Store
Rexford
vischerferrygeneralstore.com

6. Taghkanic Town Hall
Ancram
taghkanic.org

7. Liquid Fables
Beacon
liquidfables.com

8. Studio 89
Highland
studio89hv.com

Pending Site Participants

9. Fort Ticonderoga
Ticonderoga
fortticonderoga.org

10. Springville Center for the Arts
Springville
springvillearts.org/sca

11. PowerHouse
Ithaca
tinypowerhouse.org

12. Bearsville Theater
Woodstock
bearsvilletheater.com



Thank you!

Contact info:

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Susanne.desroches@nyserda.ny.gov

Find a NYSERDA program:

<https://www.nyserda.ny.gov/All-Programs>



Environmental Justice Update

Northeast Power Coordinating Council

May 9, 2024

Office of General Counsel – Environmental Justice and Equity

Conrad Bolston, Senior Counsel for Environmental Justice & Equity





As a member of the Commission's staff, the views I express in this presentation are my own, and not necessarily those of the Commission or of any individual Commissioner.





Senior Counsel for Environmental Justice and Equity

- **What does the Senior Counsel for Environmental Justice and Equity (“EJ&E”) do?**
 - Front office position in the Office of General Counsel.
 - Implementation of EJE principles in Commission policies, practices, and procedures.
 - Oversight and management of Environmental Justice and Equity Group.
 - Management over EJ&E focused efforts in response to Executive Orders.
 - Stakeholder engagement.



FERC's Office of General Counsel's Environmental Justice & Equity Group

- **How was OGC-EJE created?**

- OGC-EJE was created after FERC announced plans to create a senior position at the Commission better incorporates environmental justice (EJ) concerns into the Commission's decision-making process

- **What do FERC's Attorneys in the Office of General Counsel (OGC) do?**

- Attorneys work alongside technical staff in the Office of Energy Projects to ensure all legal requirements and Commission policies are met.

- **Who is the current OGC-EJE Group?**

- FERC's Senior Counsel to EJ&E is Conrad Bolston. The EJ&E group currently consists of one managing attorney and four attorney-advisors.





Who at FERC is Primarily Involved In EJ?

- **Public Participation and Meaningful Engagement**

- *Office of Public Participation**
- *Office of External Affairs**
- *Environmental Justice and Equity Group and Senior Counsel**
- Office of General Counsel – Energy Projects
- Office of Energy Projects

- **Policy, Procedure, and Decisional Staff**

- *Office of Energy Projects – environmental justice and Tribal specialists*
- *Environmental Justice and Equity Group and Senior Counsel**
- *Office of External Affairs – Tribal consultation**

- **Equity Team**



Environmental Justice and Equity Activities

Federal Energy Regulatory Commission | Environmental Justice & Infrastructure Permitting | FERC Panel Discussion
1.51K subscribers

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ROUNDTABLE DISCUSSION

Environmental Justice and Equity in Infrastructure Permitting

Federal Energy Regulatory Commission

Watch on YouTube

Panel 1: Priorities for Advancing Environmental Justice and Equity in Infrastructure Permitting

Panel 2: From the Front-Line: Impacted Communities and their Challenges

Panel 3: Identifying, Avoiding, and Addressing Environmental Justice Impacts



Environmental Justice and Equity Activities

1. Environmental review and analyses
2. Response to equity focused Executive Orders
3. Guidance development
4. Stakeholder outreach
5. Regulatory development and analyses





Environmental Justice Analysis Process In FERC's Environmental Review

"Screening Level" Review

Identification of EJ Communities

Resource Impact Analysis

Determination of Disproportionate and
Adverse Impact & Significance



Environmental Justice Impacts

Commission staff conducts an EJ analysis as part of the environmental review pursuant to the National Environmental Policy Act (NEPA)

Significance

What is the extent of impacts on natural resource with a nexus to an EJ community?

De minimis

Less than significant

Significant

Disproportionate and Adverse Impact (D&A Impact)

Would minority and low-income communities living near a project bear a predominate portion of the negative impacts from that project?

Yes

No D & A from the project





Equity Action Plan - 2024

- **Executive Orders 13985 and 14091** - Require agencies to conduct equity assessments regarding systemic barriers.
 - FERC published an Equity Action Plan in April 2022
- **Second Equity Action Plan impending**



FEDERAL ENERGY REGULATORY COMMISSION
Equity Action Plan





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HEADLINES

Sunshine Notice | May 2024 Commission Meeting

April 18, 2024



Event Details

1 of 3 Automatic Zoom

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

SUNSHINE ACT MEETING NOTICE

April 18, 2024

The following notice of meeting is published pursuant to section 3(a) of the government in the Sunshine Act (Pub. L. No. 94-409), 5 U.S.C. 552b:

AGENCY HOLDING MEETING: FEDERAL ENERGY REGULATORY COMMISSION

DATE AND TIME: May 13, 2024
11:00 A.M.

PLACE: Room 2C
888 First Street, NE
Washington, DC 20426
Open to the public.

STATUS: OPEN

MATTERS TO BE CONSIDERED: Agenda
* NOTE - Items listed on the agenda may be deleted without further notice.

CONTACT PERSON FOR MORE INFORMATION: Debbie-Anne A. Reese
Acting Secretary
Telephone (202) 502-8400

Contact Information

News Media
Email: MediaDL@ferc.gov

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HEADLINES

[Presentation | System Performance Review of the January 2024 Arctic Storms](#)

April 25, 2024



Questions?



