National Grid Clean Energy Programs

Case 24-G-0248
Technical Conference

August 28, 2024

nationalgrid

Welcome to All

Agenda

1. Introduction & Welcome
2. Roles in LTP Scenarios
3. Overview of Clean Energy Programs
4. Barriers to Scaling
5. Q&A

Meeting Logistics:

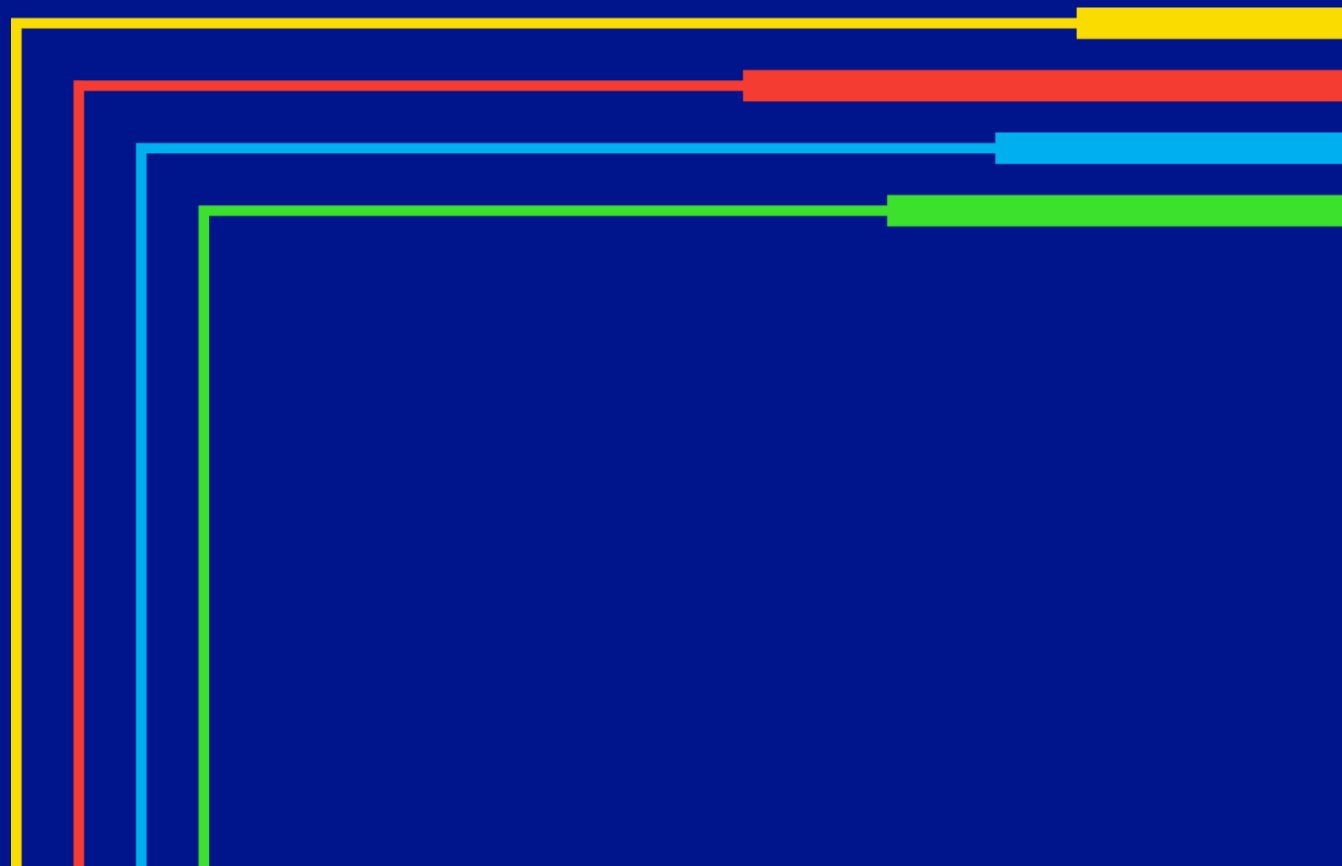
Q&A will be held at the end of the presentation to address matters related to the material presented.

Please use the “raise hand” feature of the meeting platform.

DPS Staff will be moderating the Q&A portion of today’s conference.

