# New York Initial Gas Long-Term Plan

**Case 24-G-0248**
**Technical Conference**

**June 27, 2024**

nationalgrid

# Welcome to All

## Agenda

1. Introduction & Welcome
2. Overview of our Scenarios
3. Capex Forecast Insights
4. Our Customer Demand Forecasts
5. Demand-Side Management Approaches
6. Our Gas Supply Portfolios
7. Modeling Results
8. Policies to Enable the Energy Transition
9. Stakeholder Collaboration
10. Q&A

## Meeting Logistics:

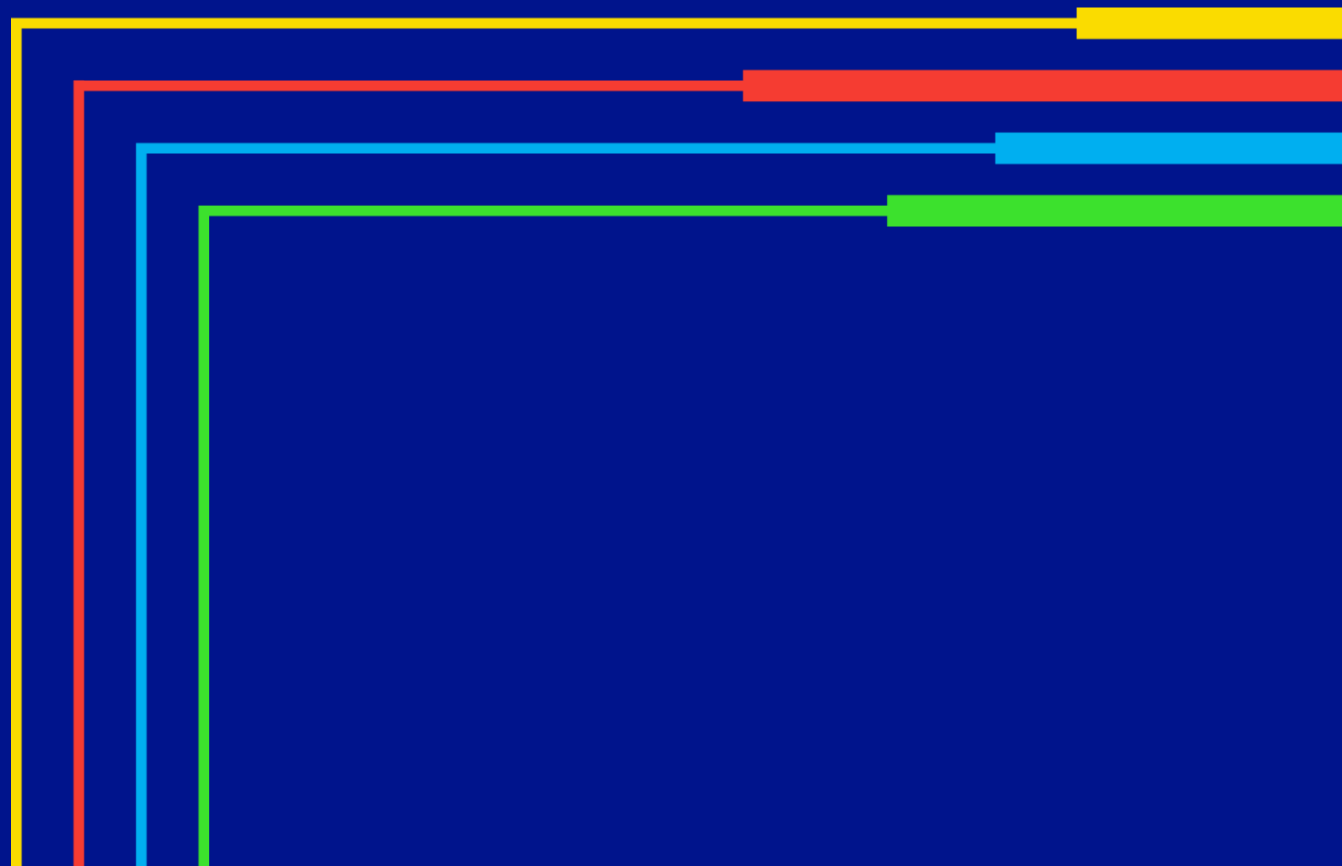
**Q&A will be held at the end of the presentation to address matters related to the material presented.**

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

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

# 1

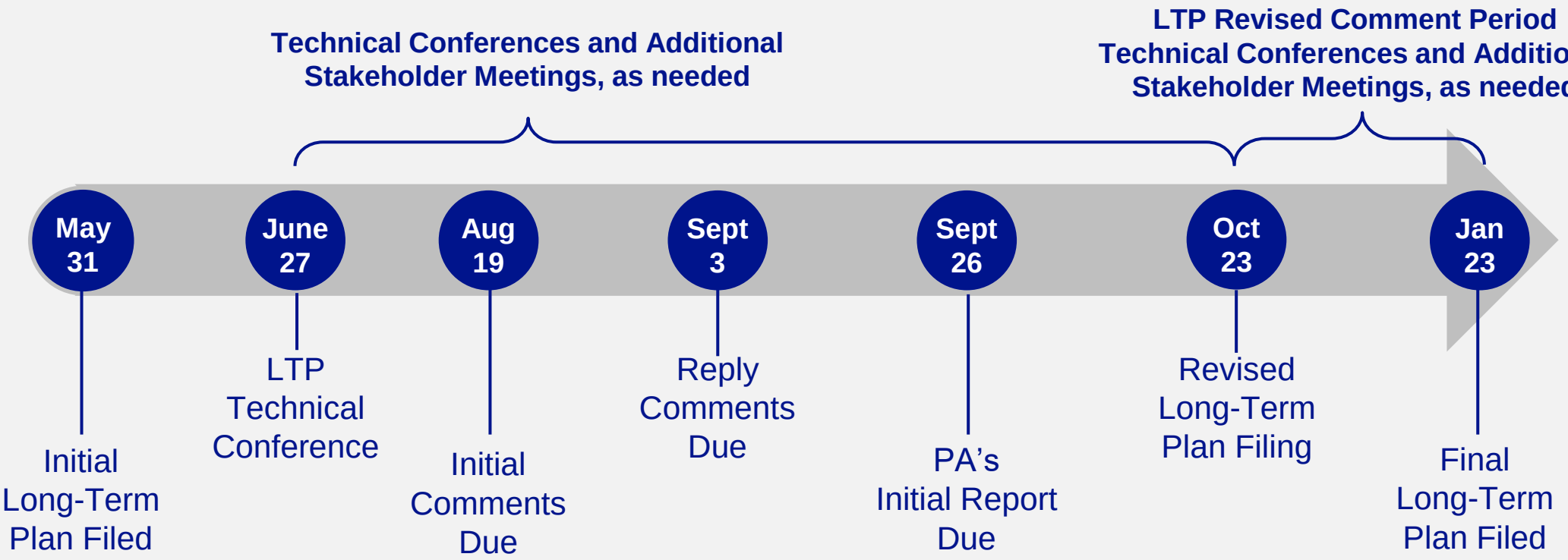
# Introduction



nationalgrid

# Introduction to National Grid's Initial LTP

- National Grid filed our LTP for KEDNY/KEDLI/NMPC on 5/31/24; Case 24-G-0248
- We're looking forward to transitioning to the stakeholder engagement process:



# Our Commitment to Climate Action

**2019**

- New York enacts **Climate Leadership and Community Protection Act** ("CLCPA"), requiring New York to reduce statewide GHG emissions
  - 40% from 1990 levels by 2030
  - 85% from 1990 levels by 2050

**2020**

- National Grid "**Net Zero by 2050**" plan is published
- National Grid publishes our first **Responsible Business Charter**, setting our own emissions targets aligned with NY State's.

**2022**

- National Grid published
  - "**Our Clean Energy Vision**"
  - "**Our Climate Transition Plan**"
    - Set out actions for reducing the Scope 1, 2, and 3 GHG emissions associated with the Company's gas and electric networks in the US

**2023**

- National Grid published a refreshed **Responsible Business Charter**
  - Reduce Scope 1 and 2 GHG emissions 60% by 2030
  - Reduce Scope 3 GHG emissions (excluding electricity sold), by 37.5% by 2034
  - Achieve net zero by 2050 for Scope 1, 2 and 3 GHG emissions.

Since 2008, we have reduced annual emissions from leaks in New York by more than 35%, **avoiding emissions of more than 5.5 million metric tons of $CO_2e$**

Since 2016, the Company's gas energy efficiency and heat pump programs resulted in **lifetime GHG emissions reductions of approximately 8.7 million metric tons of carbon dioxide equivalent ("$CO_2e$")**

## Current & Pending Clean Energy Projects

# Key Challenges and Barriers Observed

## CUSTOMER DEMAND FOR GAS IS GROWING UNDER CURRENT REGULATIONS AND POLICIES

and is projected to continue to grow in the future despite ambitious existing energy efficiency and heat electrification programs.

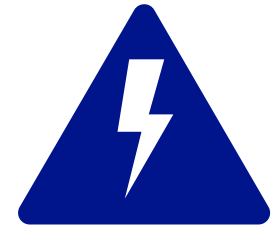
## ONGOING MAINTENANCE AND NEAR-TERM INVESTMENTS REQUIRED

To preserve reliable access to critical energy service of the gas network and to maintain the gas network

## NEW POLICIES AND REGULATIONS ARE NECESSARY

To put our shared GHG emissions reductions targets within reach and to ensure long term affordability

## THE ELECTRIC SYSTEM WAS NOT CONSTRUCTED WITH THE DISPLACEMENT OF GAS LOAD IN MIND



Significant capital deployment to strengthen the electrical system is necessary

# We are Committed to Energy Affordability and Equity

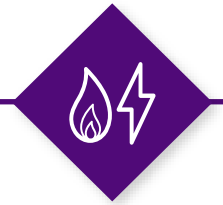
Our **draft Equity and Environmental Justice Stakeholder Engagement Framework** summarizes our principles and intentions for meeting these objectives. We welcome feedback on this framework and how to best support customers in disadvantaged communities through the gas transition.

## Fairness, Affordability, and Equity are Central to our Company Strategy

Ensuring that every customer has access to affordable and reliable energy, and that we all share the benefits of a net zero future. **Commitment to advancing the CLCPA's clean energy and equity goals, while integrating procedural, distributional, and structural equity more broadly across our business.**

## We offer a range of solutions for Low and Moderate income customers

Solutions including income-eligible monthly bill credits, payment plans, forgiveness programs, grant programs, and personalized support. Many of our income-eligible customers can see particular benefit from the energy efficiency programs we offer.



## Proposed new energy equity programs ensure that no customer is left behind

In the clean energy transition, we have proposed increasing access to low-carbon energy technologies in targeted communities, from community-shared solar to electric vehicle charging access to zero-emission school bus incentives.

## Advocation for Policy to create new public funding sources

**Sources t**hat mitigate the impacts of climate policy on our customers' electric and gas bills, while in parallel producing and delivering clean energy at the lowest cost to our customers (for example, through wholesale market reforms to enable large-scale clean electricity).

# 2

# Scenarios

nationalgrid

# Our Long-Term Plan Scenarios

- Scenarios are illustrative, not predictive. They are not proposals per se, but instead are hypotheticals intended to illustrate boundary cases for a feasible gas transition.
- Scenarios are intended to define the window of opportunity for the gas transition.
- Scenario analysis identifies “no-regrets” steps to be taken in near-term and establishes key indicators/signposts to guide future policy and regulatory decisions.

## Reference Case

- Illustrates a continuation of current policies based on best available forecasts
- Accounts for enacted policies including All-Electric Buildings Act and NYC Local Laws 97 and 154
- Assumes increased energy efficiency/DSM funding at historic growth rate

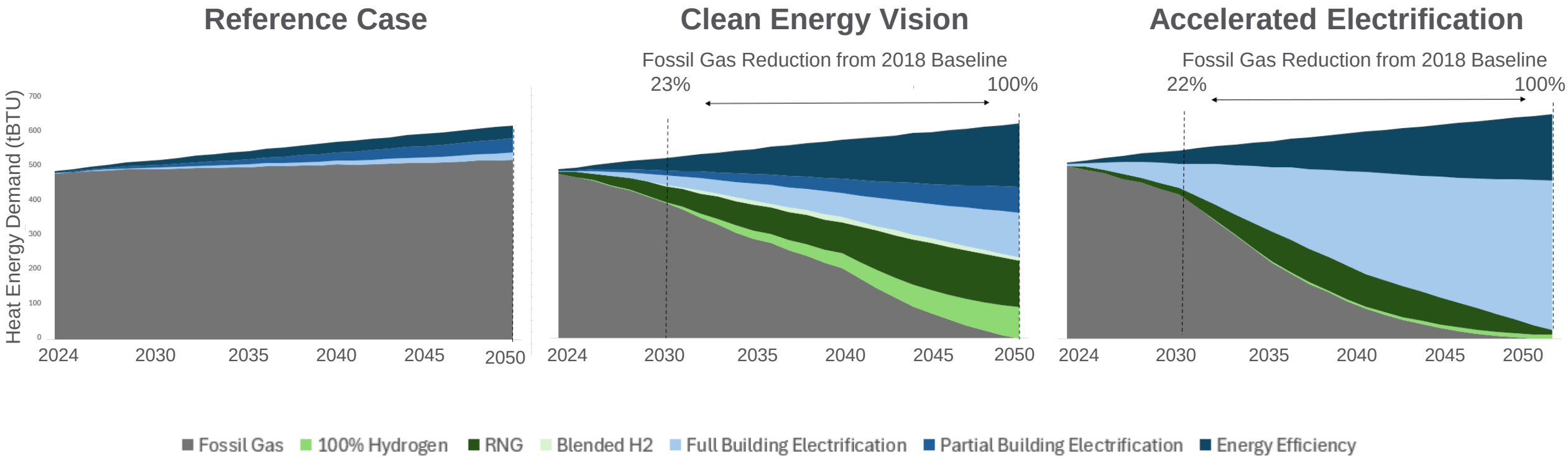
## Clean Energy Vision (CEV)

- Illustrates National Grid’s vision for the gas transition
- Fully eliminates fossil fuels before 2050; Consistent with CAC Scoping Plan gas transition recommendations
- Includes rapid expansion of electrification and efficiency/DSM
- Gas network transformed to play complementary role delivering clean alternative fuels

## Accelerated Electrification (AE)

- Illustrates a high-electrification gas transition
- Based on Climate Action Council Integration Analysis Scenario 3
- Includes significant volumes of low-carbon fuels, but less than CEV
- Includes greater levels of electrification than CEV