Grid Planning for Building Electrification



ESIG

ENERGY SYSTEMS
INTEGRATION GROUP

Obadiah Bartholomy, SMUD

ESIG DER Working Group - Grid
Planning for Building
Electrification Task Force

9 May 2024

Grid Planning for Building Electrification

An ESIG DER Working Group Task Force supported by US DOE



Project Objective

Develop, evolve and standardize best practices and next steps for building electrification as well as building -sector DERs that will provide flexibility for economy-wide electrification

Task Force Members

Consortium of grid planners, utilities, researchers, building operators, software and hardware vendors, etc.

Research Outcomes & Key Questions

1. Forecasting Building Electrification Impacts

- When does building electrification technology choice make a large difference in grid planning?
- What are best practices for modeling load correlation with weather?
- How should the variety of end-use technologies be modeled in grid planning?

2. Evolution of Distribution System Planning

- What are the best practices for load and weather uncertainty at the distribution level? How are they changing? How should a 1-in-10 forecast be used to inform distribution equipment investments?
- Should we apply resource adequacy themes to the distribution system?

3. Technology Development, Deployment, Challenges and Needs

- How do we capture across all layers of grid planning the changing technology of buildings?
- How do we reflect building load flexibility potential in Grid Planning?
- What is the role of energy efficiency and weatherization upgrades in a future power system?

Project Timeline & Deliverables

Special task force sessions scheduled from May 2023 – December 2023
Concluding April 2024 whitepaper

Find out More

<https://www.esig.energy/distributed-energy-resources-der-working-group/>

Contact: sean.morash@telos.energy

Agenda



- Key Points
- What is building electrification?
- Challenges presented by building electrification
- Solutions
 - Load forecasting
 - Energy Efficiency
 - Proactive upgrades
- Coordinated and Integrated Planning

Key Points



- Building electrification changes weather sensitivity of load
- Improve forecasting to fit the need
- Use scenarios to capture uncertainty
- Expand beyond analyzing a single peak load hour
- Re-Assess planning criteria and equipment standards
- Energy Efficiency is more important than ever
- Increase cross-disciplinary collaboration

What is Building Electrification?



In-Scope



HVAC



Water Heating

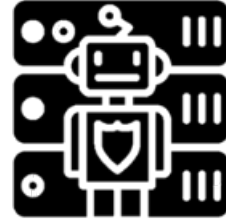


Clothes Drying



Cooking

Out of Scope



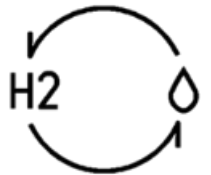
Data Centers



Industrial



DER Ecosystem

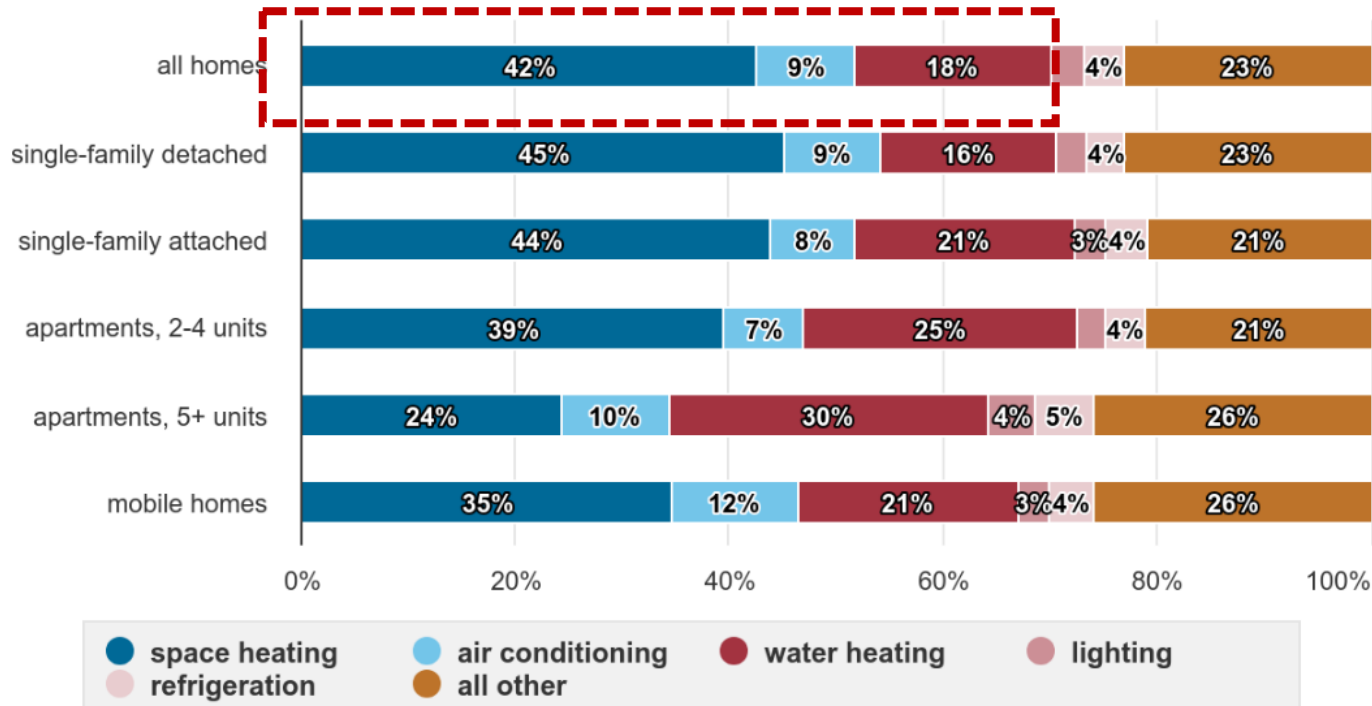


Hydrogen

Building Electrification is Mostly Heat Pumps



69% of end-use energy consumption can be supported by heat pumps



Data source: U.S. Energy Information Administration, 2020 Residential Energy Consumption Survey

Note: Shares are a percentage of annual site energy consumption. Site energy consumption excludes the losses in electricity generation and delivery.