1

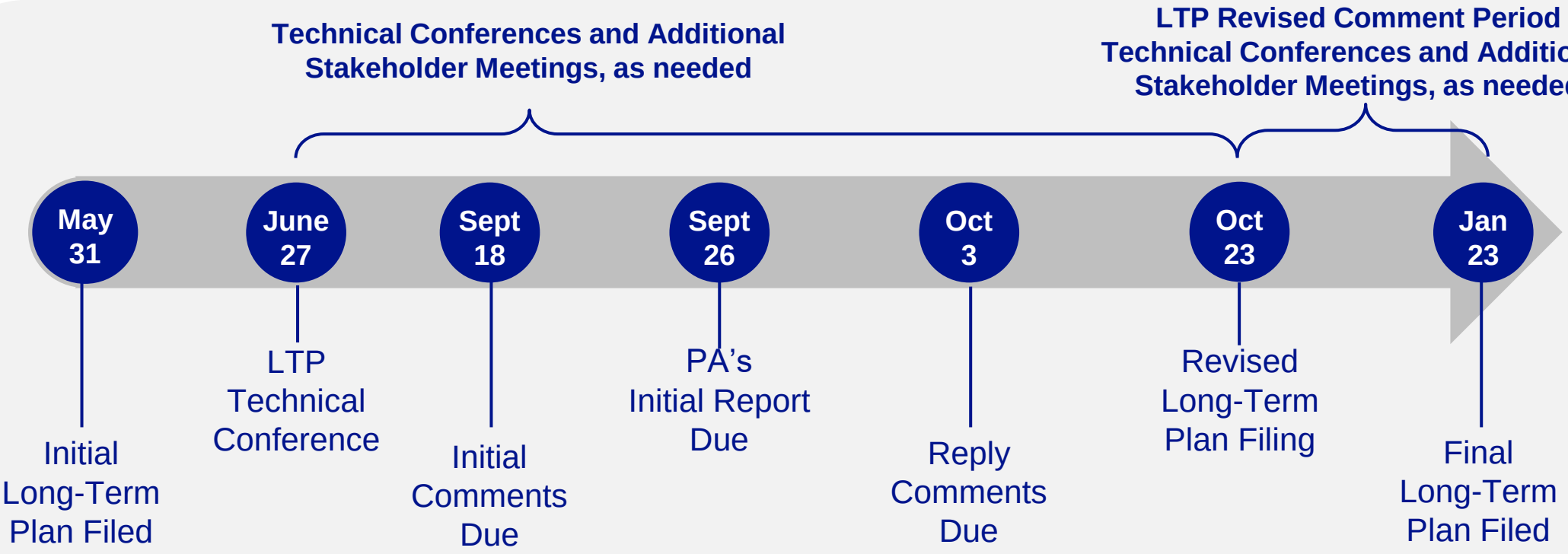
Introduction



nationalgrid

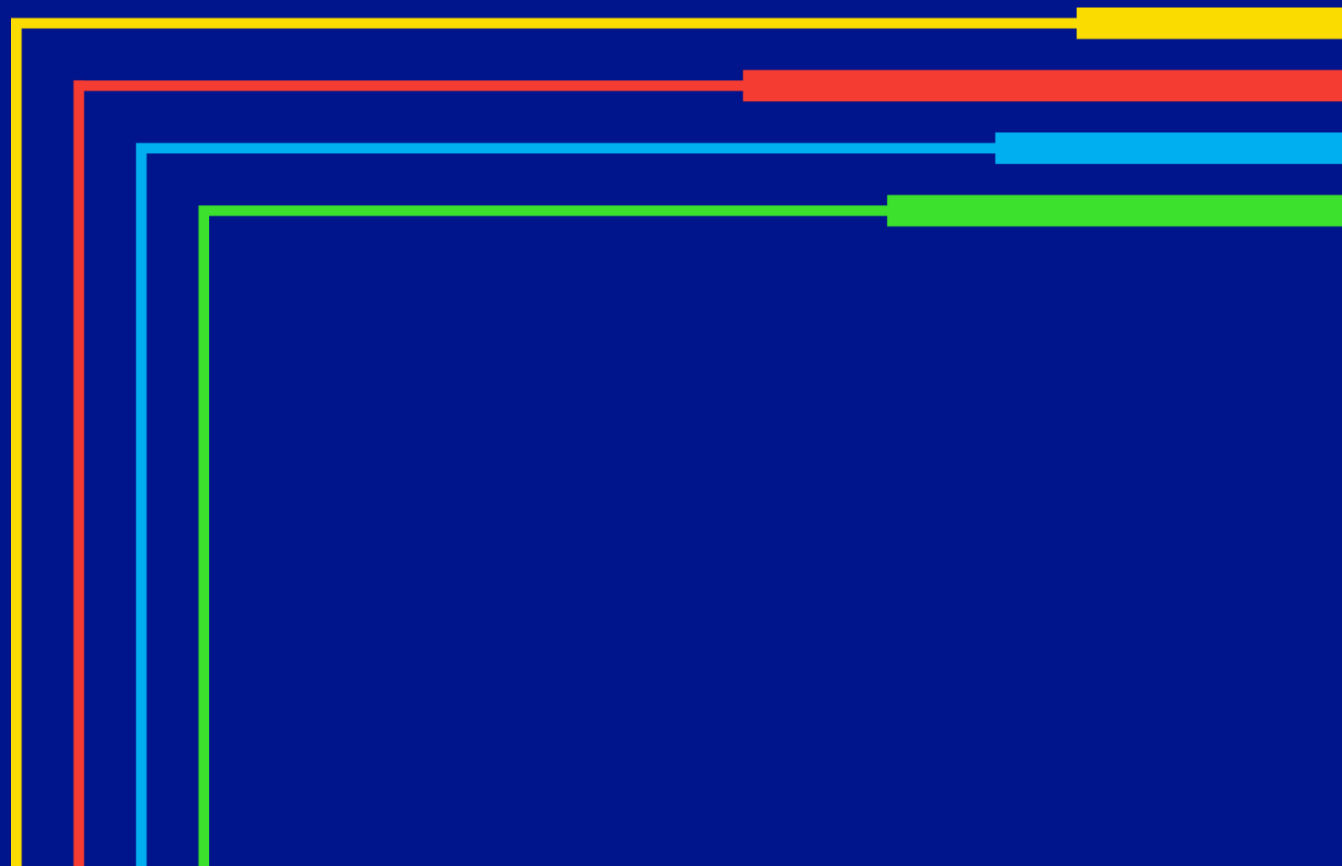
Introduction to National Grid's LTP

- National Grid filed our LTP for KEDNY/KEDLI/NMPC on 5/31/24; Case 24-G-0248; materials available on **ngridsolutions.com**
- We are working on our revised LTP, which will incorporate our latest forecast of customer requirements
- The schedule below is updated to reflect the extended comment and reply comment period



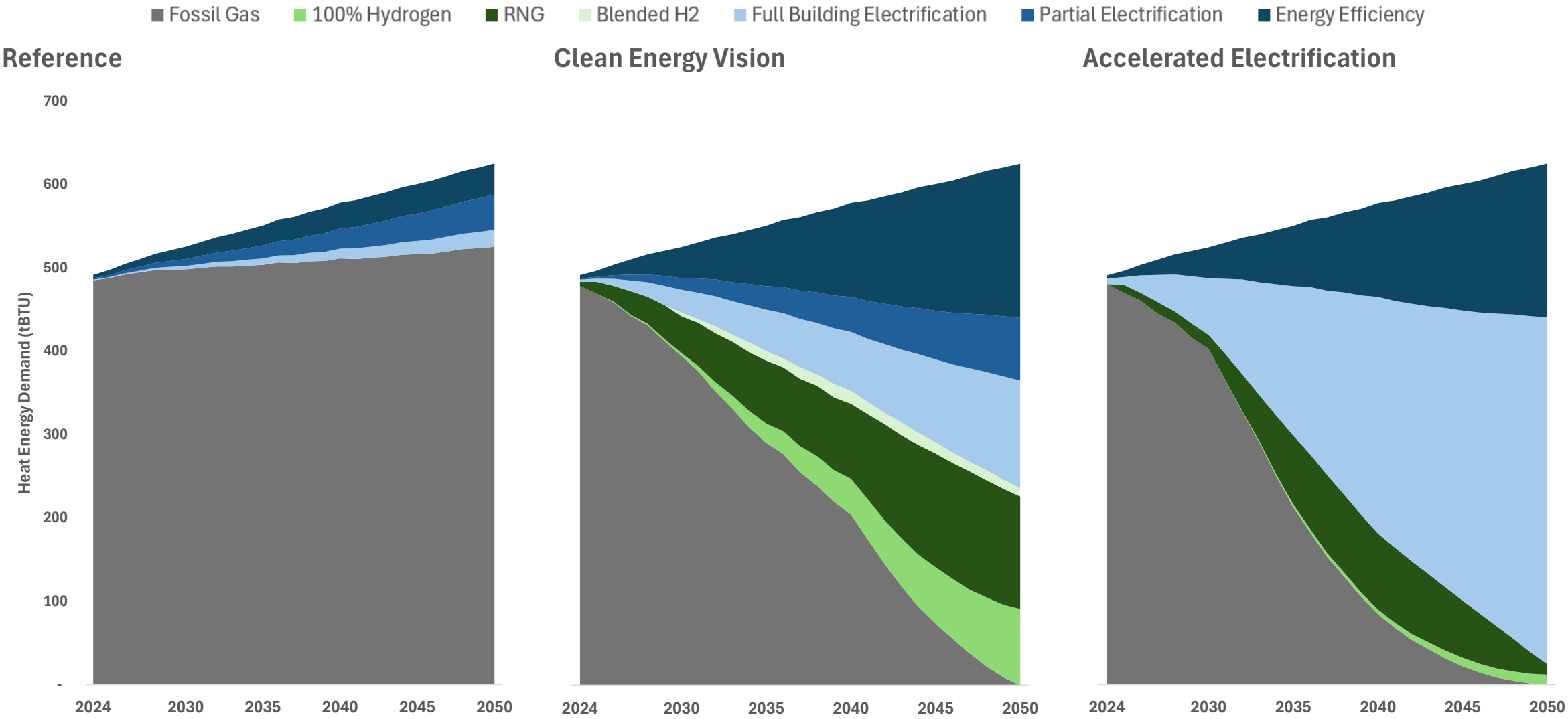
2

Roles in LTP Scenarios



nationalgrid

The Clean Energy Vision and Accelerated Electrification Scenarios rely on higher levels of customer adoption of EE and Building Electrification compared to the Reference Scenario



3

Overview of Clean Energy Programs

nationalgrid

Clean Energy Programs

For the purpose of this presentation, Clean Energy Programs refers to programs that impact annual and/or peak gas demand reduction, including:

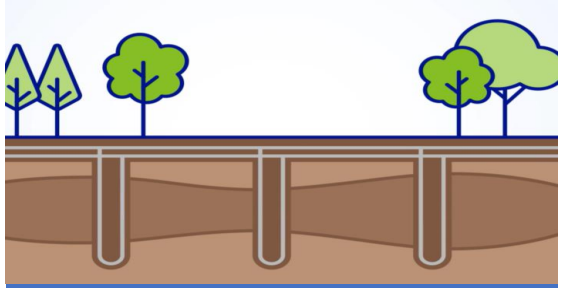
.

1. Energy Efficiency Programs

For Low and Moderate (LMI) and Market Rate (Non-LMI) customers

2. Gas Demand Response (DR) programs

3. Non-Pipeline Alternatives (NPAs)



4. Thermal Energy Networks (UTENs)

NY Energy Efficiency (EE) Framework Transition

2019-2025 – New Efficiency: New York (NE:NY) Programs

- Focus on relatively low-cost measures, some with a short effective useful life (EUL), to achieve robust energy savings targets within budgets authorized by the Public Service Commission (PSC)

2026-2030 – Energy Efficiency and Building Electrification (EE/BE) Programs

- The PSC issued a new EE/BE framework for 2026-2030 in the July 2023 EE/BE Order
  - Utilities required to adopt the “Strategic Framework,” as defined by the PSC, with a focus on “Strategic” measures like weatherization, heat electrification, and other long-lived measures that permanently reduce electric or gas usage and demand
  - Utility proposals bound by provisional $1 billion annual statewide customer-funded budgets
  - Administration of most LMI EE programs statewide transition to NYSERDA
- National Grid estimates 50% lower EE program savings in 2026-2030 than 2019-2025 due to the shift in focus to more expensive and longer-lived “Strategic” measures

NY Market Rate (Non-LMI) EE Policy Proposals for 2026-2030

Weatherization

The customer's heating utility should fund and administer weatherization programs.