# Energy Resource Volumes by Scenario

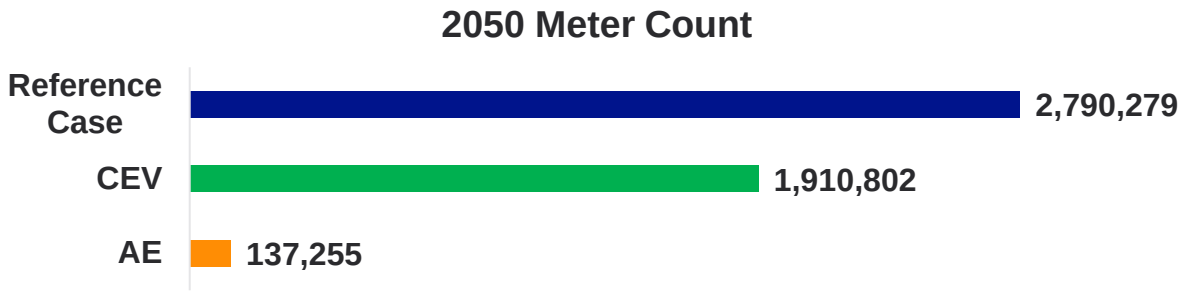


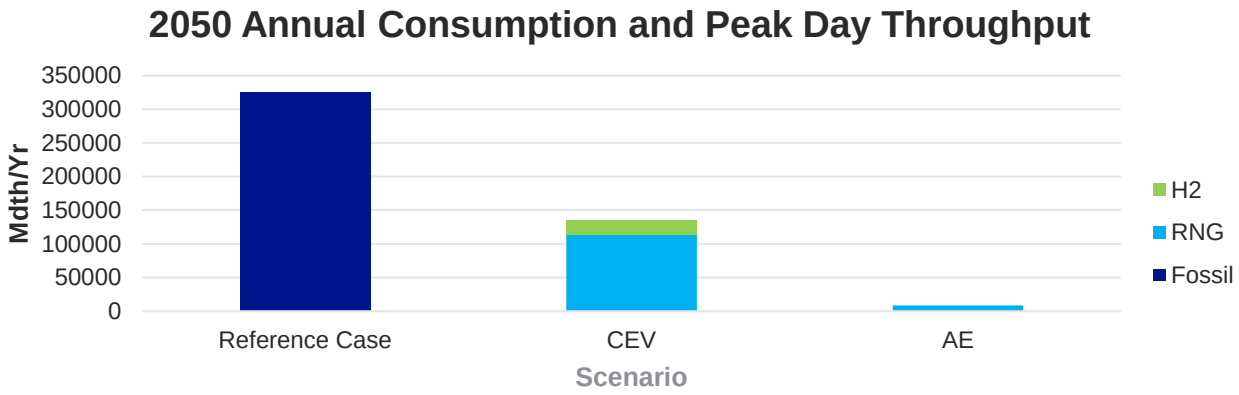
# 3

# Capital Expenditure Forecast

nationalgrid

# CapEx




| | RC | CEV | AE |
|---|---|---|---|
| Capital Investment ($M) | $67,747 | $57,066 | $37,583 |
| FOH CapEx ($M) | $1,788 | $17,384 | $10,794 |
| Total CapEx ($M) | $69,534 | $74,451 +7% | $48,377 -30% |

## RC Reference Case

- Total CapEx of **$70B**
- Distribution network of **21,620 miles**, serving **2.8M meters**
- Total annual demand increases by CAGR of **0.33%**, necessitating need for investments in supply portfolio

## CEV Clean Energy Vision

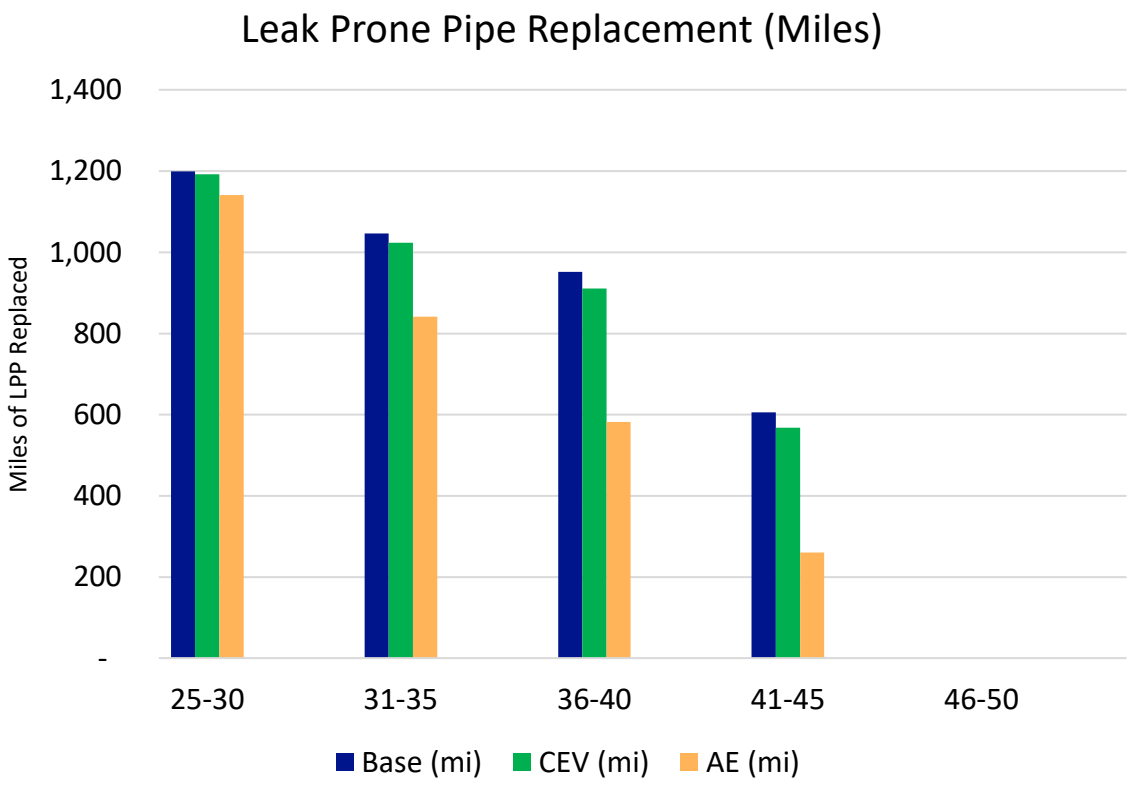
- Total CapEx of **$74B**
- Distribution network of **19,616 miles**, serving **1.9M meters**
- Additional distribution network **136K geothermal meters**
- Total annual demand reduces by CAGR of **-2.80%**
- Meters reduced by **25%**, shrinking network by **10%**

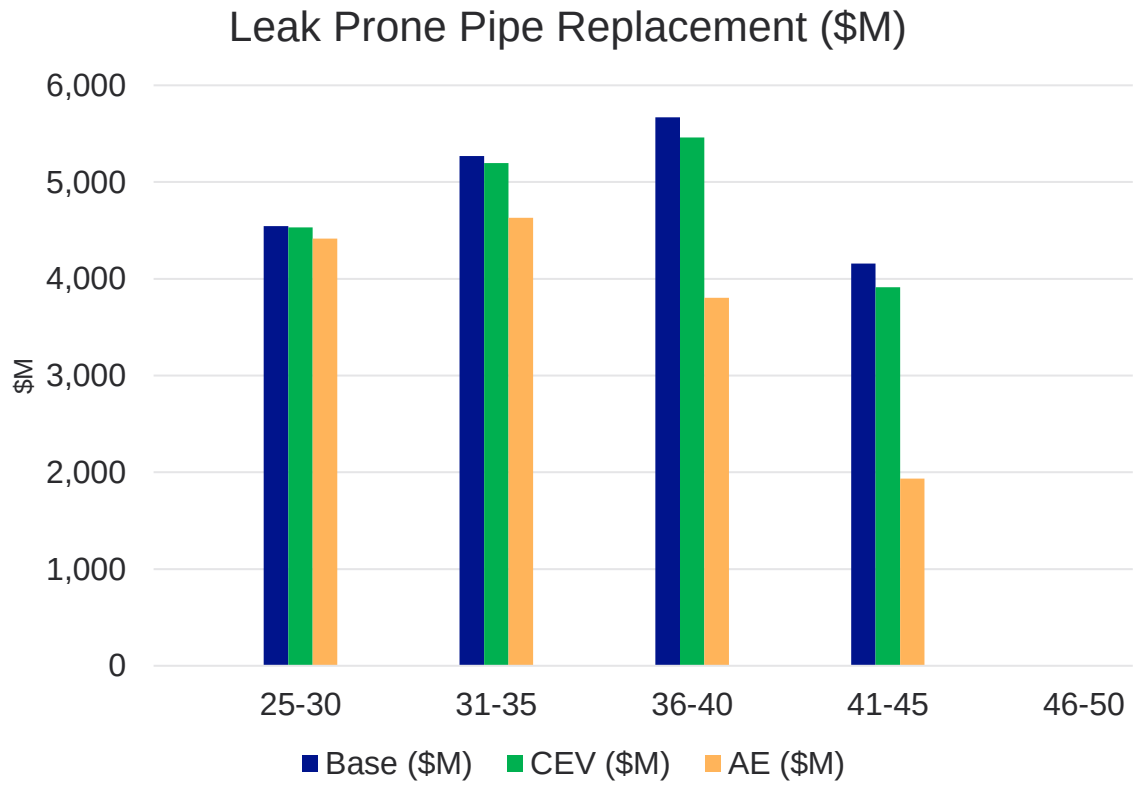
## AE Accelerated Electrification

- Total CapEx of **$48B**
- Distribution network of **2,268 miles**, serving **137,255 meters**
- Additional distribution network **136K geothermal meters**
- Total annual demand reduces by CAGR **-3.90%**
- Meters reduced by **95%**, shrinking network by **90%**

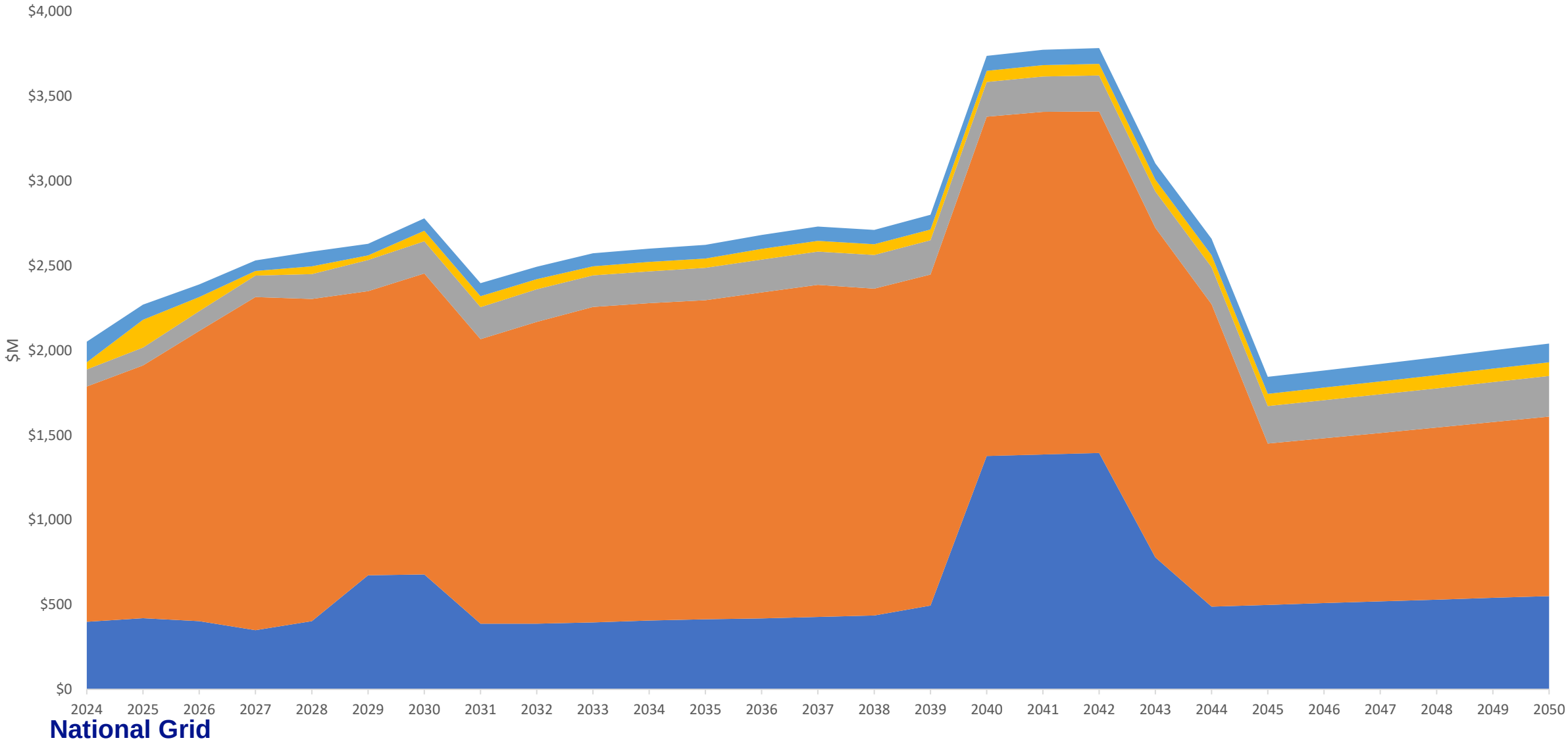
# Leak Prone Pipe Replacement

- A total of **3,803 miles** of leak prone pipe will be replaced under the reference case scenario. This reduces to **3,694 miles (-3%)** in CEV scenario and **2,825 (-26%)** in AE scenario