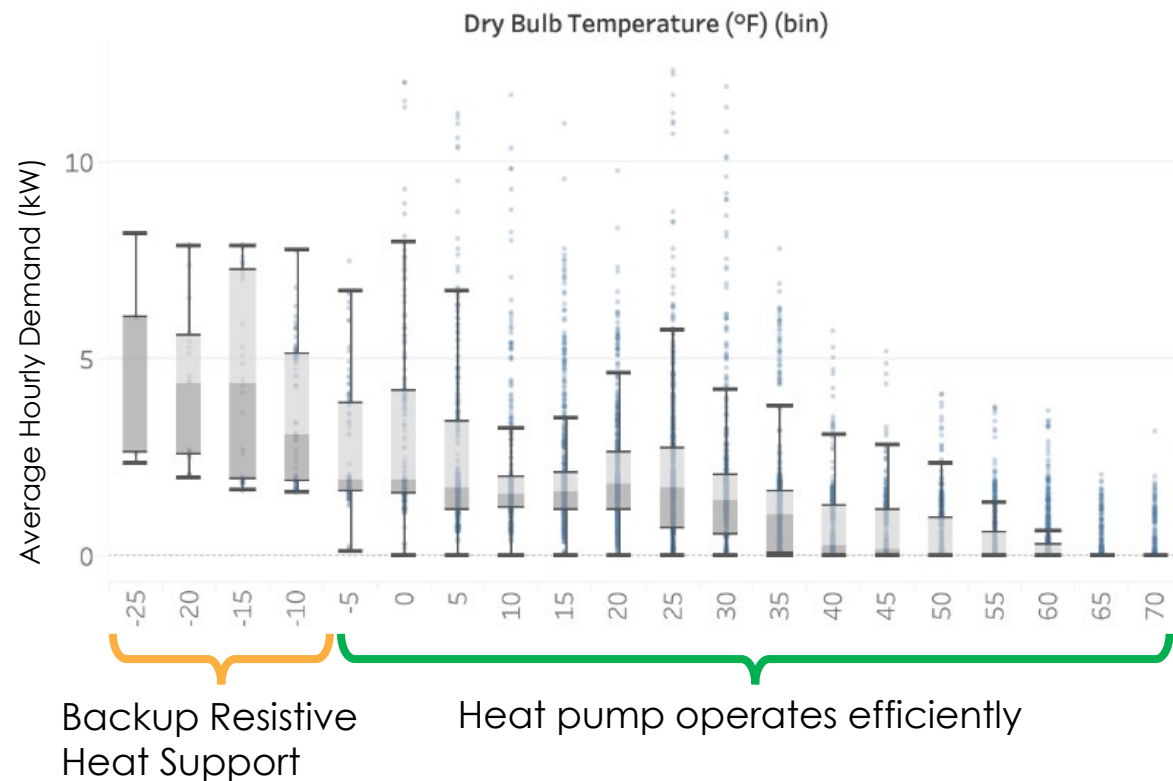


Heat Pump Technology

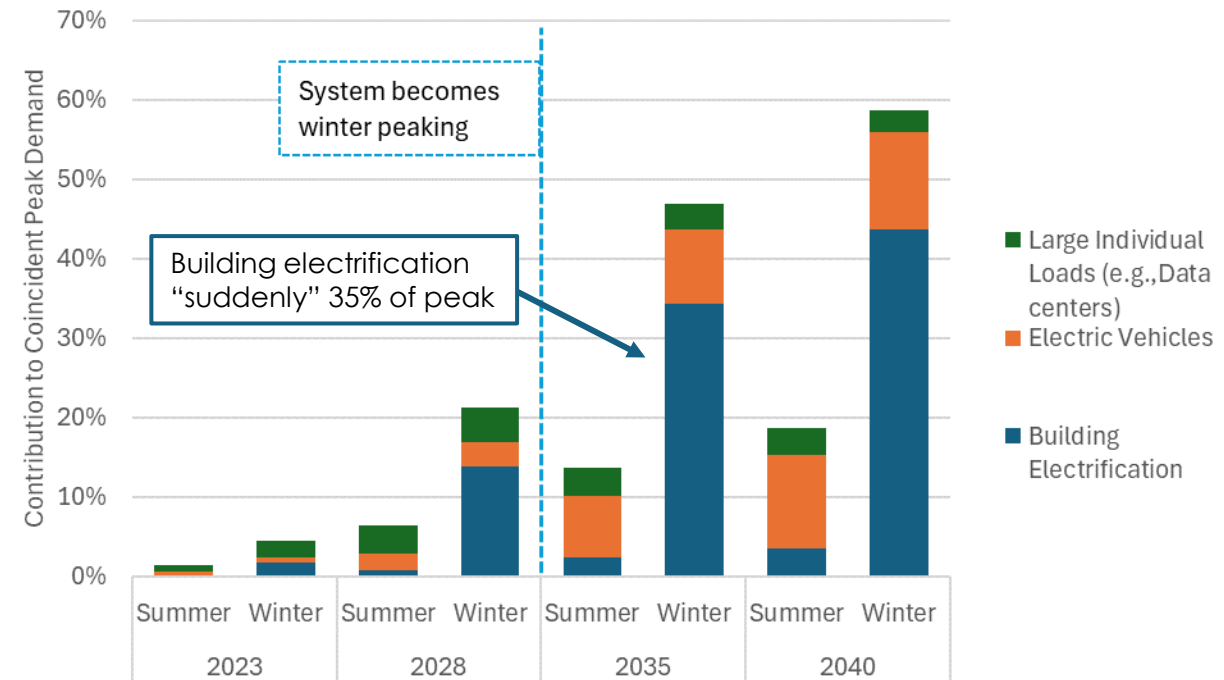
- A refrigerator that can run in reverse.
- Transfers heat from one place to another (thanks pressure and chemistry!)
- Comes in many shapes, sources, and sizes
- Can be used for air conditioning or water heating