- Gas heating customers to be weatherized by gas utilities
- Electric heating customers to be weatherized by electric utilities
- To prepare for future heat electrification, customers who heat with delivered fuels (e.g., oil, propane, etc.) to be weatherized by electric utilities

Heat Electrification

Electric utilities should continue funding and administering heat electrification programs for electric customers like the current statewide Clean Heat program.

NMPC Electric Clean Heat Program Overview

- National Grid participates in the statewide Clean Heat program in its Niagara Mohawk Power Company (NMPC) electric service territory in Upstate NY.
- Clean Heat offers financial incentives and programmatic support for Residential, Multifamily, and Commercial customers to adopt a variety of space and water heating electrification technologies such as:
  - Air-Source Heat Pumps
  - Ground-Source Heat Pumps
  - Heat Pump Water Heaters
- Clean Heat is funded and administered by electric utilities statewide. National Grid does not participate in the Clean Heat program, or offer other heat electrification incentive programs, in its gas-only service territories in New York City (KEDNY) and Long Island (KEDLI).
- NMPC Electric customers are eligible for National Grid's Clean Heat program. Customers who heat with electricity, delivered fuels (e.g., oil, propane), and natural gas can participate.
- National Grid offers bonus Clean Heat incentives for its gas customers located in constrained areas of the NMPC Gas network to install heat pumps.

Market Rate (Non-LMI) Gas EE Program Overview

Current Gas OpCo(s)	Market Rate EE Program	Key Offerings	Proposed for 2026-2030?	Key Changes in 2026-2030 Proposal
DNY & UNY	Gas Residential Weatherization	Customer incentives for contractor-installed insulation and air sealing projects	Yes	Proposed to expand to NMPC Electric in 2026 and merge into the Residential Program inall OpCos in 2026-2030.
DNY & UNY	Gas Residential Engagement	Print and email Home Energy Reports and other alerts to help customers adopt energy-saving behaviors	No	Anticipated to be 100% “Non-Strategic.” Not proposed to continue in 2026-2030.
DNY & UNY	Gas Residential Program	Incentives for high efficiency gas equipment and self-install gas-saving measures (e.g., batt insulation, etc.)	No	Primarily “Non-Strategic.” In-Store incentives for “Strategic” measures proposed to continue through the Residential Program in all OpCos in 2026-2030.
UNY Only	Gas Small Business Services Program	No-cost, direct install energy and water-saving measures coordinated with the NMPC Electric Small Business Services Program for dual-fuel (gas and electric) customers	Yes	Continue to be a comprehensive program offering “Strategic” measures (e.g., weatherization) that expands to KEDLI and KEDNY in 2026-2030
DNY & UNY	Gas Multifamily Program	No-cost, direct install energy and water-saving measures, as well as incentives for weatherization and other measures	Yes	Continue to be a comprehensive program offering “Strategic” measures (e.g., weatherization) in all OpCos
DNY & UNY	Gas Commercial & Industrial (C&I) Program	Offers large C&I customers multiple pathways to receive incentives for gas-saving measures such as high efficiency equipment	Yes	Continue to be a comprehensive program offering “Strategic” measures (e.g., weatherization) in all OpCos
DNY & UNY	Gas C&I and Multifamily Weatherization	Offers large C&I and Multifamily customers incentives for contractor-installed weatherization measures (e.g., insulation, air sealing, etc.)	Yes	Proposed to merge into the C&I and Multifamily programs for weatherization to be part of comprehensive offerings for these customers in all OpCos

Low-Moderate Income (LMI) EE Program Overview

Current OpCo(s)	LMI EE Program	2019-2025 Programming	2026-2030 Programming per NE:NY Order
KEDLI, KEDNY & NMPC Gas	1-4 Family Residential	Incentives for energy efficiency measures such as high efficiency gas equipment, insulation, air sealing, thermostats and more Statewide Framework with a Joint Management Committee (JMC) comprised of all NYS Utilities	Will be Administered Solely by NYSERDA (who can layer programming with federal incentives such as the IRA)
KEDLI, KEDNY & NMPC Gas	Affordable Multifamily Energy Efficiency Program (AMEEP)	Incentives for energy efficiency projects through a comprehensive or non-comprehensive pathway Statewide Framework with a Joint Management Committee (JMC) comprised of all NYS Utilities	Upstate: Will be Administered Solely by NYSERDA (who can layer programming with federal incentives such as the IRA) Downstate: Will be Administered Jointly by NYSERDA, ConEd and National Grid

Disadvantaged Communities (DAC) Criteria

The Geographic DAC scoring approach uses data from national and state sources to create 45 indicators. For each indicator, the percentile-rank of each census tract is used in scoring. These indicators include but are not limited to:

- Environmental Burdens and Climate Change Risks (ie. Pollution exposures, historical discrimination or disinvestment), etc.
- Population Characteristics and Health Vulnerabilities (ie. Race, ethnicity, language, health impacts & burdens, income, etc.)

It's important to note that LMI and DAC are not the same. Both must be served equitably by programs across the state but that will look differently for each. LMI and DAC have different barriers to participation with some barriers that impact both communities (ie. Aging housing stock and rent vs. own).

DACs include all customers types that are located within the geographically designated census tracks

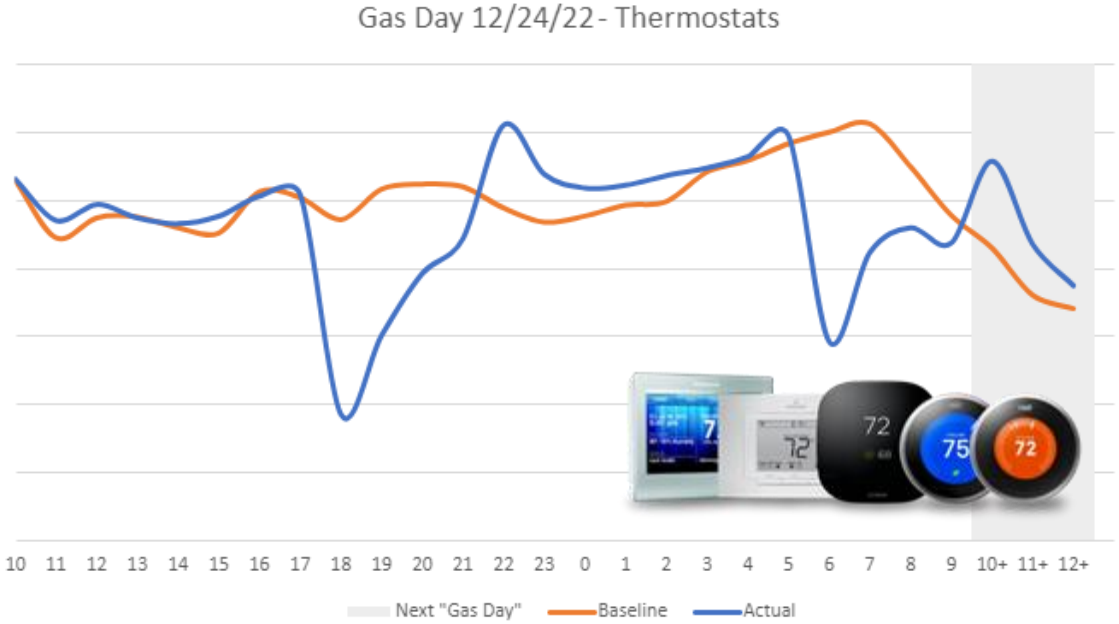
Strategy to Serve Disadvantaged Communities Through Market Rate and LMI EE Programs

- **Statewide Disadvantaged Communities (DAC) Target**
  - Per the CLCPA, a minimum of 35%, with the goal of 40%, of the benefits from spending on Clean Energy Programs (and other initiatives) should go to DACs statewide.
  - For DAC reporting, LMI and Market Rate (Non-LMI) EE programs measure benefits as the percentage of annual program incentive spend.
- **Strategies for Increasing DAC Incentive Spend for EE Programs**
  - Identify barriers to DAC customer participation in programs such as cost, health and safety, and language access
  - Design and implement solutions to address those barriers
    - **Cost**
      - Currently cover up to 100% of eligible EE project costs for small businesses located in DACs in UNY
      - Proposed no-cost direct install programs in 2026-2030 for residential, small commercial, and multifamily DAC customers in DNY and UNY
    - **Health and Safety** – Implement a weatherization health and safety program for LMI customers in DNY
    - **Language Access** – Execute the Company's language access plan filed with the PSC
  - Conduct equity evaluations to ensure programs are serving customers in DACs and recommend continuous improvements

Firm Gas Demand Response (DR)