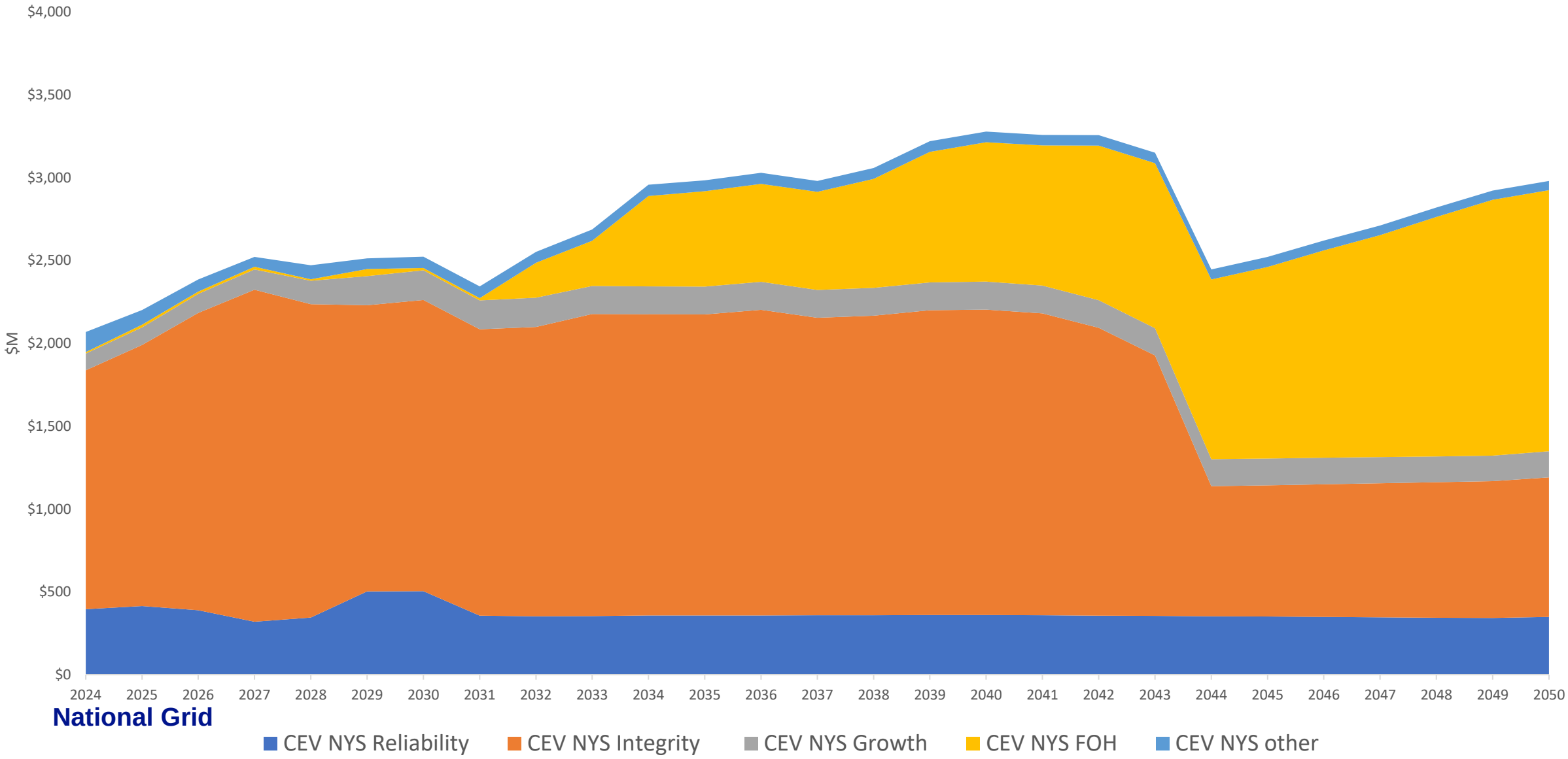


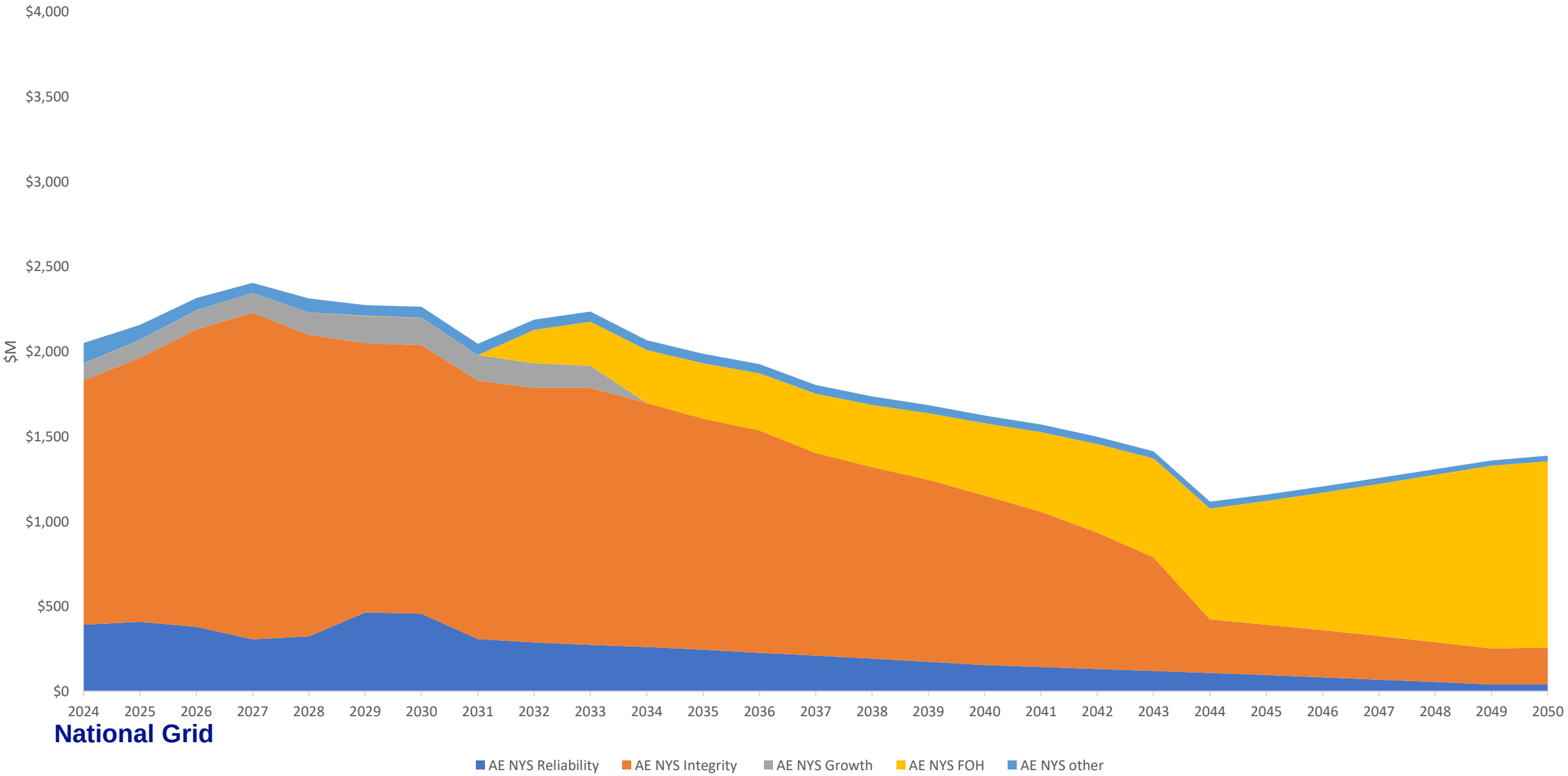
# CAPEX, Reference Case Scenario



# CAPEX, CEV Scenario



# CAPEX, AE Scenario



# 4

# Demand Forecasting

nationalgrid

# Forecasting is key to understanding the trajectory gas demand over the next two decades

**Short-term Planning**

***The Reference Case shows a projected increase in gas demand. Uncertainty bands around this case show the potential range of over or under forecasting in the near term***

**Long-term Planning**

***The analysis in the LTP looks at the Reference Case, Clean Energy Vision, and Accelerated Electrification scenarios, helping the company prepare for a net-zero future***

**What types of forecasts are produced?**

**1. Retail Forecast = Monthly demand at customer meters in normal year**

***Used for Rate setting***

**2. Wholesale Forecast = total daily requirement at city gate in normal and design year**

***Used to ensure adequate gas supply for winters***

**3. Design Day = coldest day for which the Company plans**

***Used to ensure adequate capacity to maintain integrity of distribution system during high demand periods***

# How does National Grid forecast gas demand?

**Step 1: Unadjusted Retail Forecast**

**Econometric models created to forecast monthly demand by rate group**

- **Based on normal weather (typical meteorological year)**

**Step 2: Post-Model Adjustments**

**Unadjusted retail forecasts are adjusted for exogenous factors (*e.g.*, energy efficiency, electrification, demand response, Local Law 97, Local Law 154, All-Electric Building Act)**

- **Adjustments differ across scenarios**

**Step 3: Retail to Wholesale (Normal Year)**

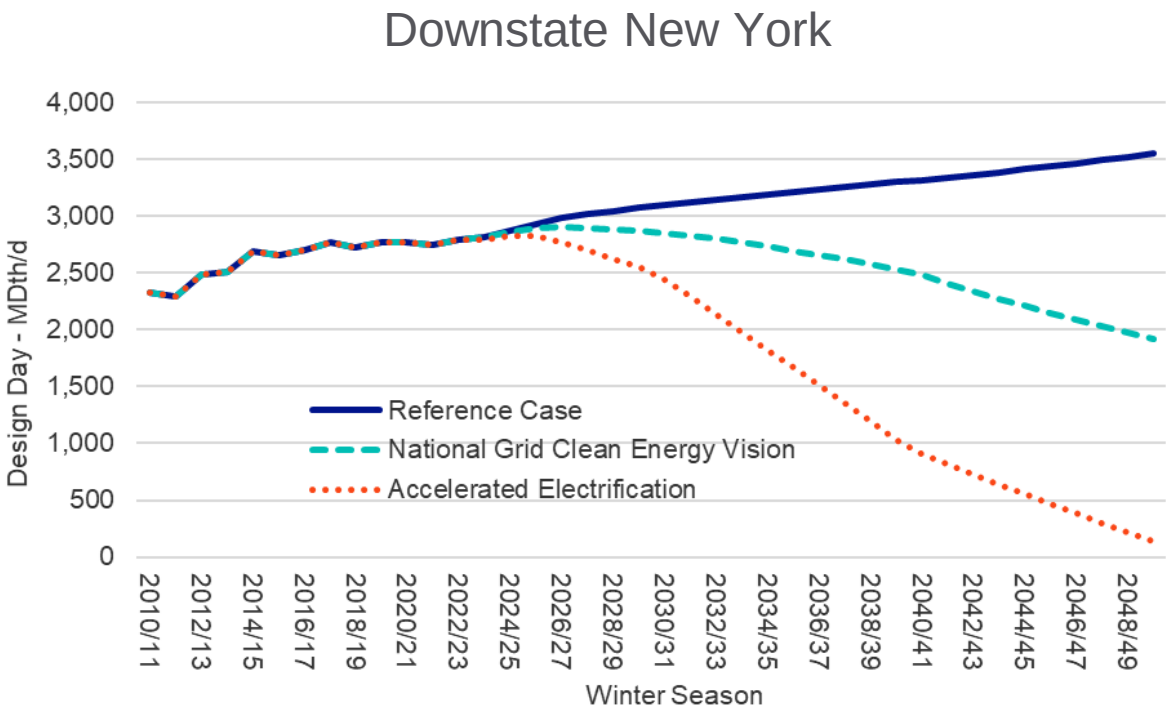
**Adjusted retail demand is converted to daily normal-weather wholesale demand, which accounts for lost-and-unaccounted for gas**

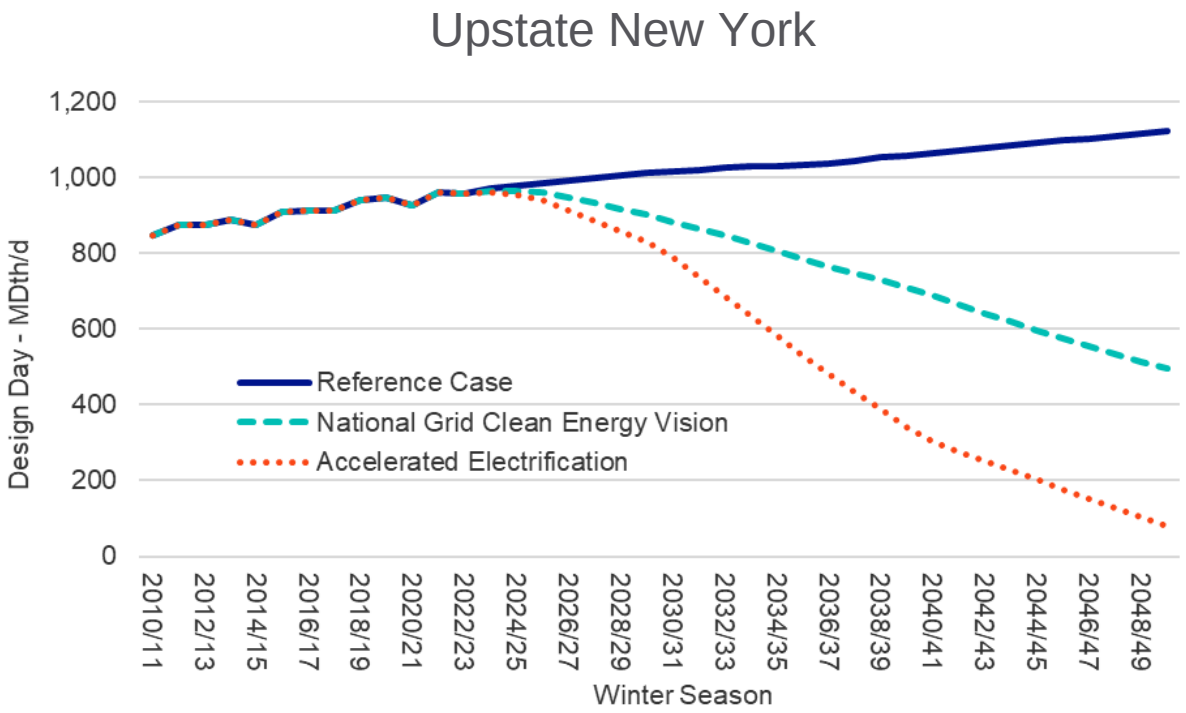
**Step 4: Wholesale (Design Year) and Design Day**

**Translation of normal weather wholesale forecast to design weather conditions, which includes design day**

- **Upstate NY Design Day Conditions: -10° F = 75 HDD**
- **Downstate NY Design Day Conditions: 0° F = 65 HDD**

# Design Day Demand by Scenario



# 5

# Demand Mitigation

nationalgrid

# Reducing Gas Demand with Demand Side Management Solutions

## Benefits and Achievement

1. Energy Efficiency
2. Electrification
3. Gas Demand Response
4. Non-Pipeline Alternatives (NPAs)
5. Utility Thermal Energy Networks

**National Grid is committed to enabling customers to reduce their gas consumption.**

**Key benefits**:

- Lower gas bills and greater occupant comfort
- Reduced greenhouse gas (GHG) emissions
- Lower's peak demand for natural gas, which:
  - Helps ensure reliability on the coldest days of the winter
  - Avoids or defers building new gas system infrastructure and/or upgrading existing infrastructure
  - Reduces natural gas procurement for customers

**8.7 million metric tons of lifetime GHGs** (carbon dioxide equivalent ) have been reduced by National Grid's gas energy efficiency and heat pump programs in NY between 2016-2023.*

=

Removing **2.1 million gasoline-powered cars from the road** for one year

Eliminating **the annual GHG emissions from 1.1 million residential homes**

Removing **23 natural gas power plants from service** for one year

**Greenhouse gas reduction data taken from NYSERDA's Clean Energy Dashboard; equivalencies derived from the EPA's Greenhouse Gas Equivalencies Calculator.*

# **Energy Efficiency:** National Grid's industry leading energy efficiency (EE) programs in NY since 2016

## 2016-2023 Programs:

### Programs for residential customers:

- Incentives for single-family homes
- In-store products, online marketplace
- Home Energy Reports
- Rebates for weatherization

### Programs for commercial and industrial customers:

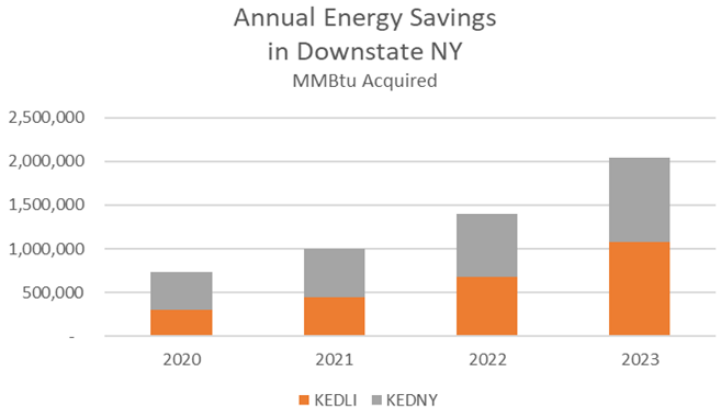
- Incentives for gas savings measures
- direct install programs, kitchen equipment/grocer programs
- custom programs, building management programs