When heat pumps show up

Sample electrified home in Minnesota (ResStock)



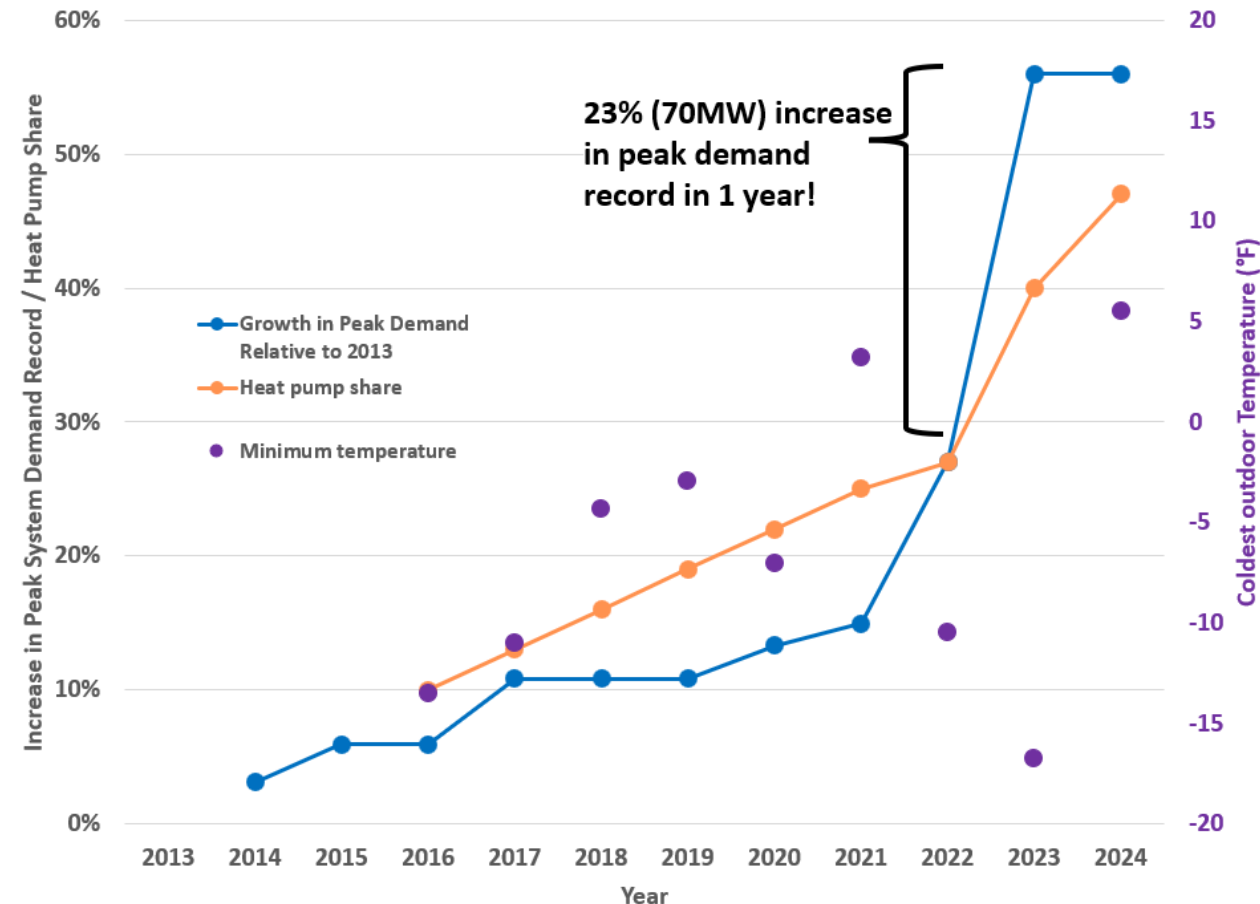
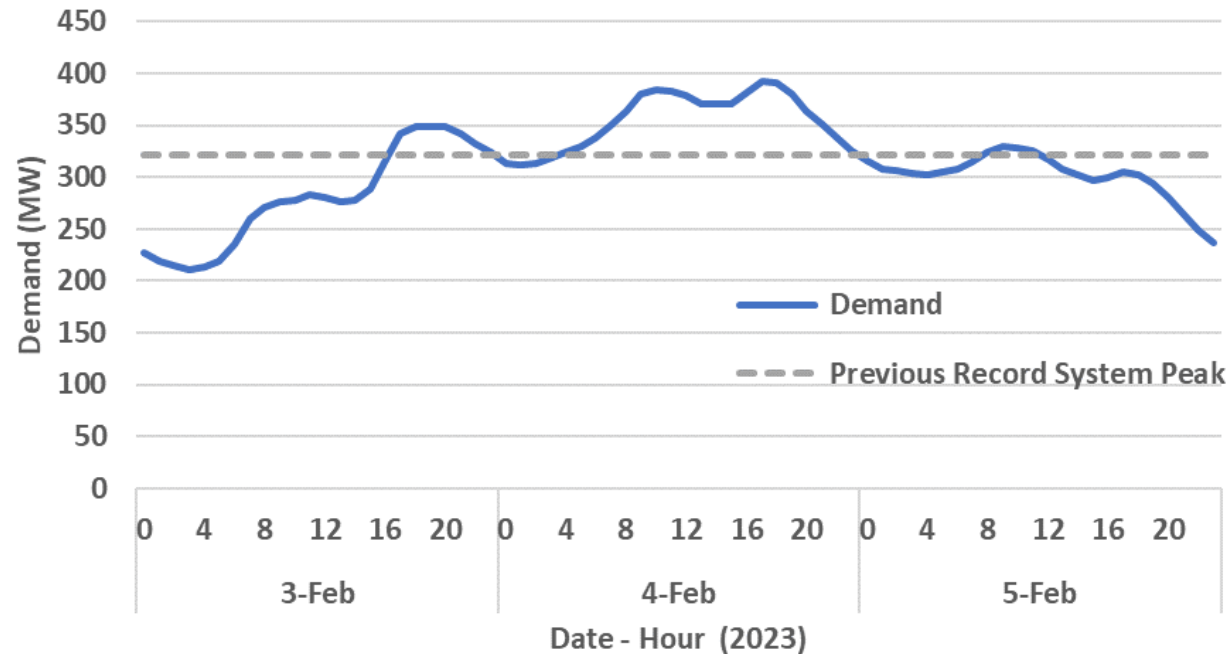
NYISO Load Forecast