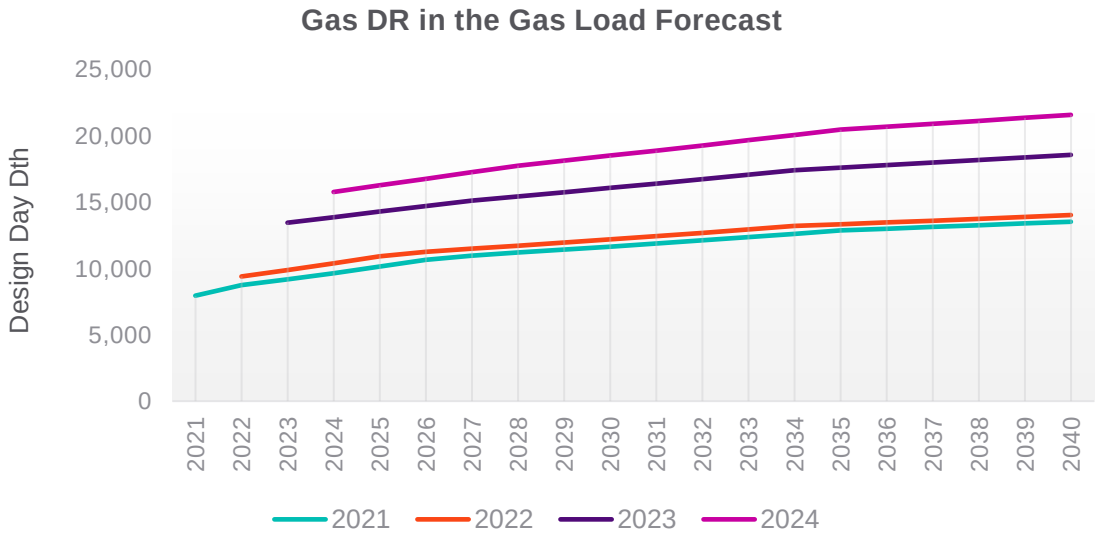
National Grid has the largest and most comprehensive set of gas DR programs in the country

- Incentivizes customers who to curtail or reduce gas usage over a 4 or 8-hour period during a peak winter day
- **Over 450 commercial and multifamily customers** participate in our Load Shedding and Load Shifting programs
- **Over 35,000 thermostats (residential and small commercial)** are currently enrolled in our Bring Your Own Thermostat program



Benefits:

- Reliability: flexible resource that provides critical reliability on peak winter days
- Emergencies: can be called upon to reduce peak load during gas system emergencies (e.g. Winter Storm Elliott, reduced ~11,500 Dth/gas day)
- Reduces gas supply requirements
- Lowers peak usage: unique role in energy transition helping defer or avoid the build out of new gas infrastructure



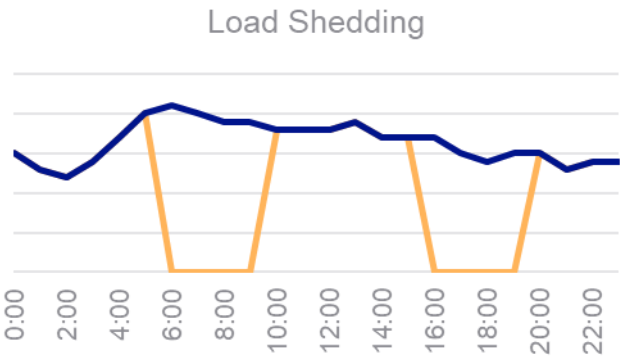
Firm Gas Demand Response

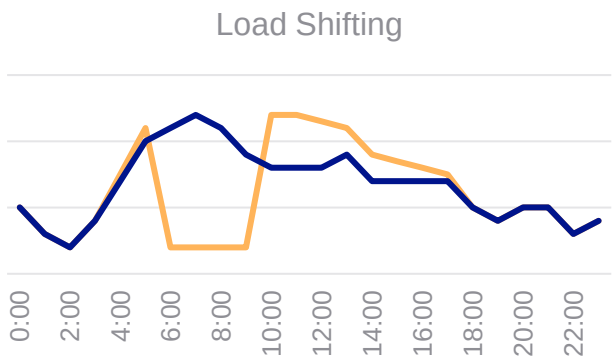
Current Programs

- **Load Shedding** and **Load Shifting** for large commercial, industrial and multifamily customer
- **Bring Your Own Thermostat -** Wi-Fi Thermostat control for residential and small commercial customers

New Initiatives

- **Full Day Setback -** Proposed demonstration of full day setback strategy for thermostat customers willing to reduce usage over a 24-hour period
- **DR Incentive Match -** Allows customers to re-invest DR incentives towards an EE project with an offer to “Match” 20% of the funding committed
  - Over $210k of DR funds committed towards EE projects in 2023-24
- **DOE Gas DR Hybrid Heating** - Awarded Dept. of Energy grant to study gas DR in situations where customers utilize a hybrid heating (gas and electric) systems
- **Pop-up Marketplace -** For DAC & EAP customers, proposed for this fall





BYOT - Full day Setback

Commit DR Incentives to an EE Project and National Grid will “Match” up to 20% of the Incentive

Gas DR Hybrid Heating

Online Pop-up Marketplace

Firm Gas Demand Response

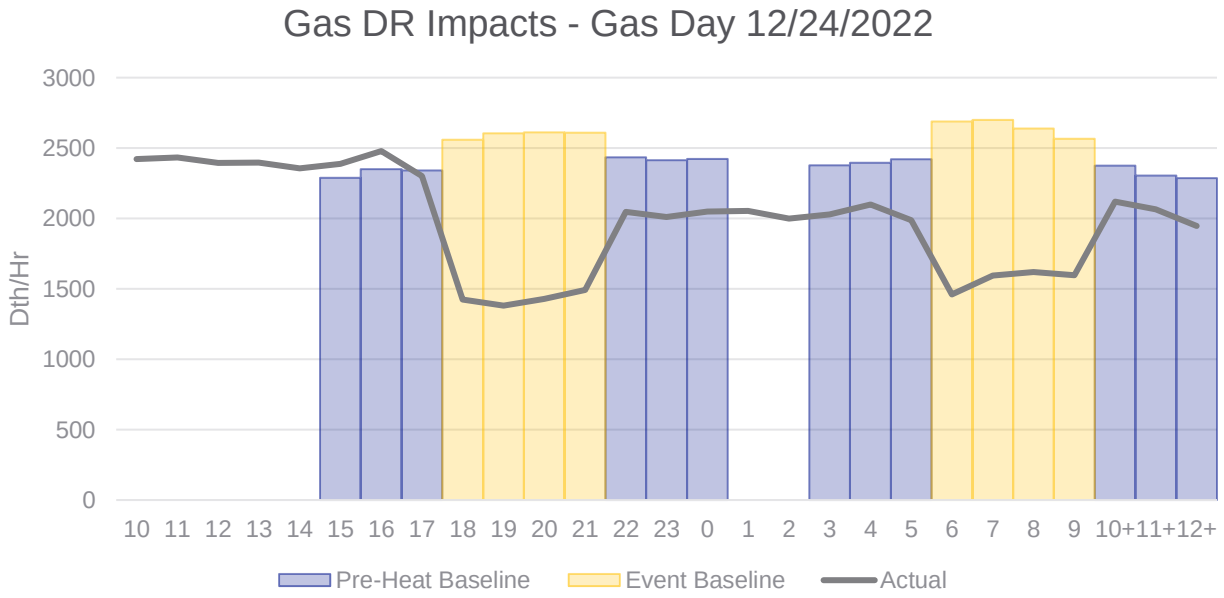
Winter Storm Elliot

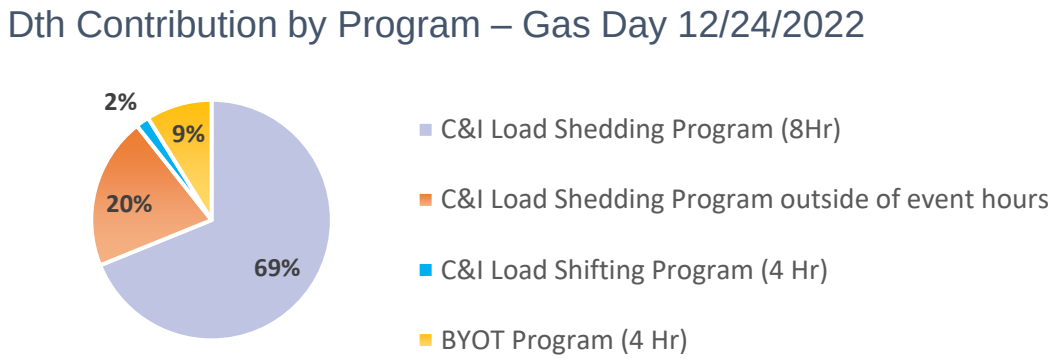
Conditions

- Rapid temperature drops (55 to 8 degrees in 8 hours) led to supply losses on upstream pipelines
- Actual temperatures well below forecast
- Gas DR participants called on with <1 hour notice to help mitigate supply losses

11,552 Dths Reduced on Gas Day 12/24/22

- 7,955 Dth reduced by C&I customers during the 8 hours of event
- 2,366 Dths of additional C&I load reduction achieved outside of event hours
- 1,023 Dths reduced by Bring-Your-Own-Thermostat (BYOT) program
- 208 Dths reduced in C&I Load Shifting during 4 AM hours of 12/25





Non-Pipeline Alternatives (NPAs)

The term “non-pipeline alternative” or “NPA” refers to any targeted investment or activity that is intended to defer, reduce, or remove the need to construct or upgrade components of the natural gas distribution system.