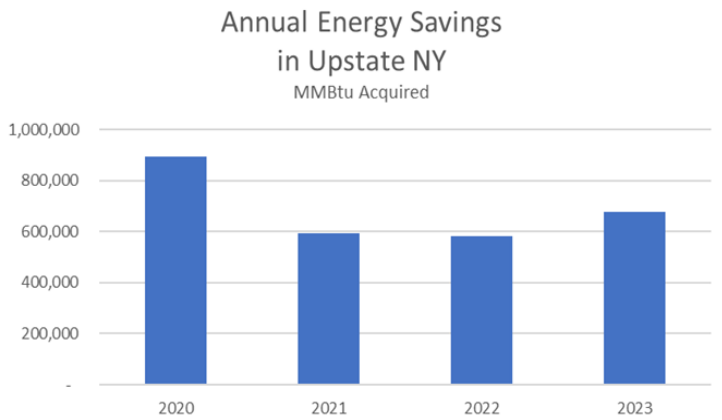
### Programs for low and moderate-income customers (LMI):

- Energy audit with weatherization upgrades
- Served ~2,300 households and 17,600 multifamily units since 2020

## Program Transition next 18 months:

- Weatherization and heat electrification to ramp up
- Home Energy Reports and residential gas heating equipment to phase out




Public Service Commission's July 2023 Energy Efficiency and Beneficial Electrification **(EE/BE) Order** for 2026-2030:

- Directs utility proposals for 2026-2030
- Order sets provisional budgets for EE and BE programs
- Utility support for equity goals, set by the Climate Justice Working Group
- Transition of a large portion of LMI program offerings to NYSERDA
- Alignment of EE programs to Strategic Framework

### Strategic Framework Requirements

- 85% budgets on "Strategic" measures (weatherization, heat electrification, heat recovery and advanced building controls)
- Maximum of 15% of budgets on "Neutral" measures

# Building Electrification (Heat Pumps)

## Upstate New York

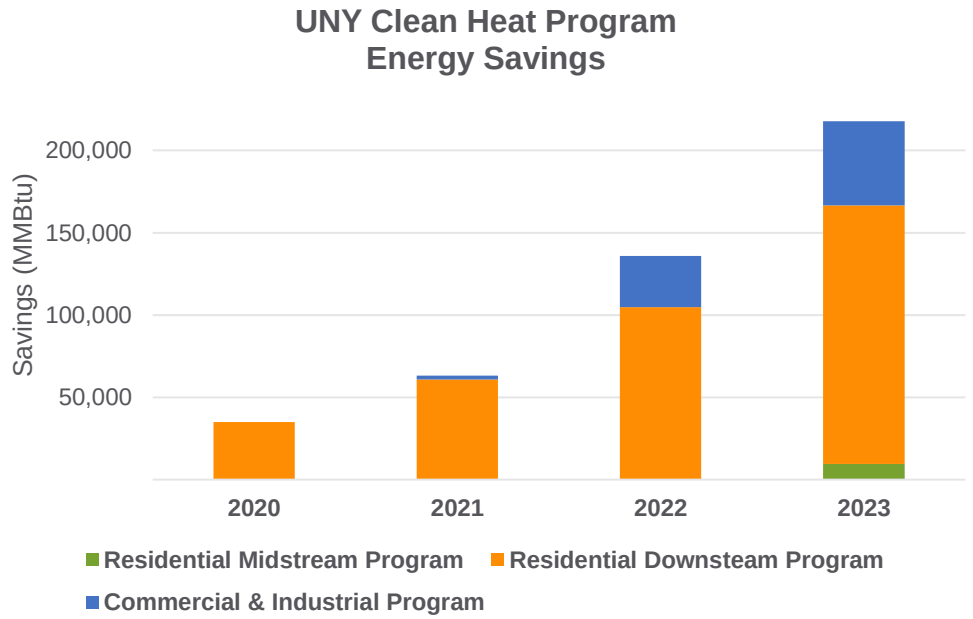
- **Clean Heat Program** (Heat pump - space and water heating): Has seen rapid growth
- Clean Heat is funded by electric utilities
- **Incentives:** For residential, small business, multifamily, commercial, and industrial customers, as well as for contractors
- **Higher rebates** are available for space heating projects in gas-constrained areas.

## Downstate New York

- **Clean Heat Programs** run by electric utilities: Con Edison and PSEG-LI. (except in specific NPA locations).
- **National Grid Role:** Support electrification by referring all customers, who request new/upgraded gas connections, to the respective electric utilities' heat pump programs.

## EE/BE Order: 2026-2030

The Clean Heat program, will evolve with changing regulatory priorities outlined in the recent July 2023 Energy Efficiency and Beneficial Electrification (EE/BE) Order directing utility proposals for 2026-2030.



# Gas Demand Response

## Overview

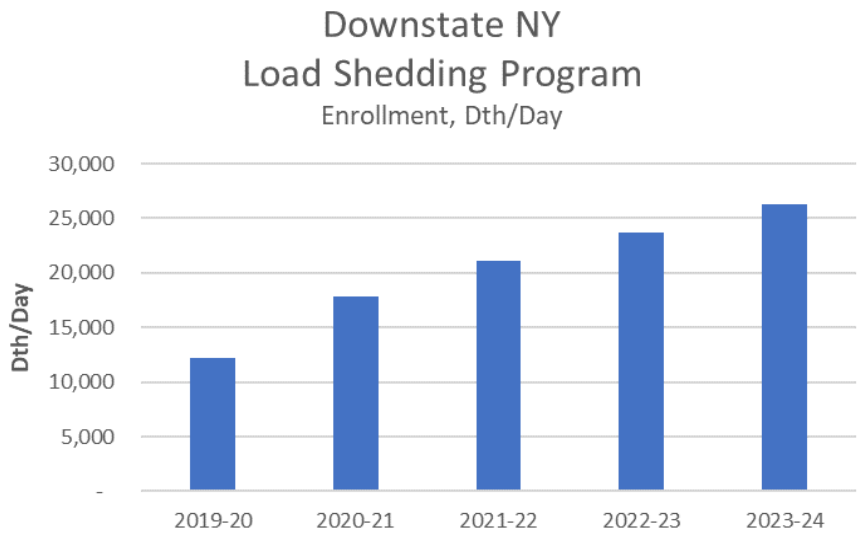
- **Largest and most comprehensive set of such programs in the country**
- Incentivizes customers who can curtail or reduce gas usage over a 4 or 8 hour period during a peak winter day

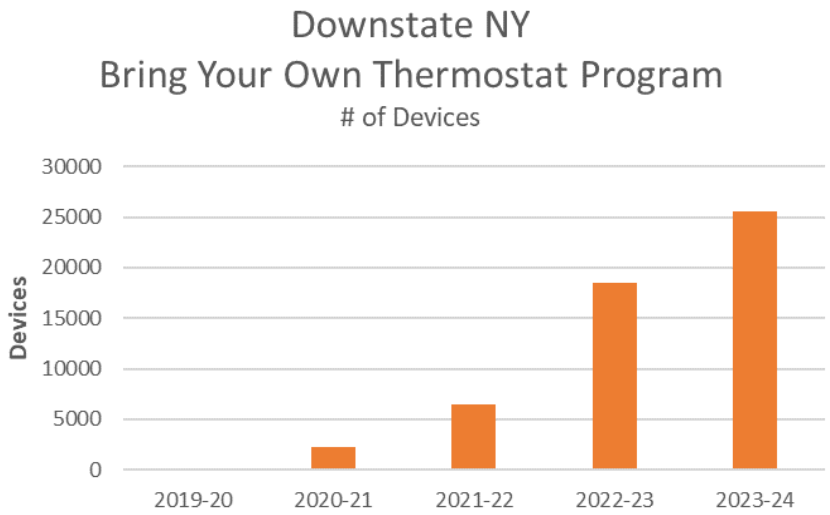
## Key Stats (NY 2023-24 Winter)

- **~450 commercial and multifamily customers** participated in our Load Shedding and Load Shifting programs
- **~32,000 thermostats (residential and small commercial)** are currently enrolled in our Bring Your Own Thermostat program.

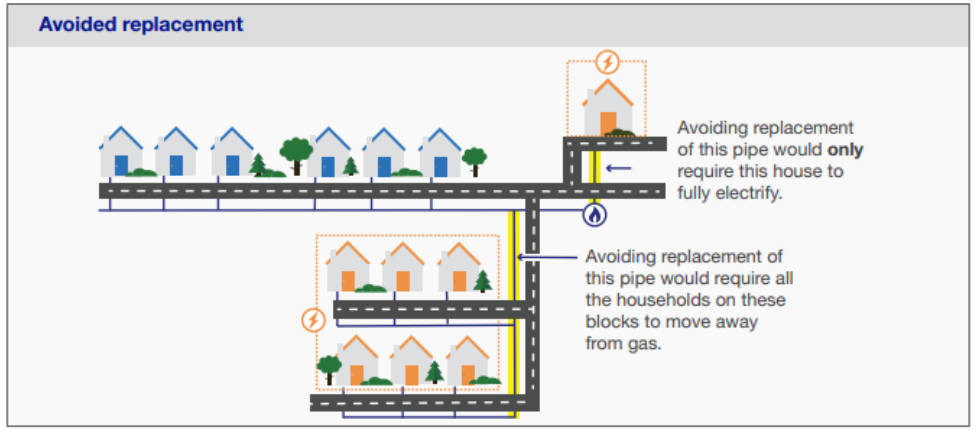
## Benefits:

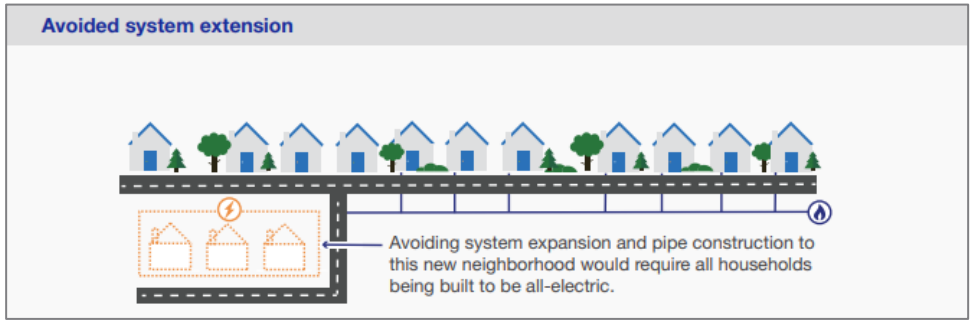
- Reliability: Flexible resource that provides critical reliability on peak winter days
- Emergencies: Can be called upon to reduce peak load during gas system emergencies (e.g. Winter Storm Elliott, reduced ~11,500 Dth/gas day)
- Reduces gas supply requirements
- Lowers peak usage: unique role in energy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

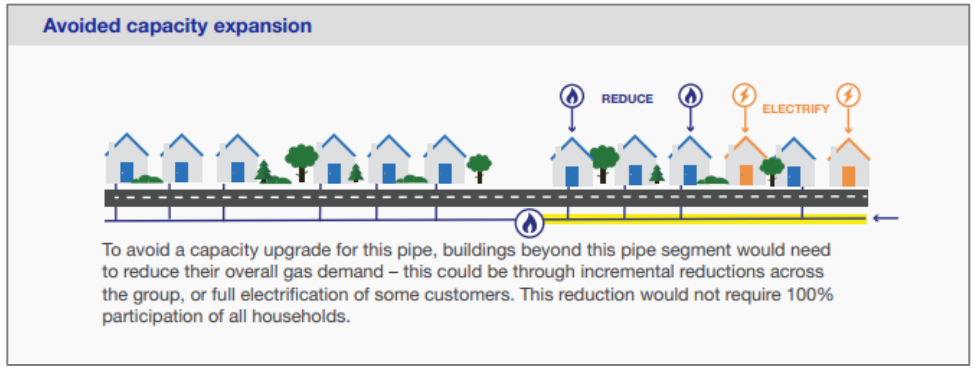


# Non-Pipeline Alternatives (NPAs)




Completed shareholder-funded NPA in Saratoga County: 3 customers electrified, 3 new gas regulators avoided, ~600 feet of gas pipe retired

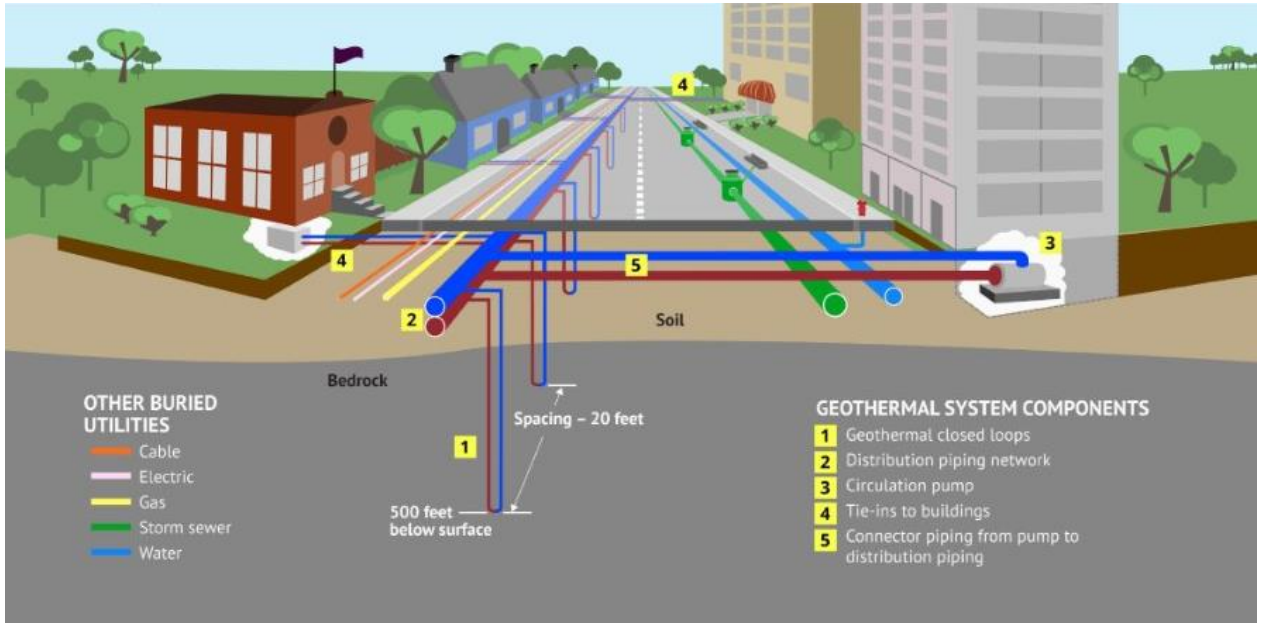
In discussions with community center in a Disadvantaged Community in Brooklyn regarding full electrification; would enable the retirement of ~900 feet of leak-prone pipe

In discussions with housing developer on Long Island that would avoid extending a gas main by ~12,000 feet and subsidize the installation of ground-source heat pumps at over 100 homes

Issued Request for Proposals for reliability and reinforcement NPAs in three areas of Brooklyn, Staten Island, and Long Island

*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*

# Utility Thermal Energy Networks (UTENs)




We have proposed **several pilots of thermal energy networks (aka networked geothermal) as an alternative means to provide heating (and cooling) to our current and future customers.**

These pilots are under review by our regulators and, if approved, will explore various technical, financial, and operational aspects of UTENs and thermal energy resources, as well as how best to leverage the technology to support customers.