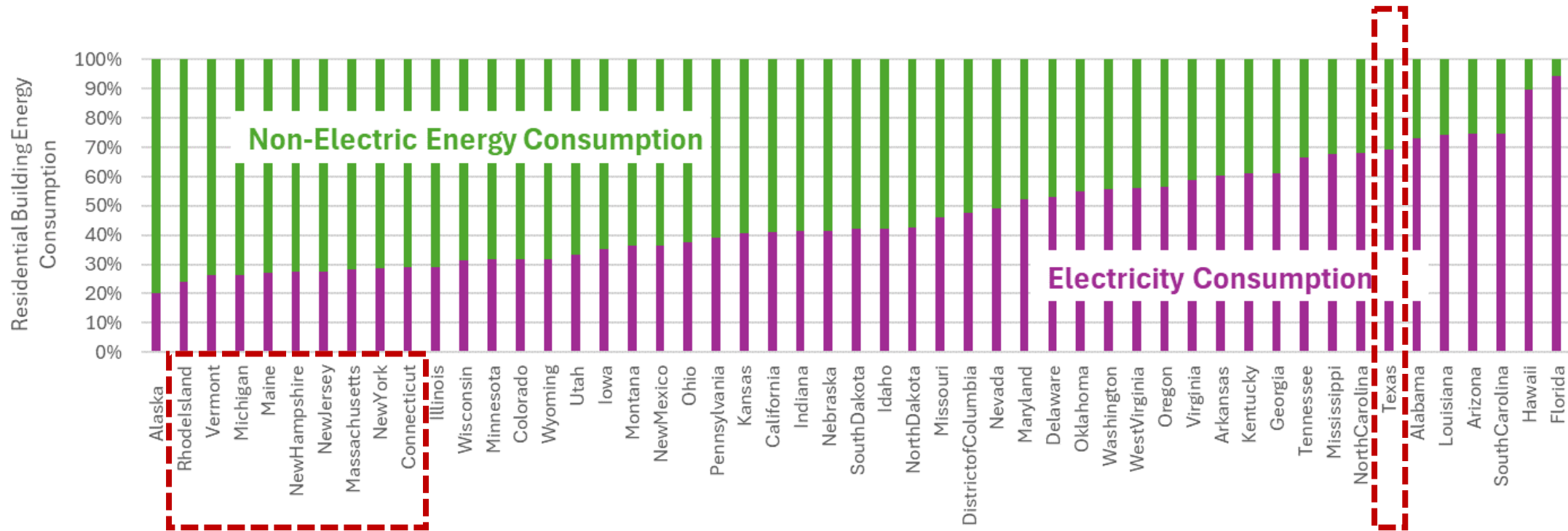
How does Building Electrification show up?