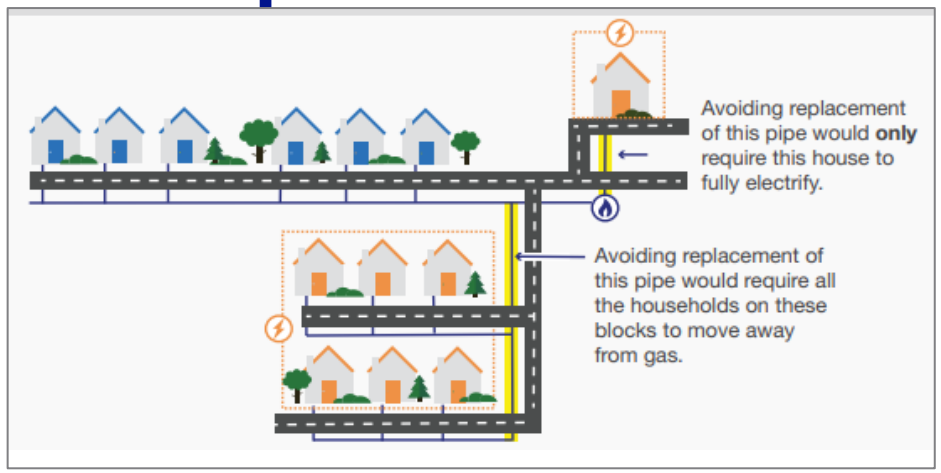
- NPAs are *not* a specific technology, rather they leverage proven technologies that exist in the market.
  - This means that deployment of NPAs is limited by the same factors that may limit deployment of the proposed technologies (e.g. customer adoption, supply chain and workforce limitations).
  - NPAs are theoretically technology agnostic, though electrification is the primary alternative for meeting heating and cooling needs.
  - "Targeted electrification" can refer to an NPA that exclusively relies on electrification.
- NPAs *are* a mechanism through which dollars that would have been spent on gas pipeline investment can be spent on alternative solutions that meet the needs of customers and address the system need.

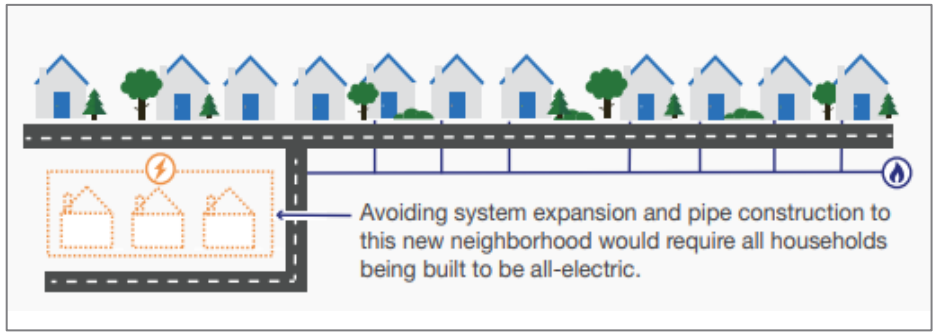
Non-Pipeline Alternatives (NPAs) cont'd

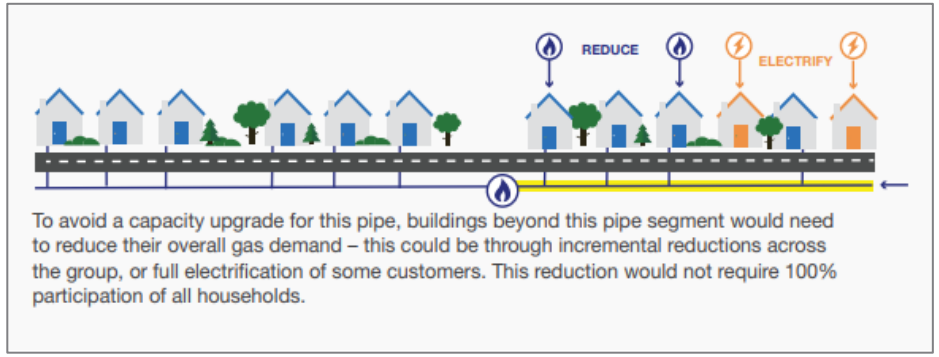
Utilities serve four primary functions relating to NPAs:

- Identification of planned capital projects that represent NPA opportunities
- Outreach and customer enrollment, either directly or via a contracted party
- Managing financial impacts of NPAs
- Filing and documentation related to NPA process
  - File petitions for NPAs that advance
  - Complete documentation for projects where NPAs do not advance

Non-Pipeline Alternatives (NPAs) cont'd







Leak-Prone Pipe (LPP) NPAs

Requires that all customers served by a segment of LPP disconnect from the gas system to allow for segment decommissioning

New Connection NPAs

Requires that all customers who are seeking a connection to the gas system adopt an alternative and withdraw their request for connection

Reliability and Reinforcement (R&R) NPAs

Does not require all customers in a given target area to adopt an alternative; different solutions (e.g. electrification or load reduction) may be acceptable to meet the aggregate need

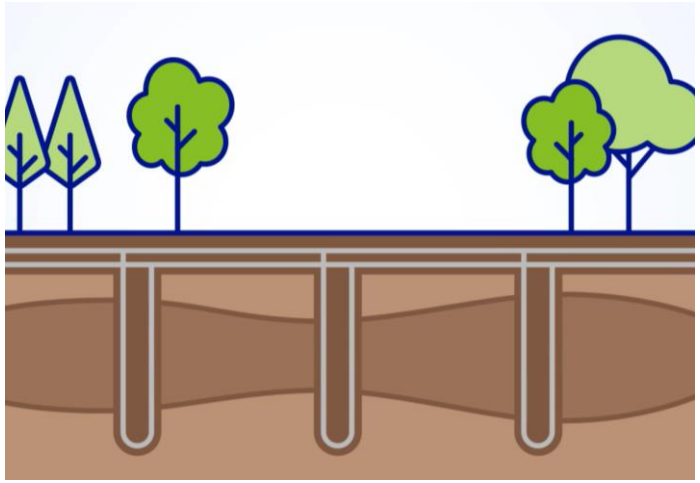
Images at left from Rocky Mountain Institute/National Grid study, "Non-Pipeline Alternatives: Emerging Opportunities in Planning for U.S. Gas System Decarbonization", published May 2024

Non-Pipeline Alternatives (NPAs) cont'd

Finding from NPA analysis with RMI	Change to NPA approach
Achieving 100% customer adoption with >5 customers is extremely difficult	- Prioritize segments with <5 customers when 100% participation is required - Add service line NPA opportunity to maximize opportunities for single customer decisions
Existing policy frameworks support customer choice, which makes adoption of NPAs voluntary	- Lengthen NPA planning time horizon to reduce disruption - Leverage customer propensity data, municipal/community partners, and implementation contractors to maximize likelihood of success
Coordinated, integrated energy planning can ensure a cost-effective energy transition	- Build IEP capability - Refine estimating approach with electric system planning to reduce cost and lead time associated with NPA analyses;

Utility Thermal Energy Networks (UTENs)

An energy solution that's local, reliable, and renewable



Thermal Resources

UTENs can connect a variety of local, renewable resources, such as heat from wastewater treatment plants, waste heat from processes (e.g. data centers, grocery stores), and geothermal wells

Distribution Network

Water, and an environmentally-friendly antifreeze, is circulated in a network of sealed pipes. This fluid travels to connected homes and businesses.