# 6

# Supply Planning

nationalgrid

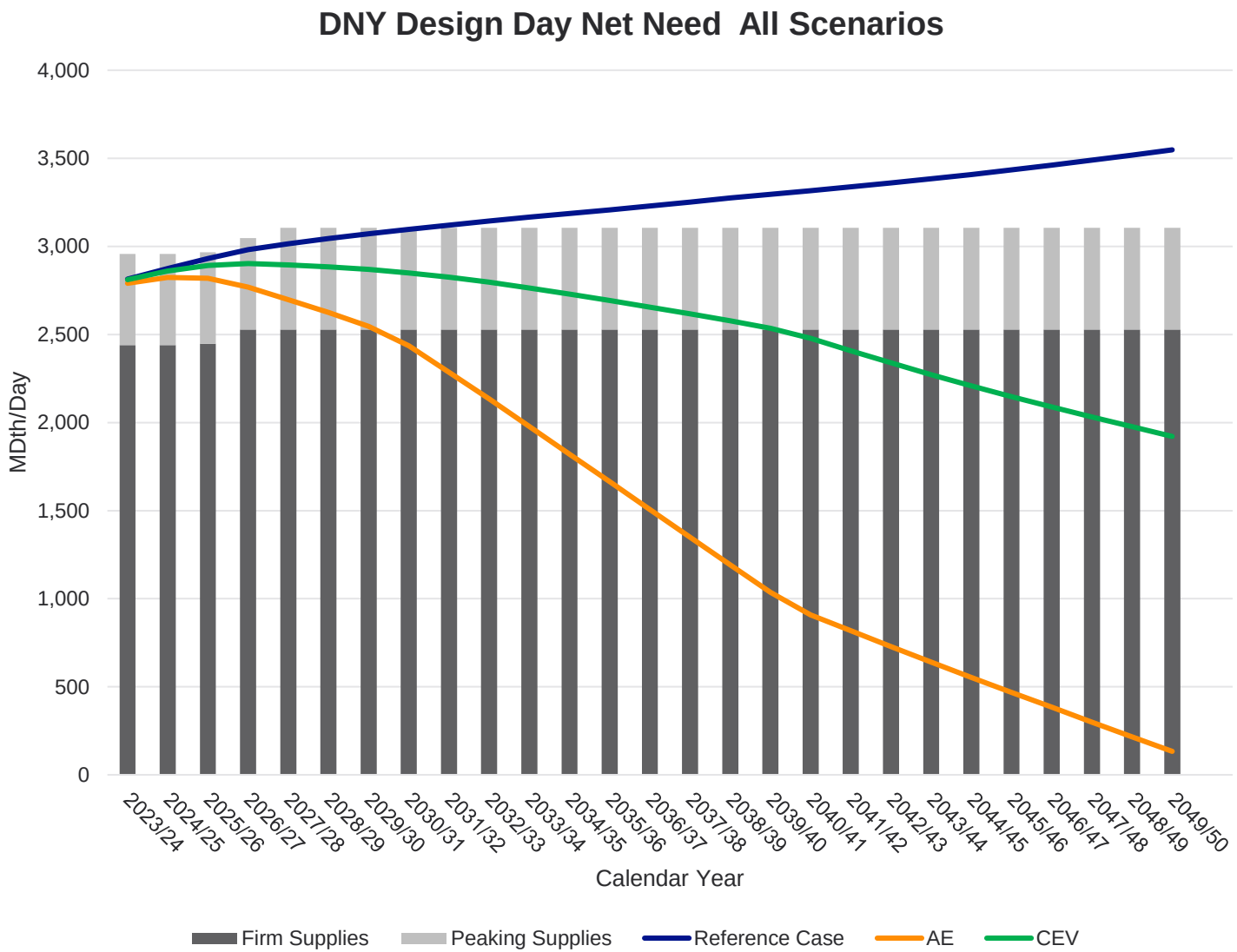
# Downstate NY Supply Portfolio

### *Downstate NY is served directly by:*

- Iroquois: 520,417 dt/day
- Tennessee (via ConEd/NY Facilities): 65,542 dt/day
- Tetco: 523,338 dt/day
- Transco: 1,391,047 dt/day

### *The Downstate NY Portfolio includes:*

- Transportation and/or storage on twelve interstate pipelines/storage facilities
  - Iroquois ExC (in-service 2026/27)
- Underground Storage (82.7 BCF w/ 1,063,702 dt/day of withdrawal rights)
- Peaking Supplies:
  - City Gate Peaking Supplies: 58,000 dt/day
  - Cogen Supplies: 65,056 dt/day
  - CNG: 61,600 dt/day (88,000 dt/day by 2026-27)
  - LNG:  394,500 dt/day



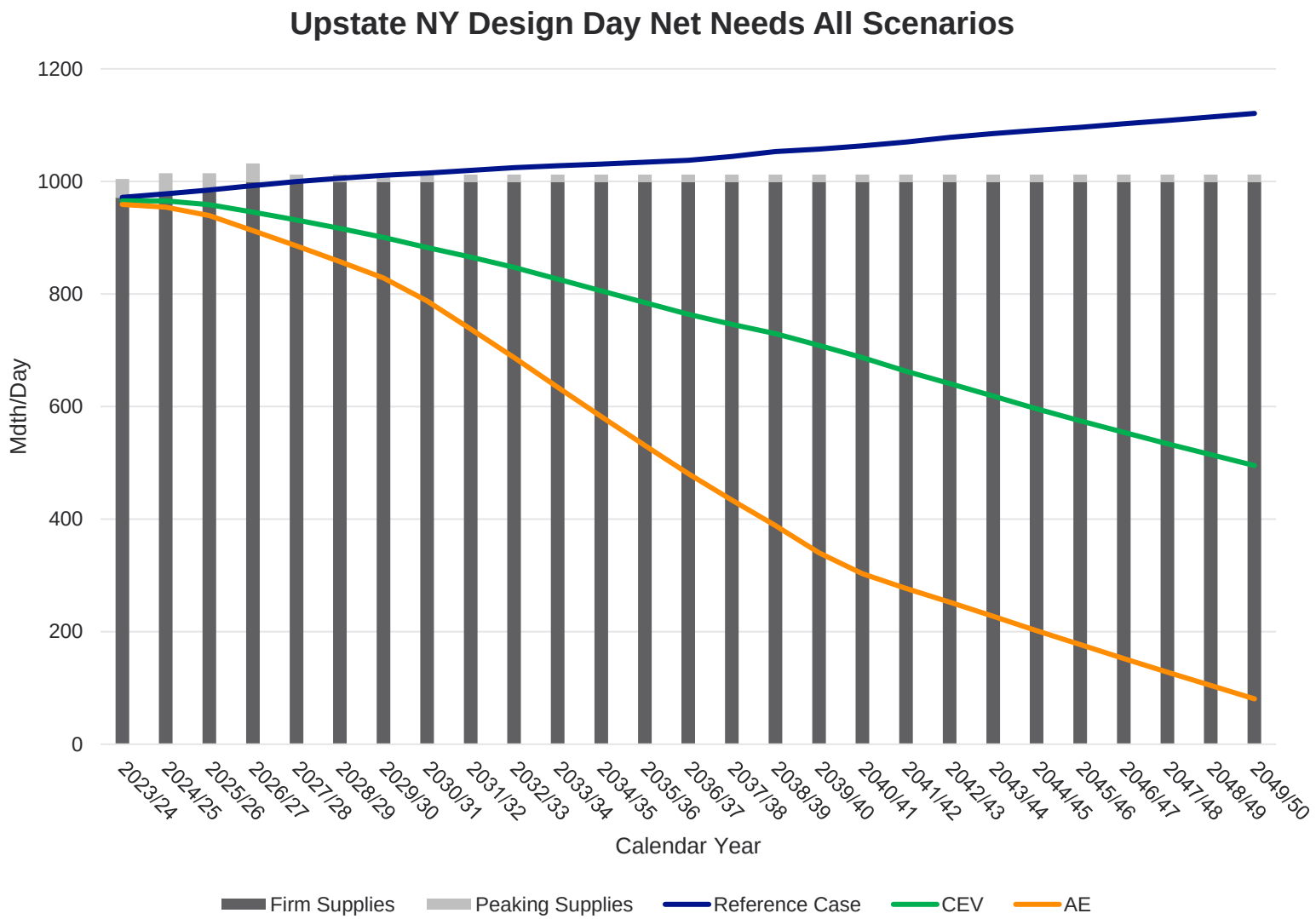
# Upstate NY Supply Portfolio

***Upstate NY is served directly by:***

- Eastern: 424,022 dt/day
- Empire: 0 dt/day
- Iroquois: 51,596 dt/day
- Tennessee: 50,000 dt/day

***The Upstate NY Portfolio includes:***

- Transportation and/or storage on three interstate pipelines/storage facilities
- Underground Storage (22.9 BCF w/ 438,078 dt/day of withdrawal rights)
- Peaking Supplies:
  - City Gate Peaking Supplies: 20,000 dt/day through 26/27
  - Cogen Supplies: 13,225 dt/day
  - CNG/Energy Transfer Sites: 17,600 dt/day in 24/25, 35,600 dt/day by 26/27



# Peaking Resources

Critical components used to ensure reliable gas supply, **particularly during peak demand periods**

Offer **flexible and scalable solutions** for meeting sudden spikes in demand

**Balance** the stability and availability of supply with cost-effectiveness and environmental considerations

**LNG**

- **Provides a reliable backup supply and reduces dependency on constrained pipelines**
- **Natural gas in its liquid state is about 600 times smaller than its volume in a gaseous state in a natural gas pipeline**

**CNG**

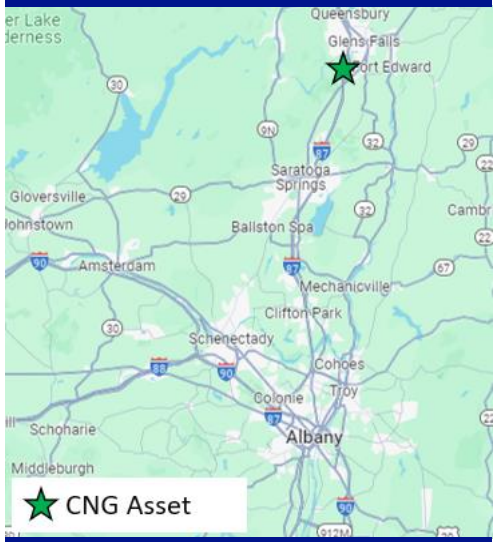
- **Offers mobility and can address specific local demand pockets effectively**
- **Relies on use of long-distance trucking for the delivery of product to our service territory**

## Downstate NY


**LNG Assets: Greenpoint and Holtsville**

**CNG Assets: Barrett, Farmingdale, Glenwood, Inwood and Riverhead**

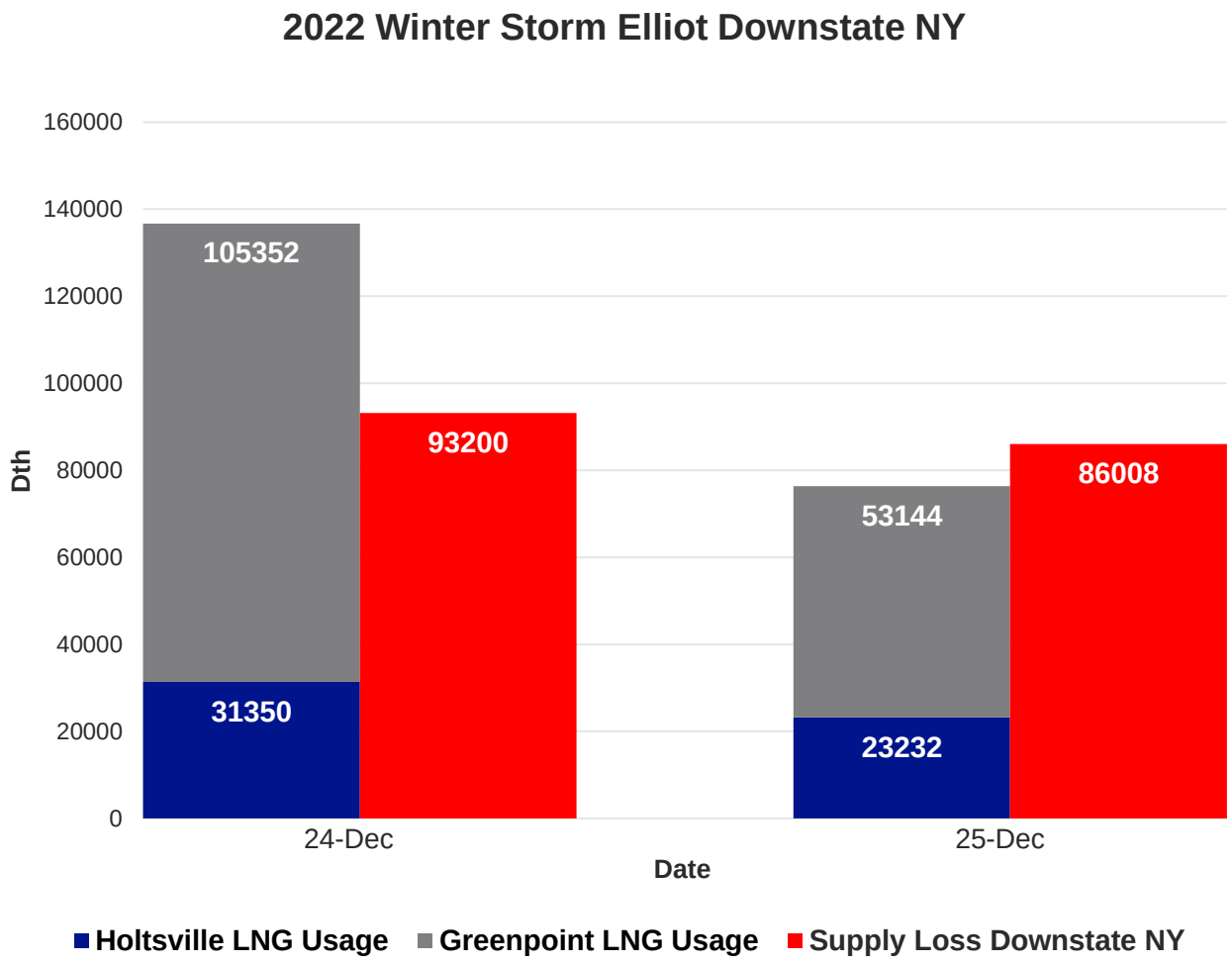
## Upstate NY




**CNG Asset: Moreau**

# Use of LNG During 2022 Winter Storm Elliot

- **If the gas system is unable to meet demand, National Grid would need to curtail customers' usage by shutting off parts of its system to avoid unsafe operating conditions.**
- During Winter Storm Elliot ("WSE") Downstate NY experienced supply losses on all three main pipelines that provide the majority of supply
- Supply loss was caused by
  - **Extreme and rapid temperature drops** coupled with rain, wind, and snow
  - Compressor failures
  - Producer Equipment failures caused by freeze offs
- **The use of on-system LNG assets at Greenpoint and Holtsville were critical in maintaining adequate system pressures as well as providing supply.**