- Prince Edward Island (PEI) has a program to provide free heat pumps to residents.
- They have installed 7000 new heat pumps since 2021.
- A cold snap in early 2023 led to a 23% year over year demand increase



Every state could be affected by building electrification



Solutions



ESIG

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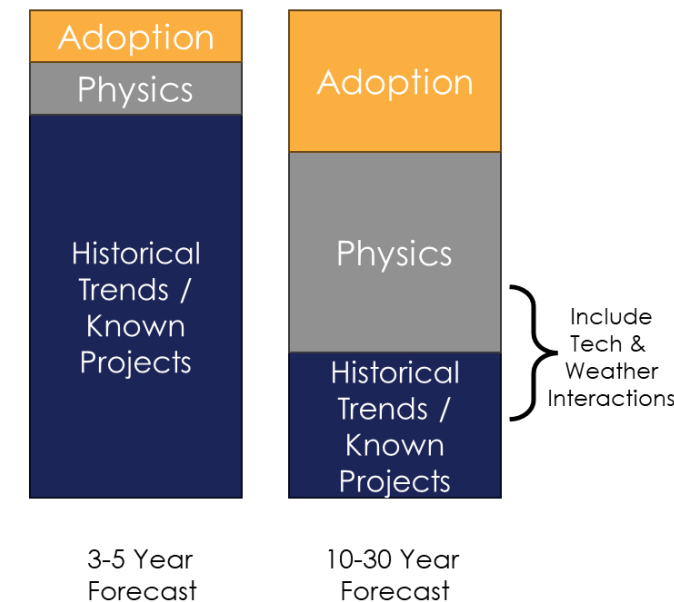
Solutions: Load Forecasting



Sources of uncertainty change with electrification. Load forecasters are well positioned to communicate the tradeoffs, variables, and key assumptions that drive different outcomes

Best practices in load forecasting for building electrification:

- **Take into account how buildings are used.**
 - Commercial coffee shop = commercial concert venue ???
- **Evaluate multiple types of technology.**
 - Incentives could be designed to drive grid-friendly adoption
- **Consider weather effects.**
 - The weather-sensitivity factors that historically captured building response will change with increased electrification.
- **Use blended forecasts.**
 - Distribution planning needs both top-down and granular bottom-up inputs. Policy shifts and local trends can be considered in the analysis.



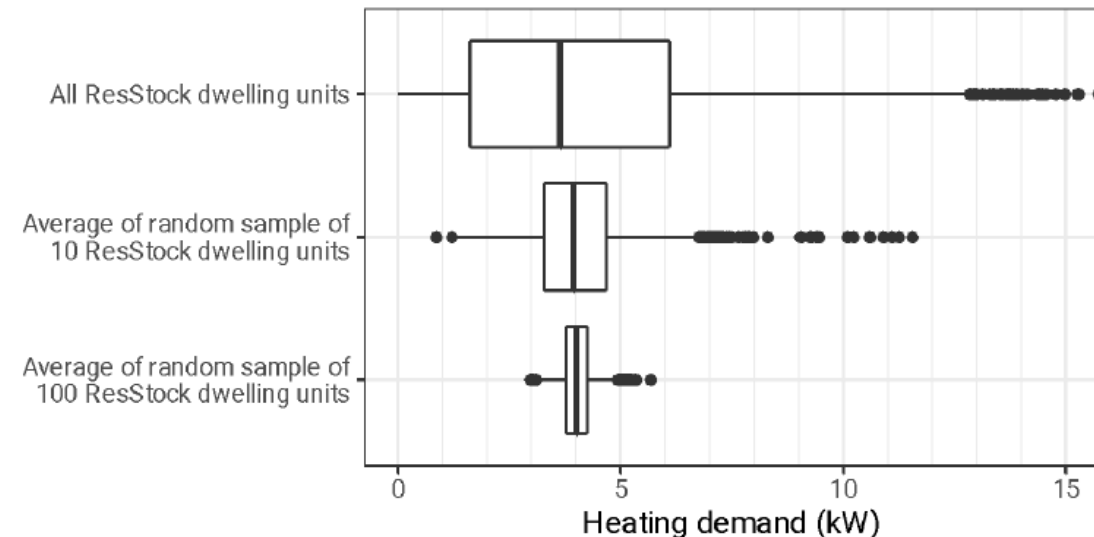
Solutions: Revised Planning Practices



A better understanding is needed of how existing planning criteria and equipment standards can support the future. Changing risks and new forecast products prompt new planning analysis.

New Planning Practices:

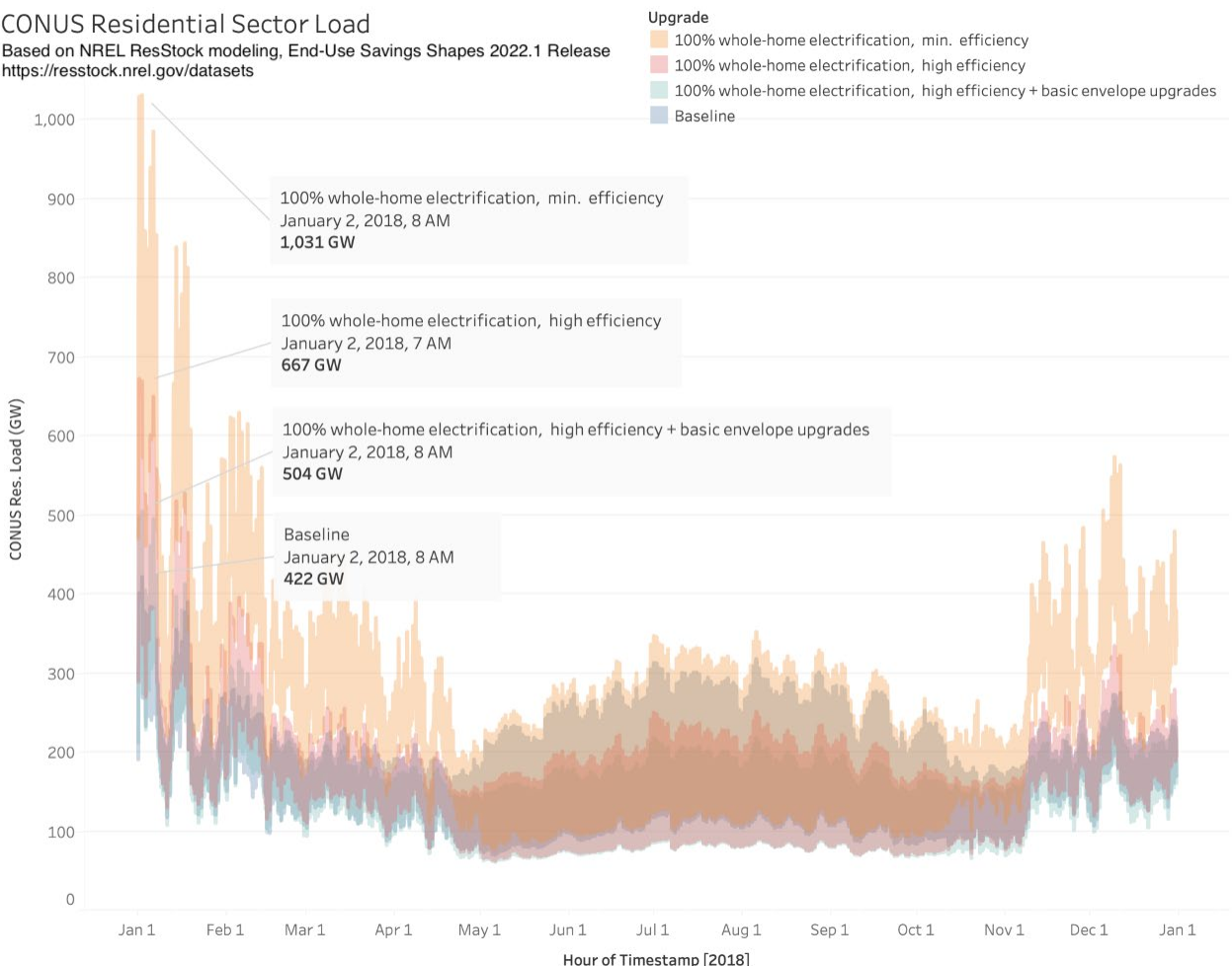
- Moving Beyond a Single Peak Hour
- Updating planning criteria holistically:
 - Design conditions by which standards and plans are made, such as outdoor temperature
 - Thresholds that trigger further analysis
 - Standard planning margin that is reasonable for new equipment, including EV considerations.
 - Consider Load Diversity



Solutions: Energy Efficiency



Energy Efficiency (EE) is more important than ever because of the nature of the grid stress associated with heavy electrification.



Energy Efficiency “Thermal Resilience”

- **Thermal autonomy** - the fraction of time that a building maintains comfortable indoor conditions without inputs from outside systems, such as the power grid.
- **Passive habitability** - how long a building remains habitable during extended power outages that coincide with extreme weather events.
- Influences both peaks and energy requirements

Solutions: Proactive Upgrades

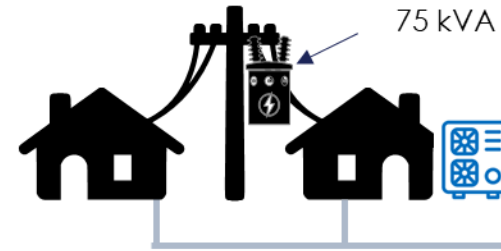
Across planning, there's a need to consider the full extent of electrification

Different flavors of proactive:

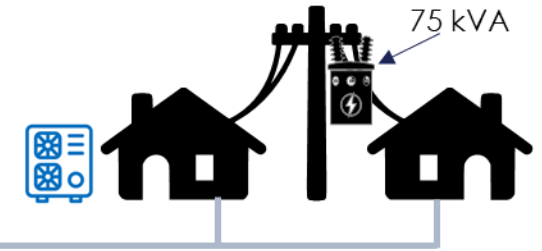
- “Future-ready” the grid with opportunistic upgrades:
 - Updated planning criteria
 - Reconsider design standards
 - New load factors = different stress on the system
- Discrete projects requiring upgrades

Options for Upgrade Strategies

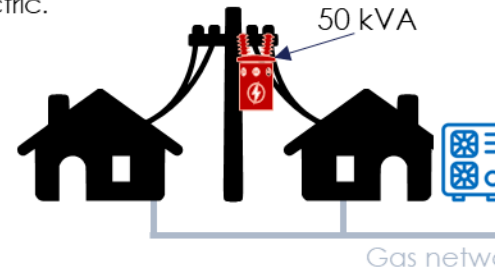
A) Customers on this electric service transformer, which has already been upgraded opt to convert to electric heating.



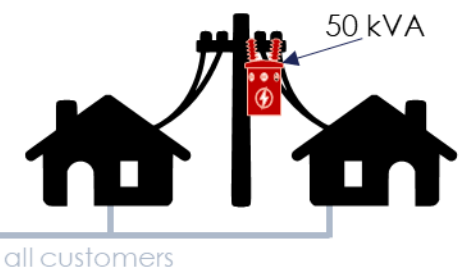
B) Customers on this electric service transformer, which has already been upgraded, are slow to adopt electric heating.