Heat Pumps

Within each building, a heat pump uses the conditioned working fluid to heat or cool the space, pumping heat in to warm a room or pumping heat out to cool it.

UTENs cont’d

- A Dec 2023 Department of Energy report reveals that weatherization paired with widely deployed ground-source heat pumps, relative to widely deployed air-source heat pumps, could result in significant societal benefits, including:
  - >$300 billion reduction in wholesale payments for electric grid services through 2050
  - 7,351 million metric tons of CO2 emissions reduction
  - 24,500-43,500 miles of avoided electric transmission infrastructure
  - >593 terawatt-hours per year (TWh/year) less electricity generation required

•This study states "Because this study is an impact analysis only, it does not examine the costs of and available land areas for installing GHPs in existing buildings or new constructions. Further analysis is needed to assess installation costs and needed land areas of the deployment scenarios presented in this study."

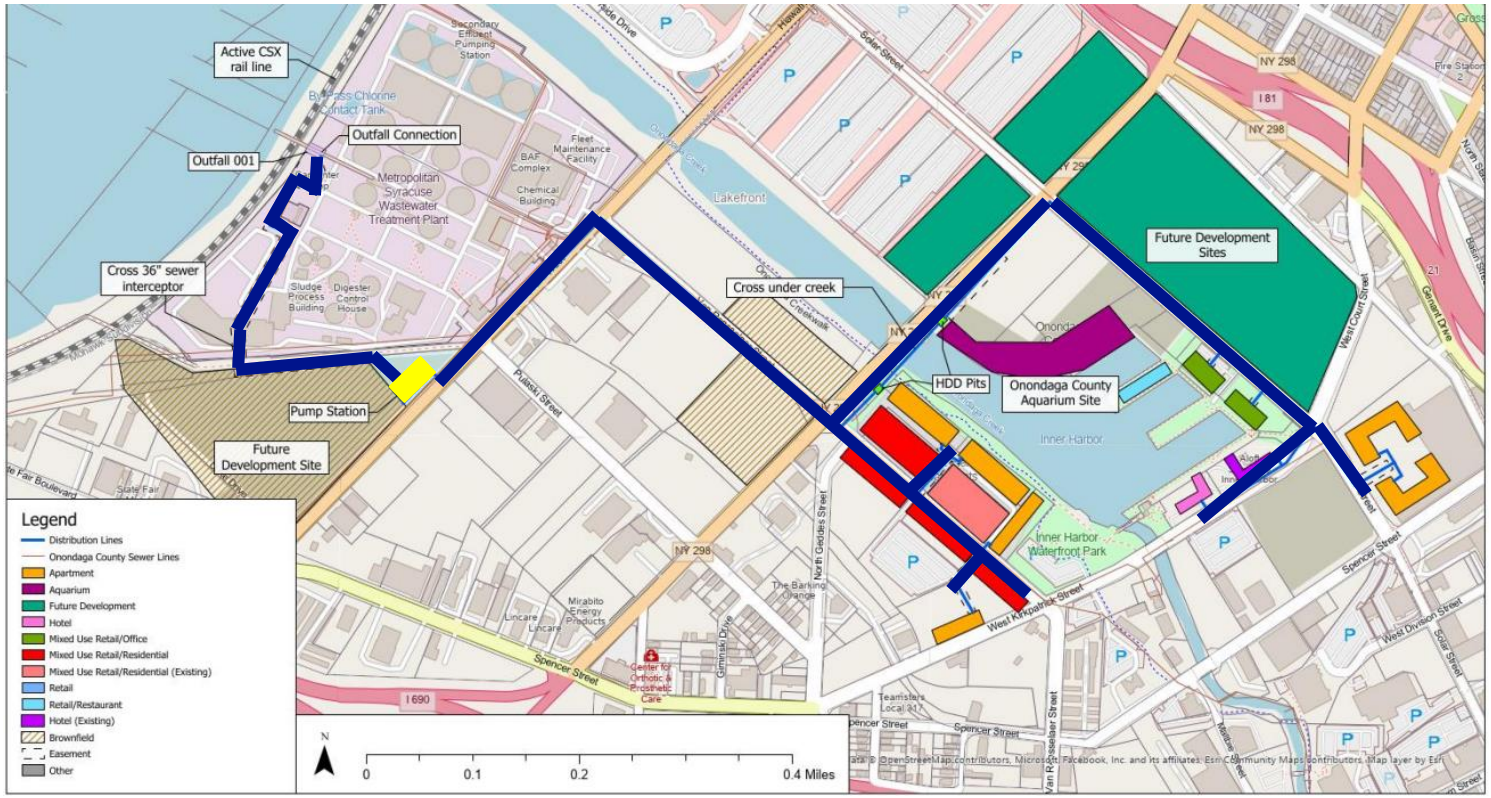
UTENs cont’d

- UTENs could address a number of barriers to GHP adoption because they may:
  - Increase the opportunity to install boreholes in favorable locations
    - Allow for utilization of multiple thermal resources (e.g. wastewater heat exchange)
  - Remove the need for customer financing
  - Reduce annual cost by recovering over full lifetime of assets
  - Simplify mechanical system conversion and make it similar to gas connection
    - Reduced lead time if system is already in place, which may allow for customer adoption at system failure

Syracuse UTEN Pilot Proposal

- **The outfall of wastewater treatment plants is an untapped resource.**
  - Pilot will harness the waste heat available in the outfall and deliver it to customers in the inner harbor area
- **The energy needs of customers planned for the first phase of the pilot represent ¼ of the capacity of the system.**
  - The system will be initially oversized to allow for expansion into the downtown area in the future.

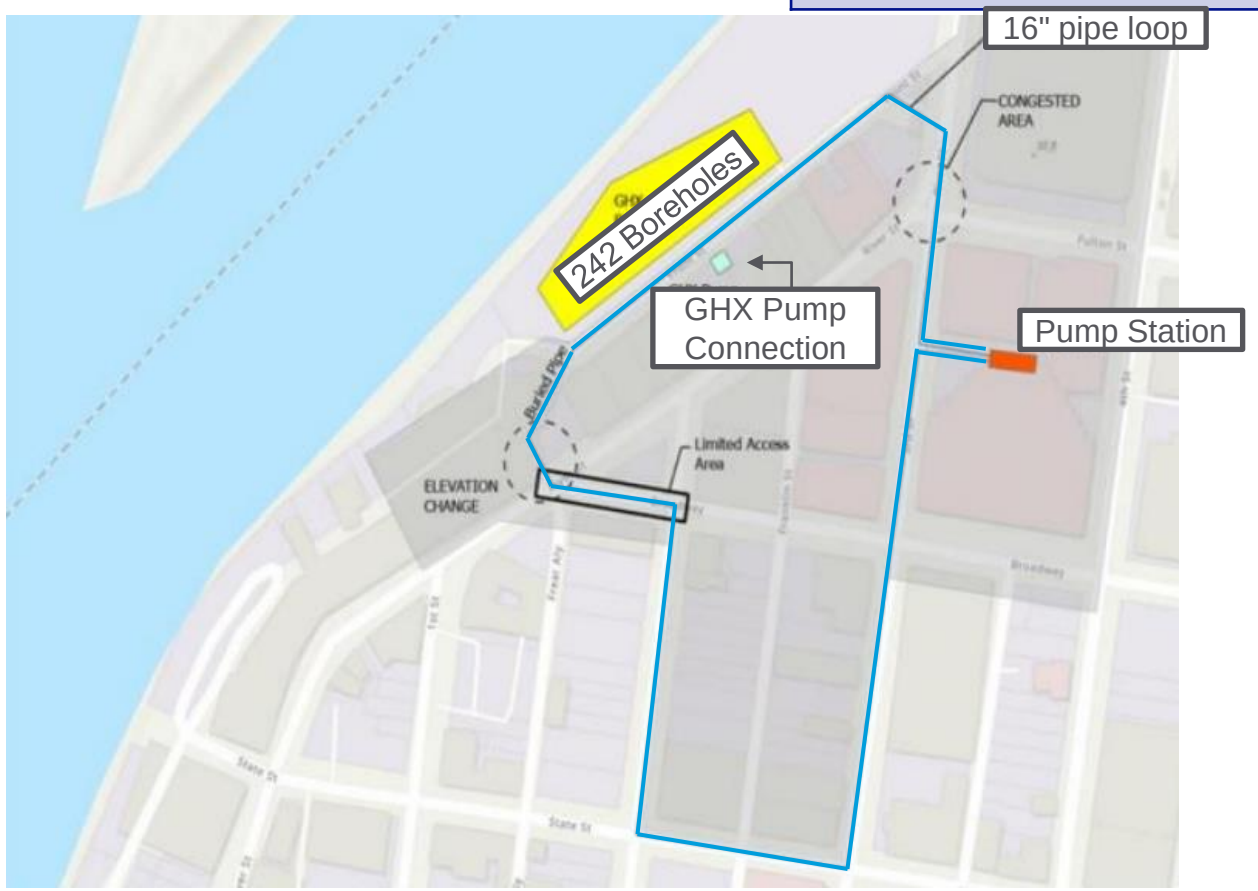
Cost	$133M
Capacity (tons)	2,460
GHG Reductions (MT CO_2e / year)	-2,798
Located in DAC?	Yes