# Low-Carbon Fuels

## Renewable Natural Gas

- RNG offers potential for a decarbonized energy alternative that can work within our country's existing infrastructure
- National Grid's CLCPA Study found the high and low resource potentials for RNG in the eastern United States in 2050 to be 2,199 and 1,158 TBtu/year respectively
- In order for National Grid to achieve its Clean Energy Vision, the procurement of approximately 135 TBtu/year will be necessary by 2050, representing approximately 8.0% of the average RNG potential in the eastern United States

## Hydrogen

- The use of green hydrogen produced locally or regionally is a key element of National Grid's CEV to decarbonize the gas networks
- Green hydrogen can be blended with natural gas or RNG up to 20% by volume and run through existing gas networks that have been upgraded through the Company's LPP removal program and used in existing customer appliances and systems without significant upgrades to infrastructure or customer equipment.

| LCF Type (2020$MMBtu) | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|
| RNG | $43.53 | $16.03 | $14.16 | $13.54 |
| Hydrogen | $28.95 | $25.85 | $20.71 | $17.81 |

# 7

# Modeling Results, Scenario Analysis

nationalgrid

# Summary

## Approach

- 3 separate analyses: bill impact, benefit-cost analysis (BCA), and GHG emissions analysis
- Our goal is not to use these findings to “pick a winner.”
- Intended to provide insights into tradeoffs and commonalities between scenarios to inform development of a statewide gas transition plan.
- None of these analyses alone present a complete picture of scenario impacts
- Important factors remain outside the scope of these analyses, including:
  - Impact on equity and justice
  - Induced economic effects
  - Emissions leakage

## Key Findings

- The CEV and AE scenarios both achieve substantial emissions reductions – 1.2 billion and 1.3 billion metric tons of CO2e respectively by 2050.
- Achieving those emissions reductions is costly for society as a whole and for gas customers in both scenarios.
- The costs of both scenarios outweigh the benefits according to the most comprehensive available benefit-cost test.
- Net costs are higher for the AE, totaling over $91.8 billion compared to about $63.2 billion for the CEV.
- The incremental net societal cost per ton of emissions reduction is lower for the CEV, at $52/ton compared to $69/ton for the AE.
- Gas customer bill impacts are substantially lower for the CEV, but the CEV is considerably more costly for gas customers than the Reference Case.
- AE bill impacts are incrementally higher the CEV through about 2040, and then increase exponentially as customers exit the gas network leaving very few remaining gas customers in 2050 to share the costs of the gas network.
- We do not anticipate bill impacts of the magnitude forecasted in either scenario will be acceptable to customers, regulators, or policymakers. This analysis should inform targeted policy and regulatory initiatives to manage affordability and equity risk of the energy transition.

# Bill Impact Analysis

## Approach

- Based on forecasted revenue requirements and meter counts for each scenario
- Includes forecasted annual values for:
  - Rate base
  - Taxes
  - Post-tax return on rate base
  - Depreciation
  - O&M
  - DSM program costs
  - Purchased fuel (accounting for fuel costs and fixed costs)
- Does not include:
  - Electric bill impacts
  - Other costs of electrification
  - UTEN customer costs
  - 100% hydrogen customer costs

  *These items are included in the BCA*

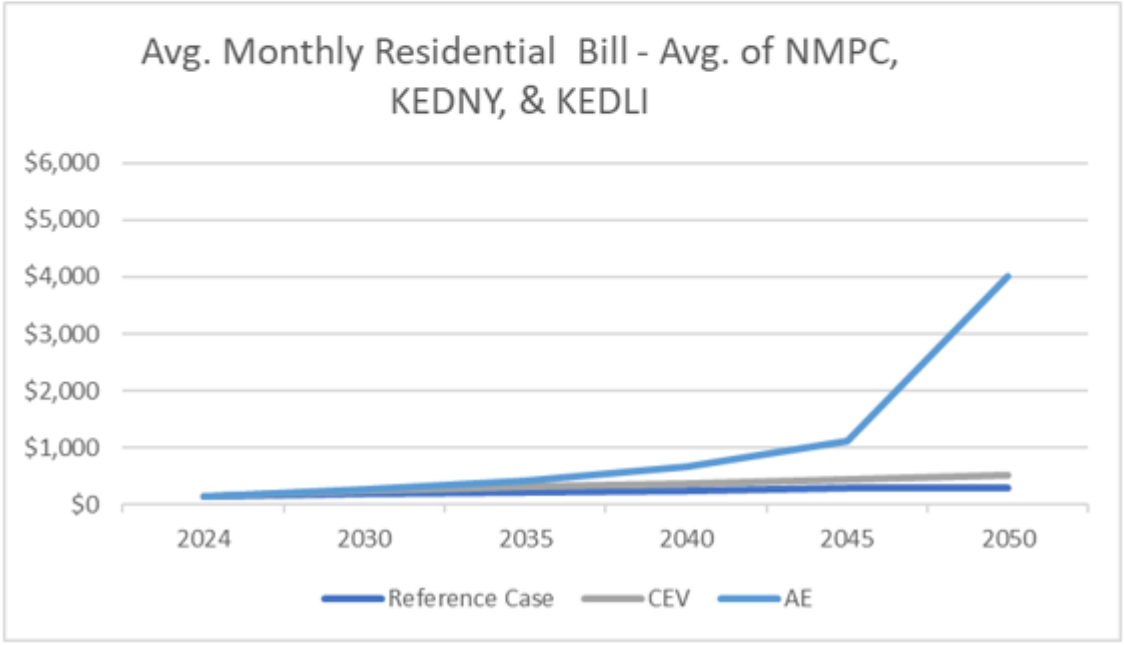
## Key Findings

- Both CEV and AE result in significantly higher gas bills for remaining gas customers.
- Bill impacts are significantly lower in CEV than AE, although both scenarios are costly
- New approaches to manage bill impacts for remaining gas customers will be essential for any successful gas decarbonization transition pathway
- Both scenarios face the same essential challenges:
  - The need to continue investing in the gas network to provide same and reliable service even though the gas distribution network is significantly downsized
  - Fewer customers to cover those costs, resulting in higher per-customer revenue requirements and higher individual bills
  - Increased commodity costs for clean alternative fuels relative to fossil fuels.

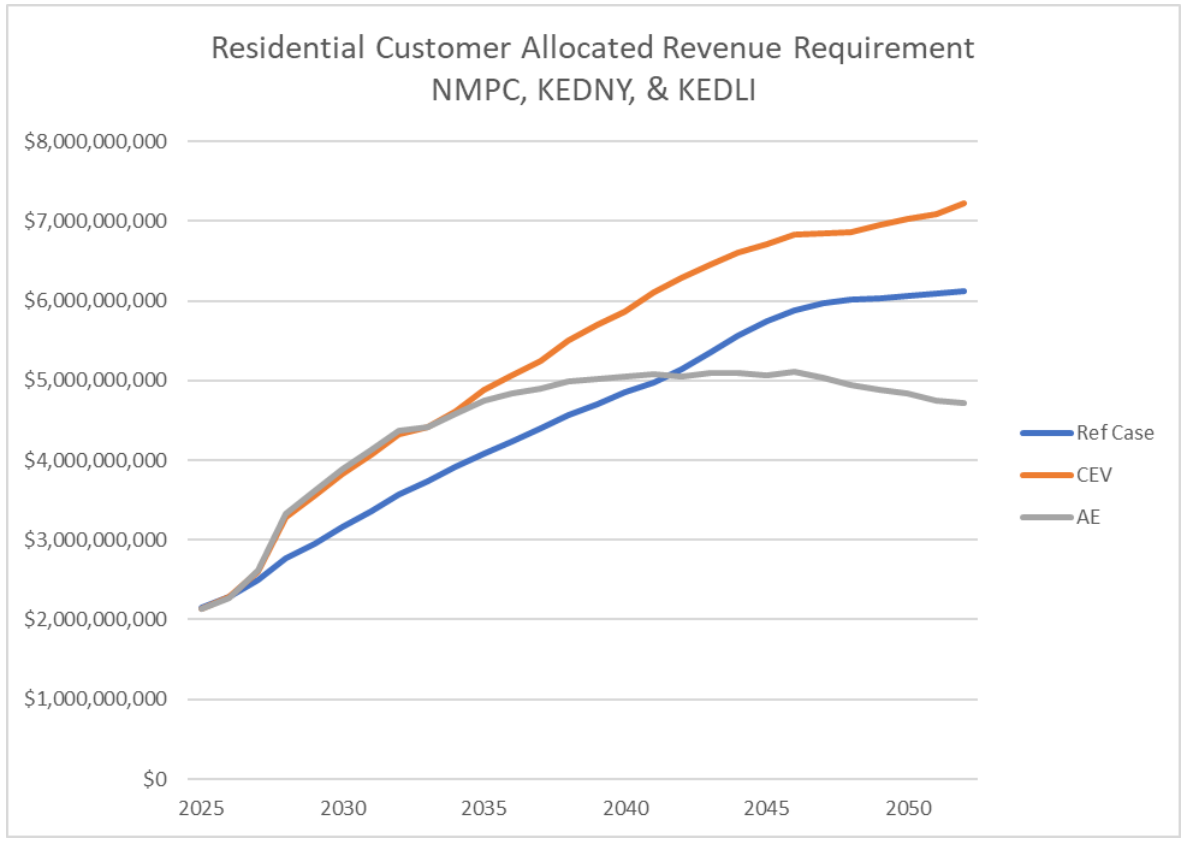
**Table 7-1: Average Monthly Residential Bill – Average of NMPC, KEDNY, KEDLI**

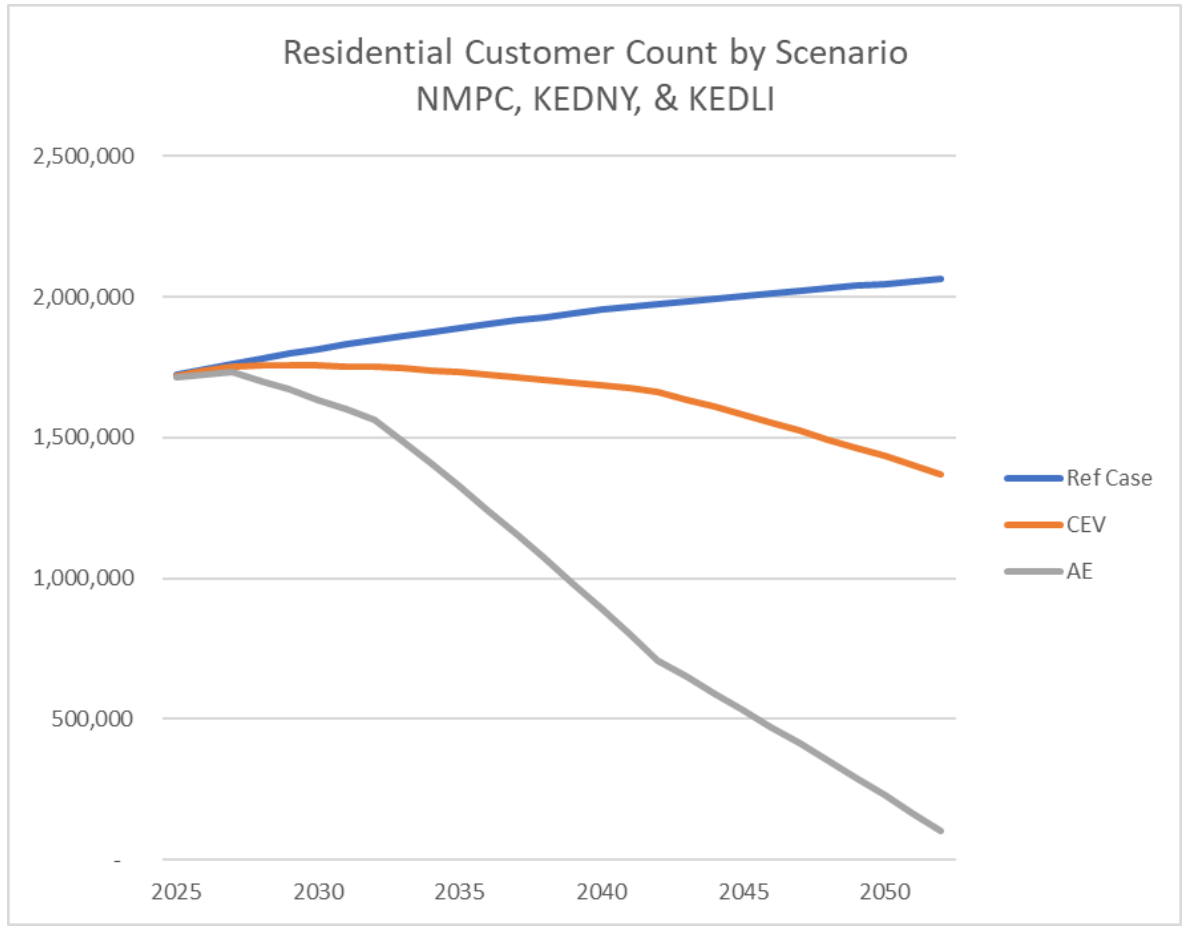
| Avg. Monthly Residential Bill - Avg. of NMPC, KEDNY, & KEDLI | | | | | | |
|---|---|---|---|---|---|---|
| | Reference Case | % increase | CEV | % increase | AE | % increase |
| 2024 | $138 | | $138 | | $138 | |
| 2030 | $199 | 44% | $257 | 87% | $275 | 100% |
| 2035 | $227 | 64% | $310 | 126% | $418 | 203% |
| 2040 | $253 | 83% | $368 | 168% | $676 | 391% |
| 2045 | $285 | 106% | $438 | 219% | $1,105 | 703% |
| 2050 | $285 | 106% | $530 | 285% | $4,022 | 2822% |