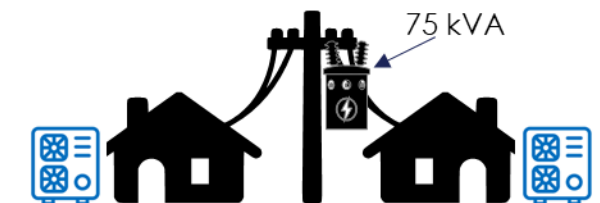
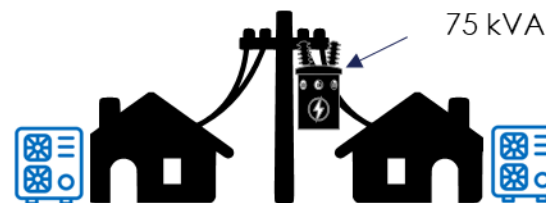
C) Customers on this electric service transformer, which has not been upgraded, can overload grid equipment when they choose to convert to electric.



D) Customers on this electric service transformer, which has not been upgraded, are slow to adopt electric heating.



This region has targeted electrification, outfitting every home with new heat pumps and performing all necessary grid upgrades upon conversion, including any upstream upgrades, such as at the substation. In order to achieve this level of electrification, all customers must be willing to abandon their gas supply.

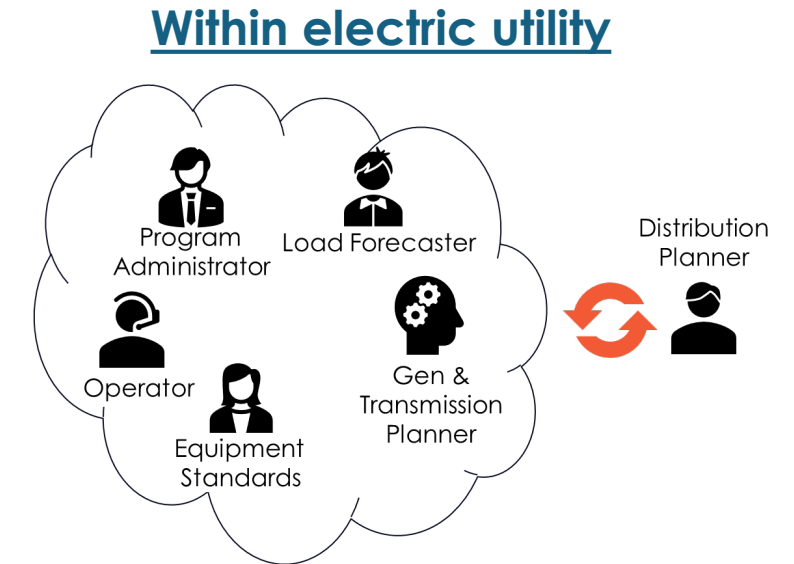


Solutions: Integrate Planning



Within the electric utility

- Customer experience informs reality
- Load forecasters inform future options
- Planners and asset managers need to align



Outside of the electric utility

- Collaborative approach to building electrification
- Gas network planners have lessons that could be helpful
- Feedback on the costs and implications of policy

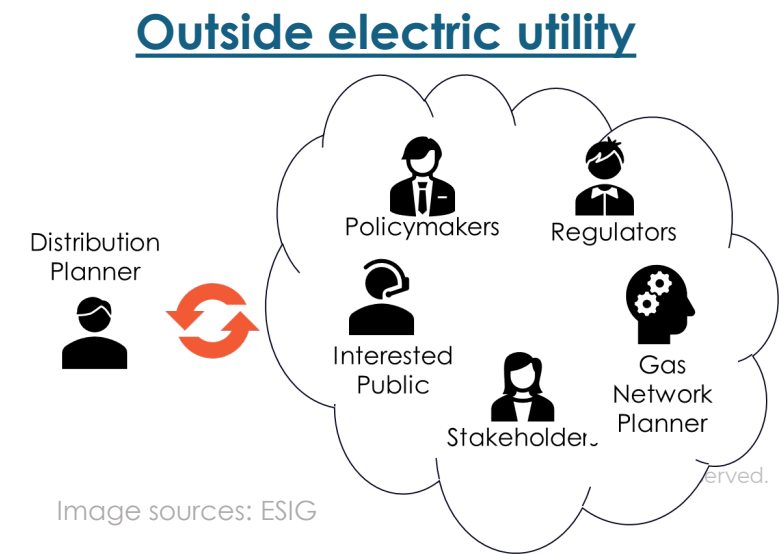


Image sources: ESIG

Opportunities for Additional Research



- The economics of future-ready infrastructure designs
- The impact of load diversity on distribution equipment sizing
- The impact of increased sub-hourly variability on distribution equipment aging
- The suitability of 1-in-10 forecasts to capture distribution equipment risk under high electrification
- Technical Assistance: How to consider "Major Event Days" in reliability and resilience investments. "Major Event Days" are typically excluded or reported separately from SAIDI/SAIFI/CAIDI/etc. and are defined differently across jurisdictions.
- DR and load flexibility in winter given that many thermostat programs are oriented around summer.
- Electrified load futures under different weather conditions (ResStock/ComStock only offer one weather year)
- Best practices in characterizing building stock and building use (coffee shop vs. concert hall) at distribution planning levels.



Questions?

Thank you!

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NPCC 2024 – 2027 Strategic Plan

Strategic Focus Area

Reliably Integrate Resources Brought Forward by Decarbonization Objectives

2024 NPCC Planned Outreach Activity

- DER/VER Forums
 - Various Decarbonization Topics
- Webinars/Workshops
 - Artificial Intelligence
 - Cold Weather Preparedness
 - EMT Modelling
 - Cyber and Physical Security
- IBR Registration Initiative



NPCC 2024 Outreach Activities

Comments/Suggestions

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[NPCC 2024 Corporate Goals and Strategic Plan](#)

[NPCC DER/VER Guidance Document](#)