Troy UTEN Pilot Proposal

- **Managing customer timelines has been the largest difficulty.**
- **Developing a unique, bifurcated business model**
  - Enables municipalities to participate in the energy transition
  - Mimics other energy systems

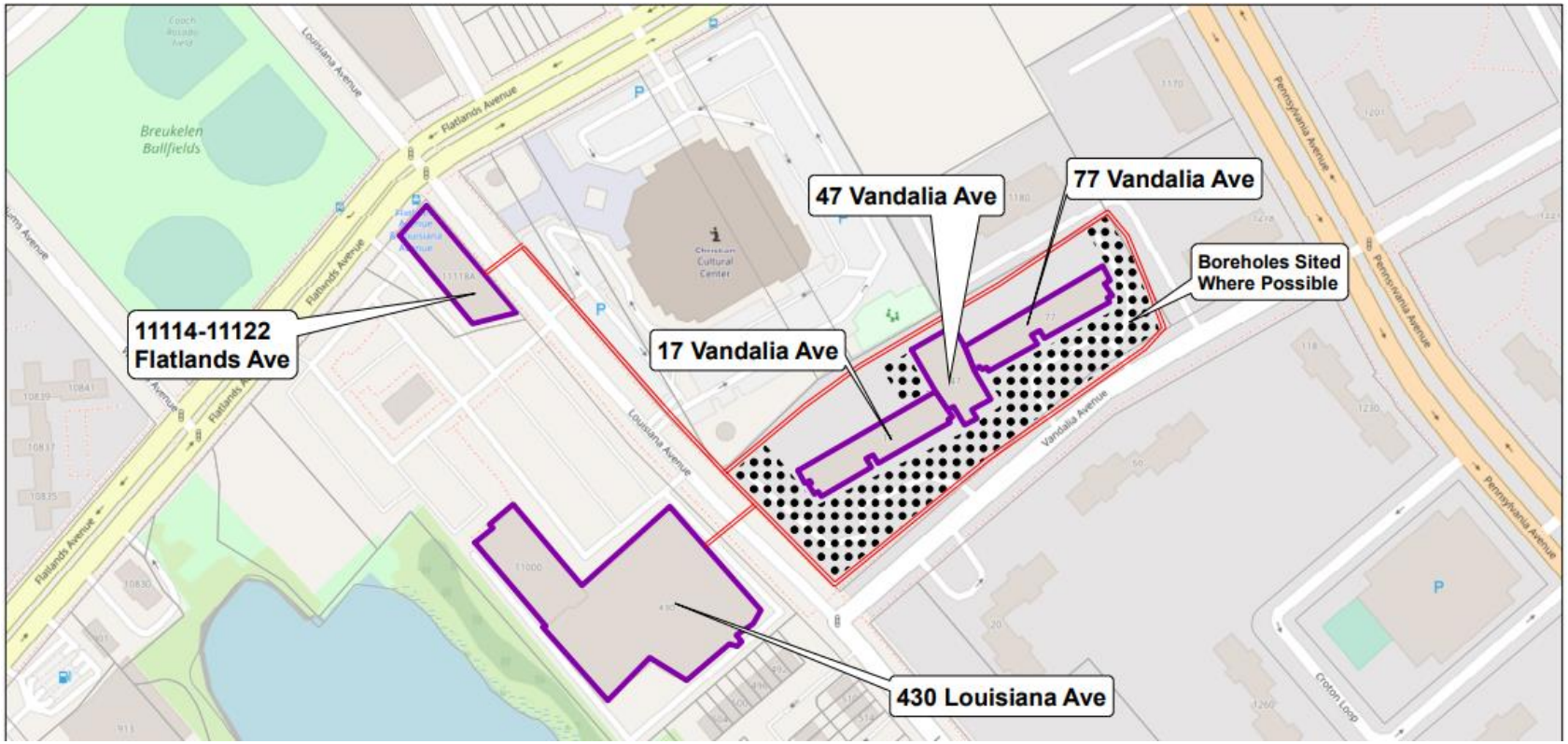
Cost	$53M
Capacity (tons)	790
GHG Reductions (MT CO_2e / year)	-1,782
Located in DAC?	Yes



KEDNY UTEN Pilot Proposal

- **Install a water-source VRF mechanical system to provide heating and cooling to the residents of the NYCHA building.**
  - Residents are not currently provided central cooling
- **Assessing the feasibility of utilizing waste heat from MTA dewatering efforts and capturing waste heat from the nearby 26th Ward WWTP.**
  - Potential to tie into the “Urban Village” redevelopment

Cost	$108M
Capacity (tons)	560
GHG Reductions ($MT CO_2e$ / year)	-448
Located in DAC?	Yes



4

Barriers to Scaling

nationalgrid

Electrification and Efficiency Penetration by Scenario

The levels of electrification and energy efficiency projected to be delivered at current funding levels is lower than the levels required by the CEV and the AE scenario.

Figure 8-1: Full Building Electrification by Scenario

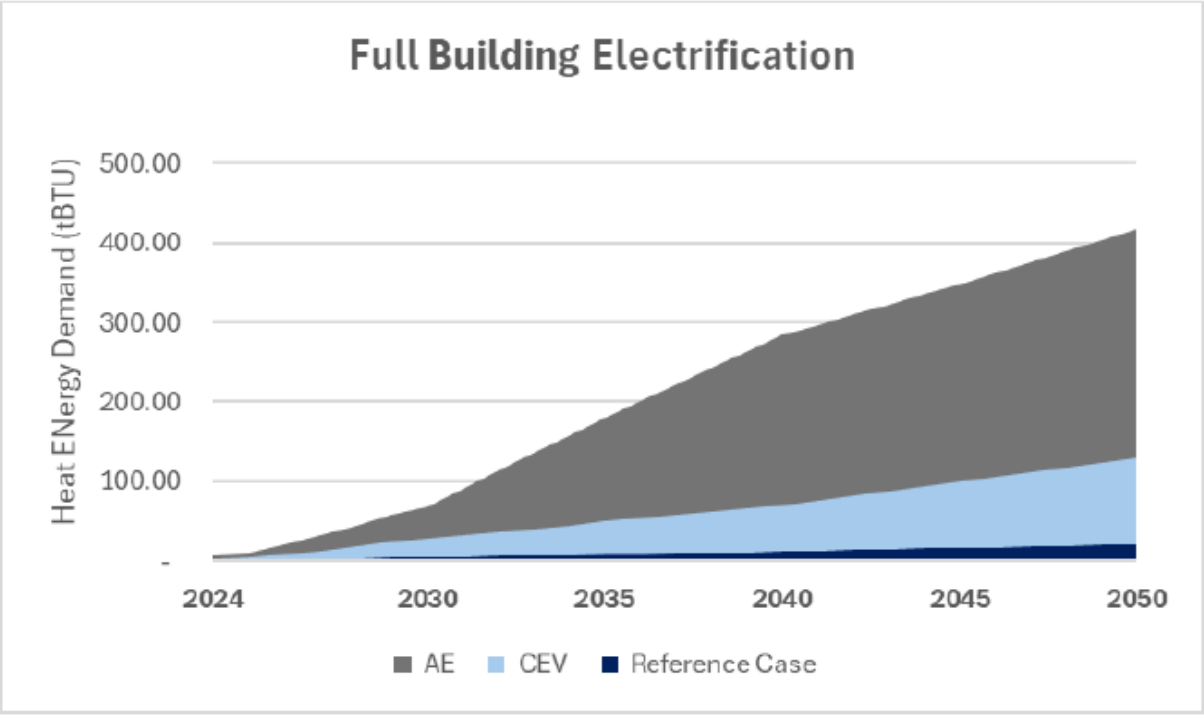
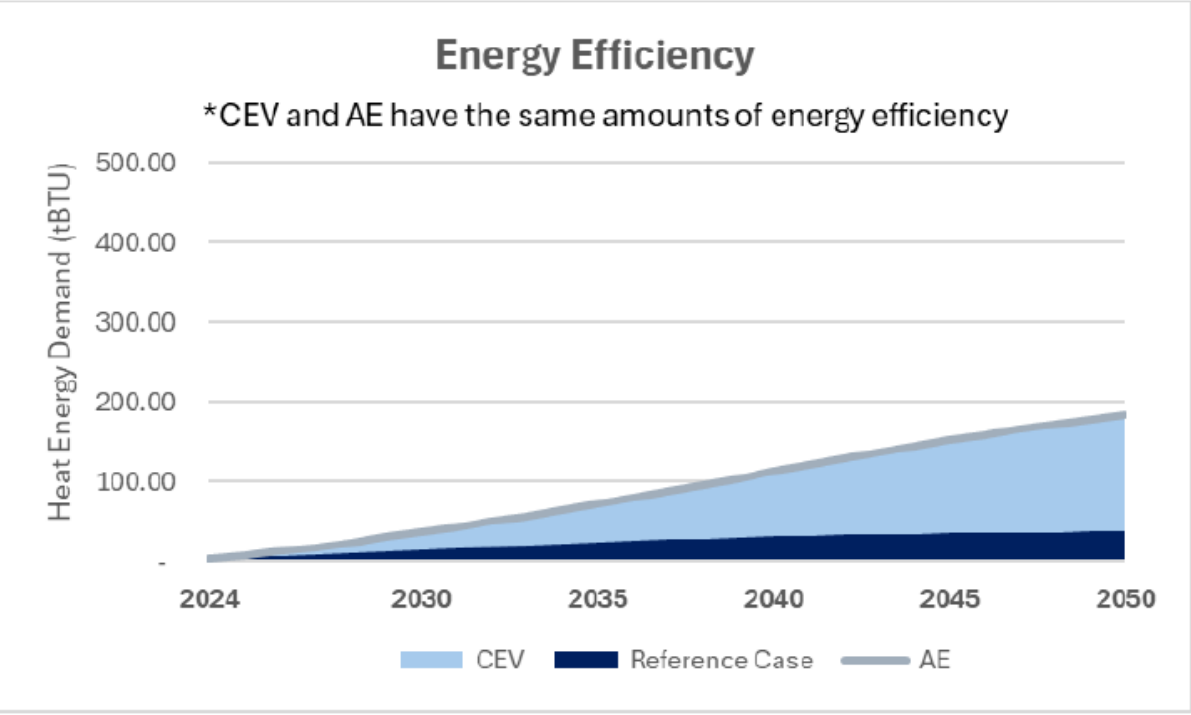