**Figure 7-1: Average Monthly Residential Bill**

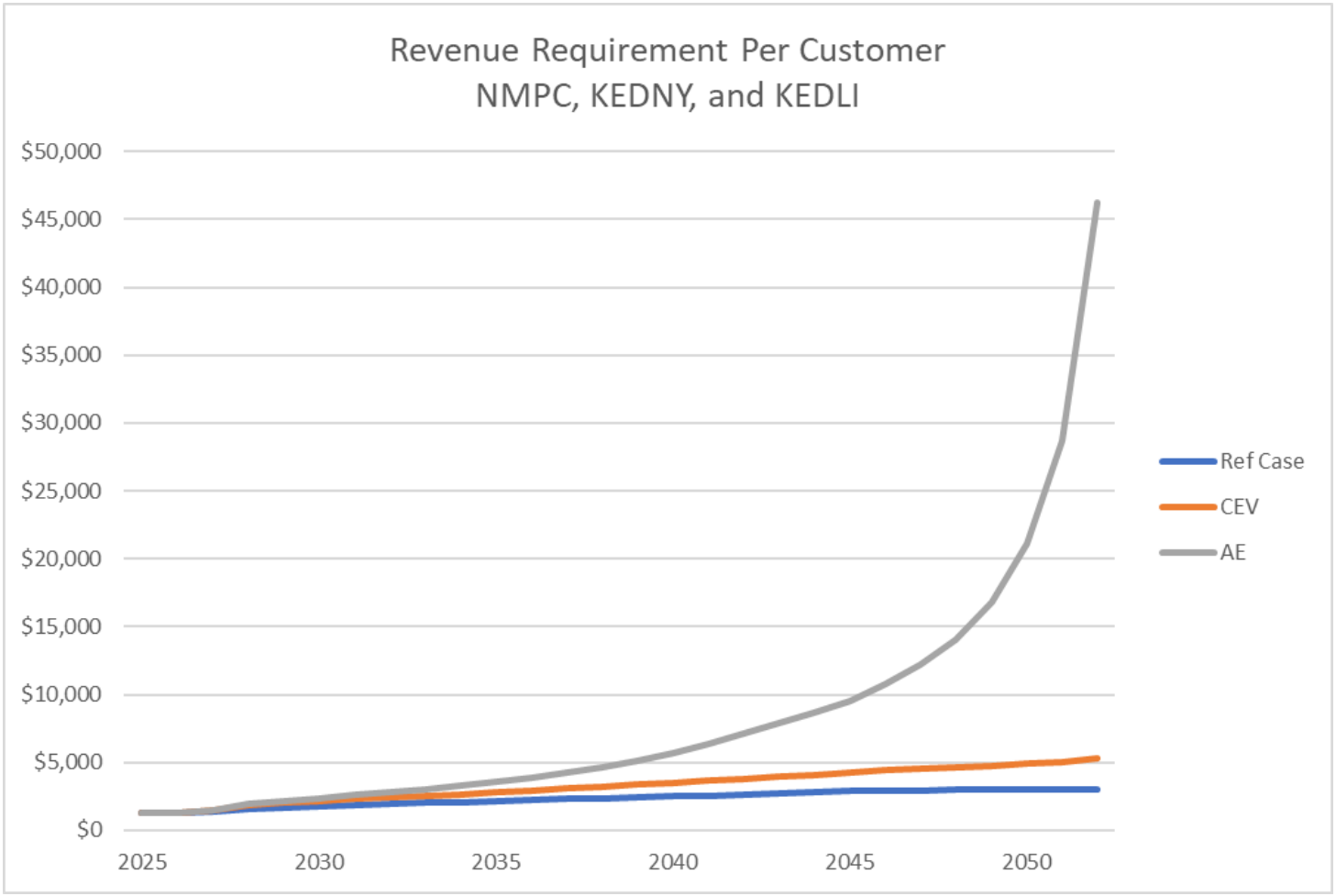


# Factors Driving Per-Customer Revenue Requirement



# Revenue Requirement per Customer Shapes Bill Increases



# Benefit-Cost Analysis

## Approach

- Analysis conducted according to methodology established in PSC's BCA Framework Order, which complies with the Commission's direction.
  - The Order focuses on electric utilities. This analysis follows guidance in the Order and industry best practices to adapt for gas utility purposes.
- Compared quantifiable benefits and costs accrued to customers, electric and gas systems, and society between 2025 and 2050 using the Societal Cost Test (SCT).
- SCT is the most appropriate test for benefit cost analysis of LTP scenarios given the broader energy system, customer, and societal implications of gas network decarbonization.

Table 7-4: Benefit-Cost Test Definitions in the SCT

| Benefit-Cost Category | SCT |
|---|---|
| Avoided Gas Supply | Benefit |
| Avoided Gas Infrastructure Revenue Requirement | Benefit |
| Avoided GHG Emissions from Gas Combustion | Benefit |
| Avoided Emissions from Methane Leakage | Benefit |
| Avoided Electricity Consumption | Benefit |
| Avoided Electric Capacity | Benefit |
| Added Hydrogen and RNG Fuel Supply | Cost |
| Added Future of Heat Infrastructure Revenue Requirement | Cost |
| LPP Retirement Revenue Requirement | Cost |
| Increased Electricity Consumption | Cost |
| Increased Electric Capacity | Cost |
| Increased GHG Emissions from Electricity | Cost |
| Gas Utility Energy Efficiency Administrative Costs | Cost |
| Incremental Participant Cost | Cost |
| Non-Gas Utility Electrification Administrative Costs | Cost |

# BCA Results

- A benefit-cost ratio greater than 1.0 indicates a positive NPV (i.e., present value of benefits exceeds present value of costs over the lifetime of an investment).
- Costs outweigh benefits in all scenarios
- Participant incremental costs associated with energy efficiency and heat electrification represent the largest costs in all scenarios

Table 7-5: Benefit-Cost Test Ratios by Operating Company and Scenario

| Operating Company | Benefit-Cost Test | Reference Case | CEV | AE |
|---|---|---|---|---|
| NMPC | Societal Cost Test (SCT) | 0.67 | 0.72 | 0.73 |
| KEDNY | Societal Cost Test (SCT) | 0.43 | 0.60 | 0.51 |
| KEDLI | Societal Cost Test (SCT) | 0.52 | 0.78 | 0.65 |
| National Grid Territory Total | Societal Cost Test (SCT) | 0.47 | 0.68 | 0.60 |

Table 7-6: Benefit-Cost Test NPVs ($2025) by Operating Company and Scenario

| Operating Company | Benefit-Cost Test | Reference Case ($M) | CEV ($M) | AE ($M) |
|---|---|---|---|---|
| NMPC | Societal Cost Test (SCT) | -$1,070 | -$13,268 | -$12,825 |
| KEDNY | Societal Cost Test (SCT) | -$17,296 | -$37,983 | -$56,705 |
| KEDLI | Societal Cost Test (SCT) | -$5,933 | -$12,037 | -$22,318 |

# GHG Emissions Analysis

## Approach

- Analysis is consistent with New York DEC's current accounting framework
- GWP-20 is utilized for all purposes
- Results are presented in metric tons of CO2-equivalent (CO2e)
- Analysis reflects emissions reductions from avoided gas consumption net of increased electric sector emissions
- Emissions from electric grid decline through 2040, after which they are assumed to be zero as required by the CLCPA

## Key Findings

- Both the CEV and AE reduce over 1 billion metric tons of CO2e by 2050
- CEV scenario has slightly lower emissions reductions than AE (about 2 percentage points difference)
- Incremental net societal cost per ton of emissions reduction (societal cost premium) is lower under CEV ($52/ton vs $69/ton for AE)

Table 7-7: GHG Emissions Reductions by Scenario and OpCo

| Operating Company | Impact Type | Reference Case | CEV | AE |
|---|---|---|---|---|
| NMPC | $CO_2e$ (metric tons) | 27,516,084 | 322,275,624 | 348,396,994 |
| KEDNY | $CO_2e$ (metric tons) | 144,352,925 | 515,414,713 | 583,119,721 |
| KEDLI | $CO_2e$ (metric tons) | 81,962,562 | 369,729,522 | 401,695,554 |
| Total | $CO_2e$ (metric tons) | 253,831,572 | 1,207,419,859 | 1,333,212,270 |

# Impacts on DACs

- Low-income customers and those in DACs are disproportionately likely to face barriers to electrification, underscoring the importance of lowering costs associated with energy efficiency and heat electrification, which are the largest contributors to societal costs under both the CEV and AE scenarios.

- We are working to ensure customers in DACs benefit from:

**Expanded outreach**

- To provide accessible, authentic engagement and representation in our processes

**Expanded participation**

- In energy efficiency and affordability programs that can help customers manage their bills

**Specific community economic benefits**

- Through programs such as workforce development grants as well as our shareholder-funded community initiatives

- **We are reviewing and enhancing our current engagement practices, with a focus on public outreach surrounding our major infrastructure projects, especially in disadvantaged and low-income communities.**

# 8

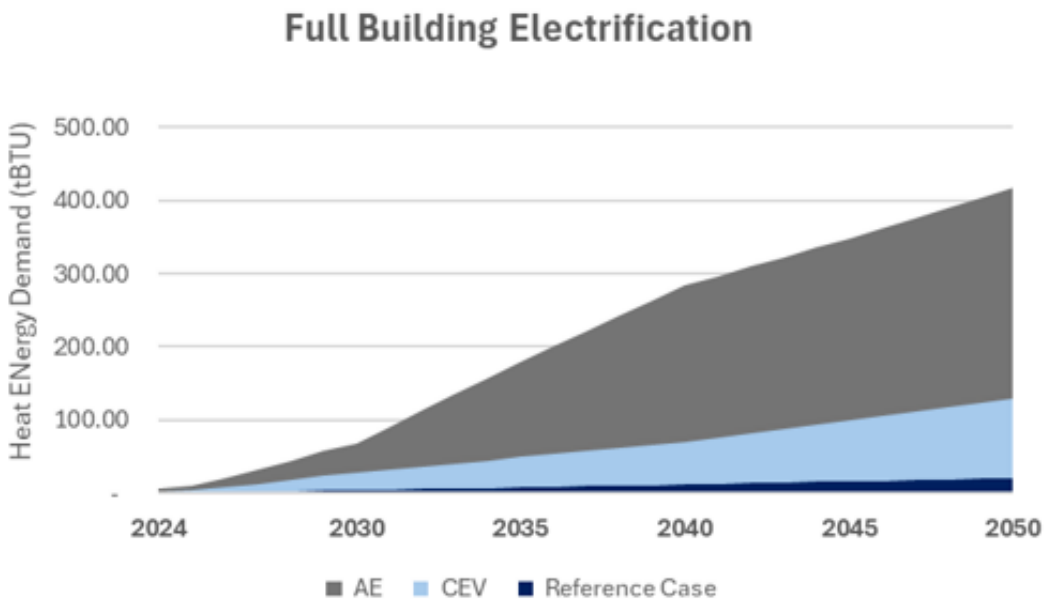
# Policy: Taking Action

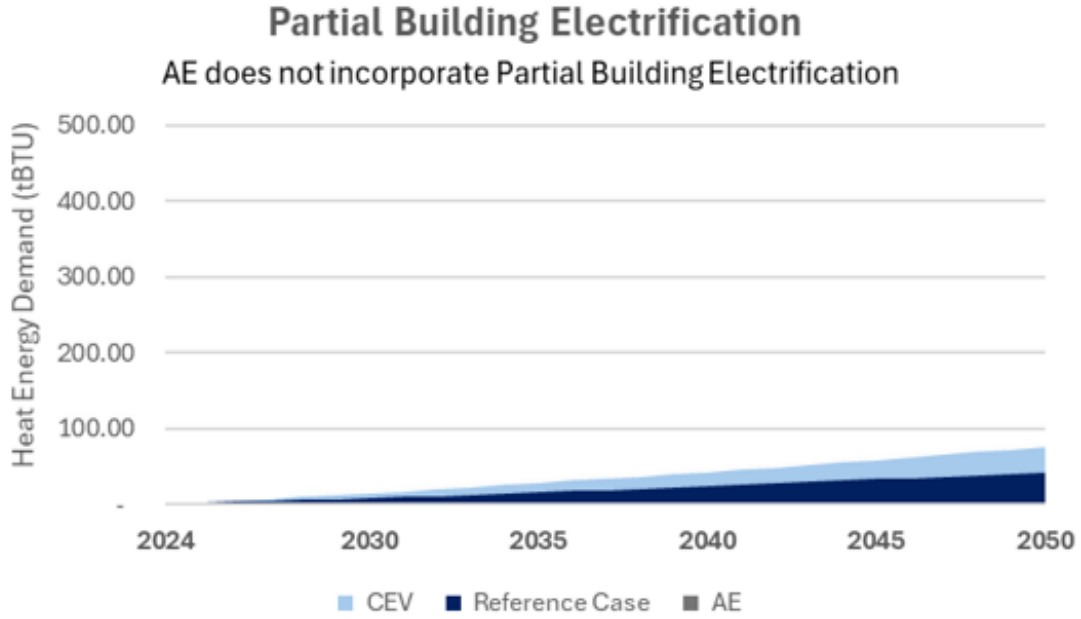
nationalgrid

# Gas Transition Resource Requirements

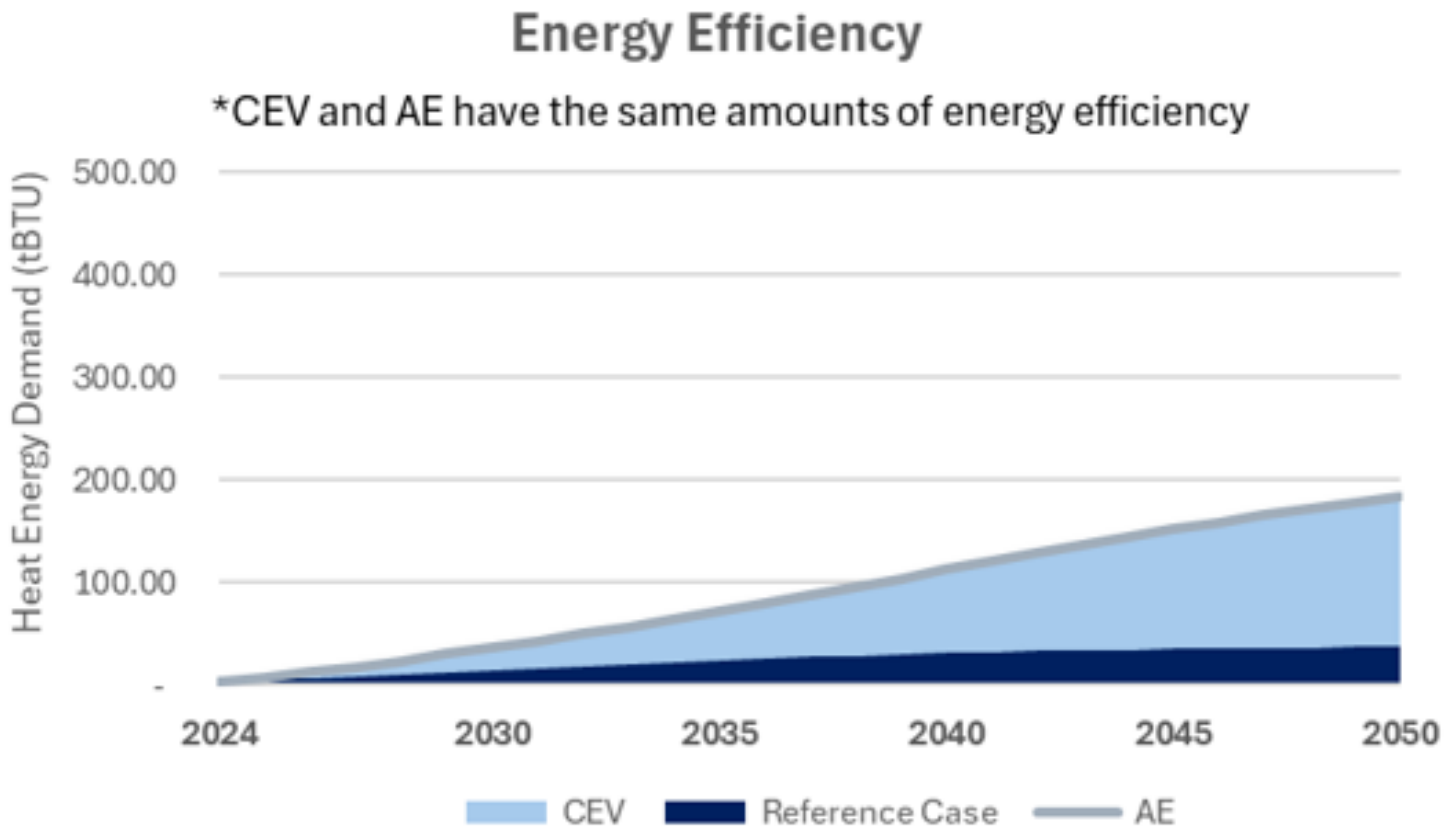
- **The demand reduction and energy supply resources necessary to achieve the gas transition are common to the CEV and AE scenarios.**
- **While the CEV is National Grid's vision for the energy transition, choosing between the CEV and AE scenarios is not necessary at this time because neither is achievable without rapidly achieving scale in the following areas:**
  - Electrification of Heat
  - Energy Efficiency
  - Clean Alternative Fuels
- **None of these resources will be available in sufficient volumes to achieve the CEV or the AE without transformational policy and/or technical innovations.**

# Electrification Resource Needs

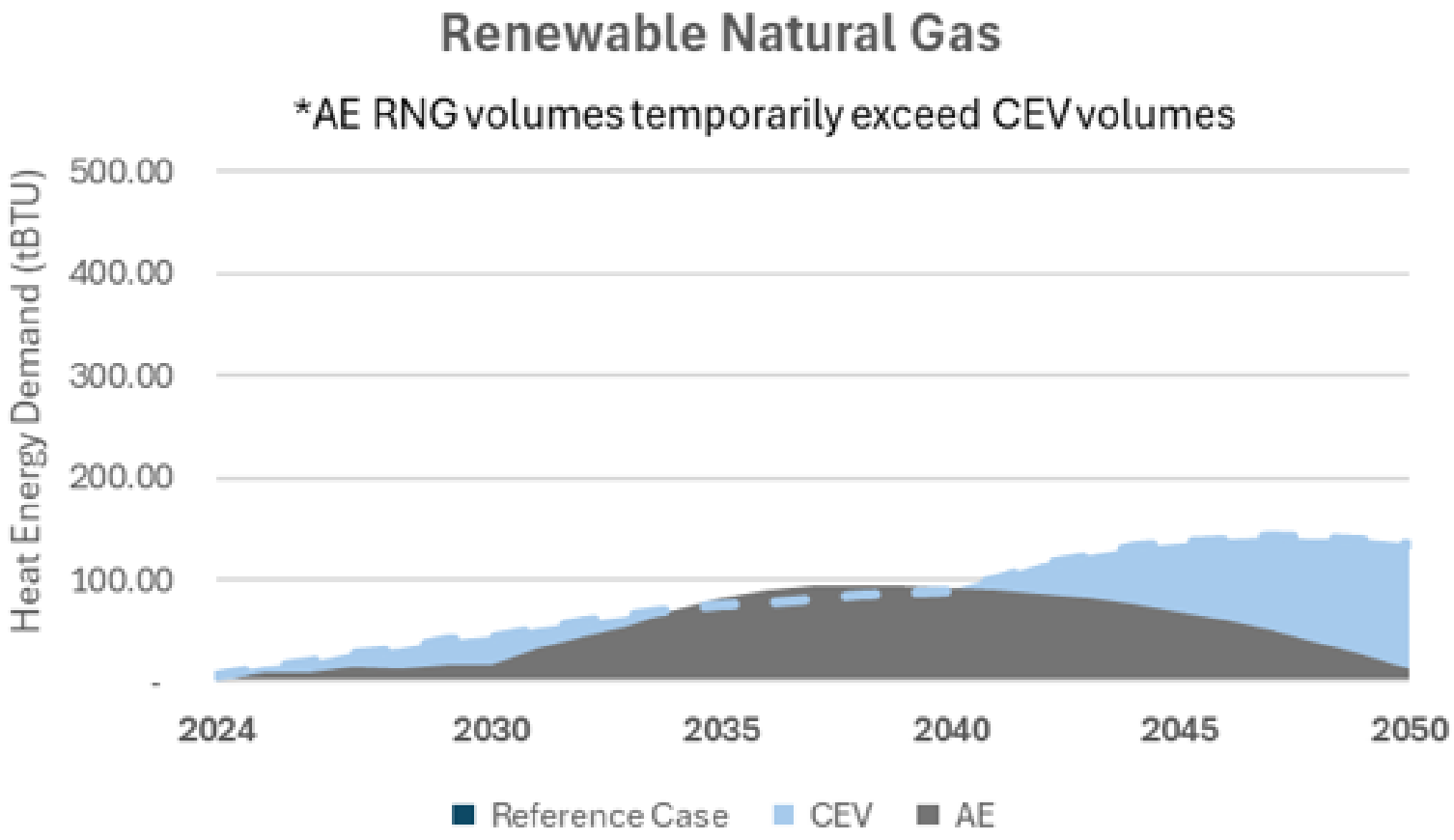


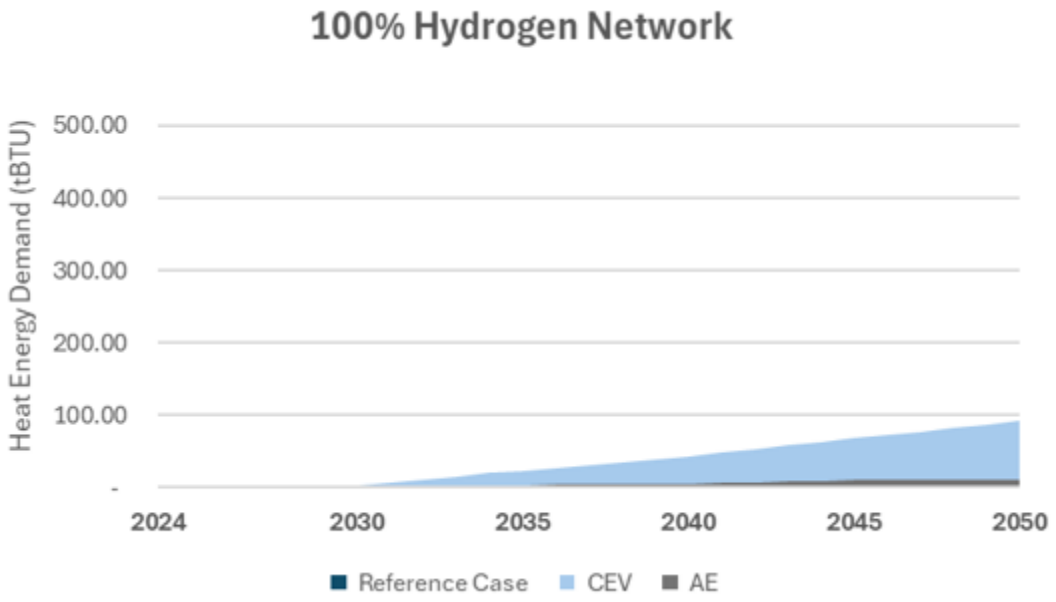
# Energy Efficiency Resource Needs

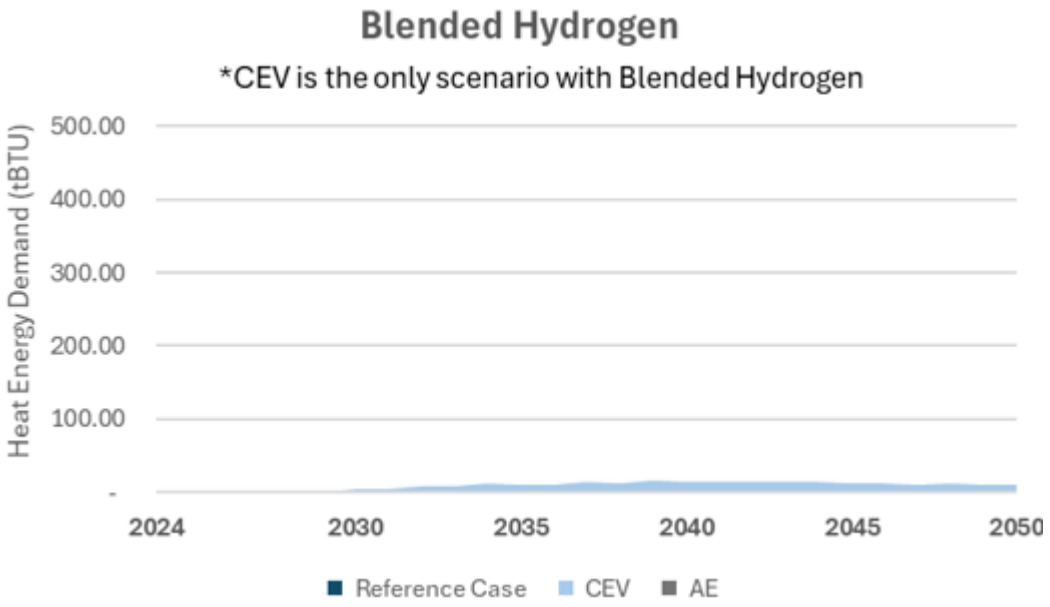


# Clean Alternative Fuels - RNG



# Clean Alternative Fuels – H2



# Common Risks to the CEV and AE

**Key categories of risks are common to both scenarios, including:**

- **Affordability**
- **Equity**
- **Jobs and Economic Development**
- **Energy System Reliability**
- **Electrification Adoption Rate**
- **Electric System Capacity**
- **Emissions Leakage**

# Recommended Policy and Regulatory Action

- **Both the CEV and AE scenarios require new policies and regulations to reshape how utilities plan and construct gas infrastructure, procure fuel, incentivize customer choices, and recover costs.**
- **Moving forward, utility regulations must be adapted to consider decarbonization without diminishing the importance of safety, reliability, and affordability.**
- **We have identified four key categories of regulatory and policy reforms necessary to enable the gas transition, all of which are common the CEV and AE scenarios:**
  - Establishing frameworks for an orderly transition
  - Ensuring long-term energy affordability
  - Scaling efficiency and electrification to equitably reduce customer gas demand
  - Enabling procurement and integration of affordable clean alternative fuels.
- **We recommend that the Commission immediately begin a formal and comprehensive process to address these necessary reforms.**
- **These recommendations are consistent with the Scoping Plan's call for a comprehensive gas system transition plan.**

# Establishing Frameworks for an Orderly Transition

**An orderly gas transition will have common features whether it more closely resembles the CEV or the AE. Those features include but are not limited to:**

- Coordination and integration of system planning between overlapping gas and electric utilities.
- Sufficient electric capacity to serve incremental heating load without sacrificing system reliability, and without causing unreasonable cost increases for electric customers or society overall.
- Mitigating affordability risk to gas customers in the future who are unable to electrify.
- Ensuring adequate and affordable alternatives to gas service are available for any customers who may be required to electrify through policy or regulation.
- Enabling sections of the gas network to be decommissioned and incremental gas utility costs to be avoided through the deployment of efficient electric heating technologies while maintaining safety and reliability of the gas and electric systems.
- Regulatory and policy assurance of timely recovery of utilities' prudently incurred costs.
- An equitable transition for gas system workers.

**Recommended Areas for Policy and Regulatory Development:**

- Integrated Energy Planning
  - Regulatory support for cross utility data sharing.
  - Enabling partnerships between utilities and municipalities to ensure alignment, build community support, and incorporate local priorities in project planning.
  - Enhancements to gas system planning processes, including updated cost-effectiveness tools.
- Regulatory changes to encourage heat electrification
  - Once adequate guardrails and customer protections have been adopted, changes to gas utilities' obligation to connect new customers and line extension allowances like the 100-foot rule should be enacted.
  - No action to end gas utility obligation to serve existing customers or disrupt customer choice should be considered without requirements discussed in Section 8.3.1.2 of National Grid's LTP
- Regulatory frameworks to scale targeted electrification and NPAs
  - Challenges, barriers, and opportunities addressed in joint National Grid/RMI white paper on NPAs.
  - Policy change will be needed to evolve the utility business model and obligation to serve, while still retaining the opportunity for cost recovery in a transition away from the use of gas.
  - Absent regulatory or legislative mandates that effectively remove customers' ability to remain connected to gas networks, enacting targeted electrification and gas system decommissioning will be challenging to scale.
  - New sources of funding for NPAs will be necessary

# Ensuring Long-Term Energy Affordability

- **According to the Scoping Plan, "reduc[ing] energy burdens and address[ing] energy affordability concerns" is a "key principle" of the gas system transition.**
- **The Scoping Plan recommends identifying "ways to mitigate impacts on remaining gas customers as customers transition to electrification and away from the use of the gas system, with a particular focus on low-income customers."**
- **This is consistent with our analysis, which indicates customer bills increase exponentially if the overall year-over-year rate of gas customer departures accelerates due to high levels of total customer departures.**
- **Ensuring the gas transition is affordable will require new frameworks for cost recovery so that remaining gas customers are not burdened with the costs of today's gas system in the future.**

**Recommended Areas for Policy and Regulatory Development:**

- Equitable Depreciation
  - Effective and equitable decarbonization will require recovery of utility gas network capital costs through depreciation at a more rapid rate than in the past in anticipation of declining demand and related retirement of assets.
  - There is value in beginning to accelerate recovery of depreciation now, and considering novel depreciation mechanisms that can balance the traditional principles of intergenerational equity, cost causation, and avoidance of rate shock, while maintaining near-term affordability most effectively.
- Cross-utility Cost Coordination
  - As the gas transition progresses, coordination among gas and electric utilities will be essential to ensure costs associated with meeting today's gas demand are not borne disproportionately by gas customers who are unable to electrify in the future.
  - We recommend regulatory enablement of coordination between electric utilities whose service territories overlap with that of a gas utility on system planning and the evaluation of options to support the financing of alternatives to gas capital investment.
- Optimizing New York Cap & Invest ("NYCI") for
  - Ensure gradualism to avoid price shocks
  - Tailor price signals to customers' unique situations
  - Optimize revenue reinvestment
  - Advance complementary policies including sectoral decarbonization performance standards for transportation and heating fuels

# Enabling Procurement and Integration of Affordable Clean Alternative Fuels

- **Alternative fuels such as RNG and clean hydrogen are not a substitute for electrification, but instead as the Scoping Plan put it, "rapid and widespread building efficiency and electrification is needed and supported by the strategic utilization of alternative fuels."**
- **Both the CEV and AE scenarios require large volumes of RNG and clean hydrogen, with the AE scenario requiring more between 2035 and 2040, and the CEV requiring incrementally more overall.**
- **Policies to enable utilities to procure RNG and H2 to support decarbonization should be enacted as soon as possible to ensure the market for clean alternative fuels has time to scale up to meet future demand.**

**Recommended Areas for Policy and Regulatory Development:**

- Gas Utility Decarbonization Performance Standard
  - Require utilities to reduce carbon intensity of fuel they deliver.
  - Standard should increase over time, consistent with CLCPA targets.
  - PSC has authority to adopt such standards under existing law.
- Accurate GHG Accounting
  - New York GHG accounting should align with US and international standards for biogenic CO2 accounting.
  - Existing approach increases cost of compliance with CLCPA and reduces climate benefits by excluding viable clean alternative fuel solutions.
  - Alignment with US and international standards does not require amending CLCPA or existing regulations. DEC has authority to adapt current approach without amendments to CLCPA or changing existing regulations.
  - We do not support changing CLCPA's requirement for GWP-20.
- Support for Pilots and Demonstrations
  - Scoping Plan calls for enhanced support for RD&D for clean alternative fuels.
  - Pilots and demonstration projects will ensure the Scoping Plan's proposed "research agenda" for alternative fuels is advanced, including the development of "rigorous energy, GHG, and environmental sustainability guidelines and metrics," assessment co-pollutant impacts, development of lifecycle accounting approaches, and hydrogen safety research.

# 9

# 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