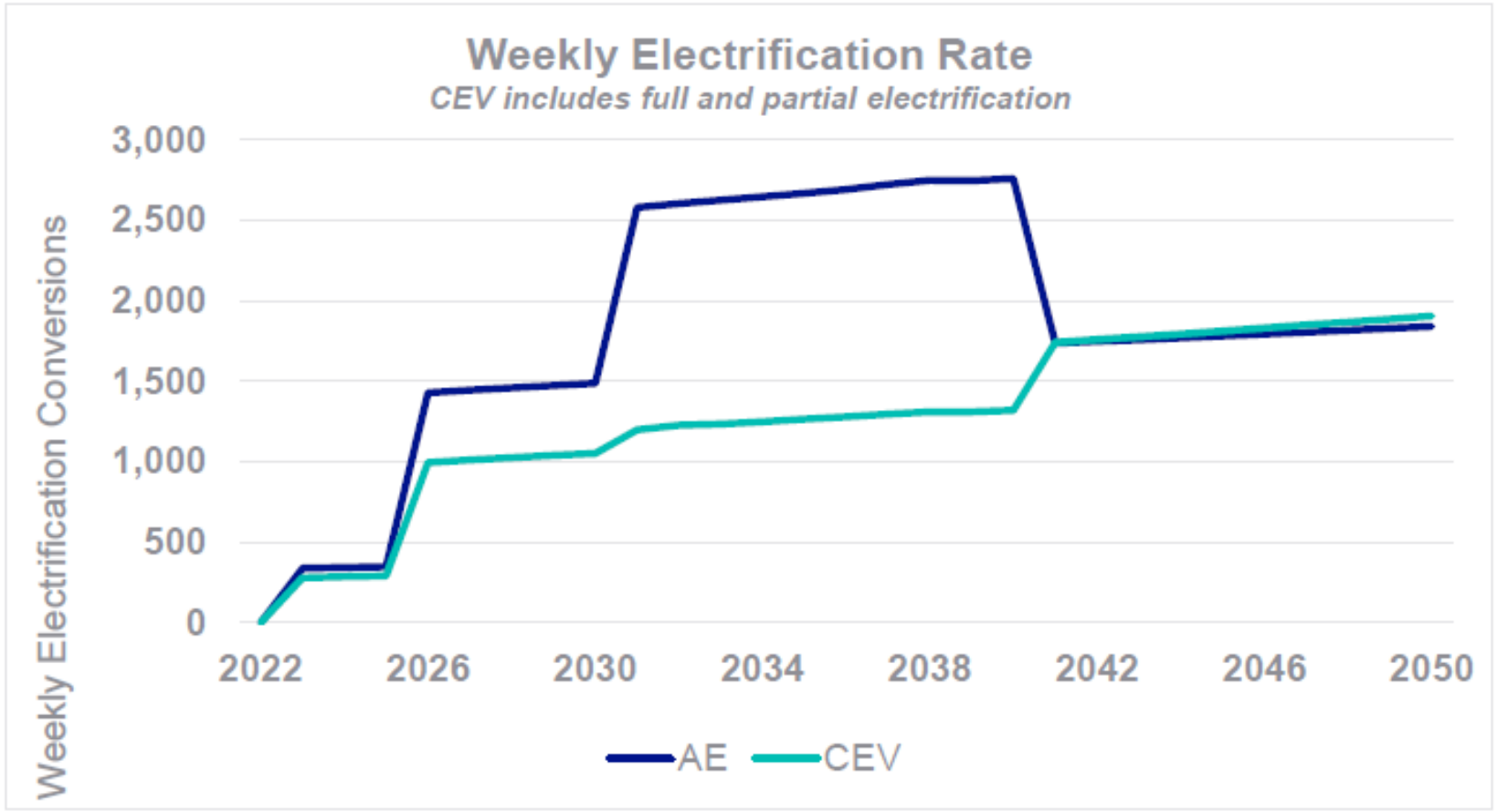
Figure 8-3: Energy Efficiency by Scenario



Electrification Adoption Rate

- To achieve either the CEV or AE scenario trajectories, between 1,000 and 2,700 heat pumps must be installed every week in National Grid's service area through 2050.
- According to DPS, the pace of heat pump installations for *all of New York state* was approximately 568 per week in 2022.[1]
- Barriers include cost of installation, cost of operation, equipment and workforce availability, and customer propensity.

Figure 8-10: Electrification Adoption (Full and Partial Electrification under CEV)



[1] Department of Public Service. "The NYS Clean Heat Program 2022 Annual Report."

Barriers to Energy Efficiency Program Scaling

- **Program funding**
  - In the July 2023 NE:NY Order, the Commission elected to pursue a “budget bounding” approach that establishes an upper limit on ratepayer funded EE and BE programs, since “the scale of the EE/BE efforts required to comply with the CLCPA objectives cannot be funded through ratepayer collections alone.”
  - Other sources of funding will be necessary to reach CEV or AE trajectories (Federal funding; other state funding such as NYCI).
- **Program design**
  - Efficient gas equipment is not considered a “strategic measure” irrespective of GHG emissions impact.
  - Enhanced coordination between gas and electric utilities would help optimize program delivery.
  - Portfolio planning process should integrate incentive programs, gas service requirements, rate design, targeted electrification/NPAs, building codes, and emissions targets.

5

Stakeholder Collaboration

nationalgrid

We Welcome Your Involvement

- **National Grid and DPS Staff are eager to hear your comments about our LTP**
  - We believe the best path forward is for parties to bring feedback and suggestions to improve our LTP.
  - We would appreciate the opportunity to understand your position regarding a clean, fair, and affordable energy transition.
- **PA Consulting will be working with DPS Staff to facilitate the Information Request process.**
- **We invite your full participation in this and all future technical sessions. Requests for technical session topics should be routed through PA & DPS Staff.**
- **This and future presentations will be posted to ngridsolutions.com**

Q&A

nationalgrid

Appendix

nationalgrid