JOINT UTILITIES
OF NEW YORK

NE:NY Targets, Budgets, Utility-NYSERDA Coordination

Technical Conference

March 8, 2019

NYSEG nationalgrid Orange & Rockland Rockland Electric Company National Fuel conEdison People. Power. Possibilities. Central Hudson A FORTIS COMPANY RG&E

Agenda

- Targets and Budgets
  - Assumptions
  - Presumptive combined and IOU-specific electric targets and budgets
  - Presumptive combined and IOU-specific gas targets and budgets

- Utility – NYSERDA coordination

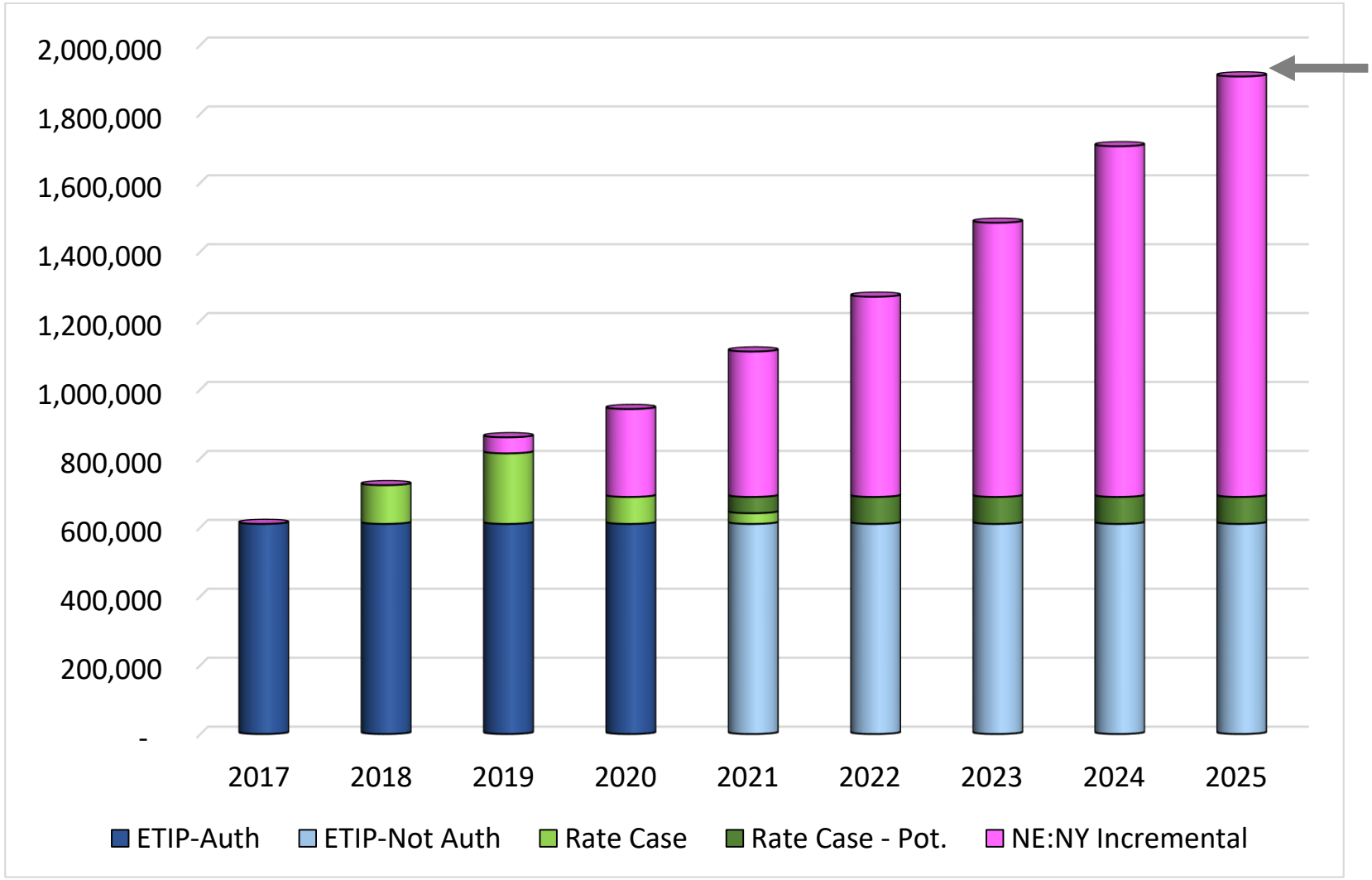
* Can pause for clarification questions, otherwise please hold questions and comments until end of sections

Targets and Budgets

Targets & Budgets: Model Assumptions

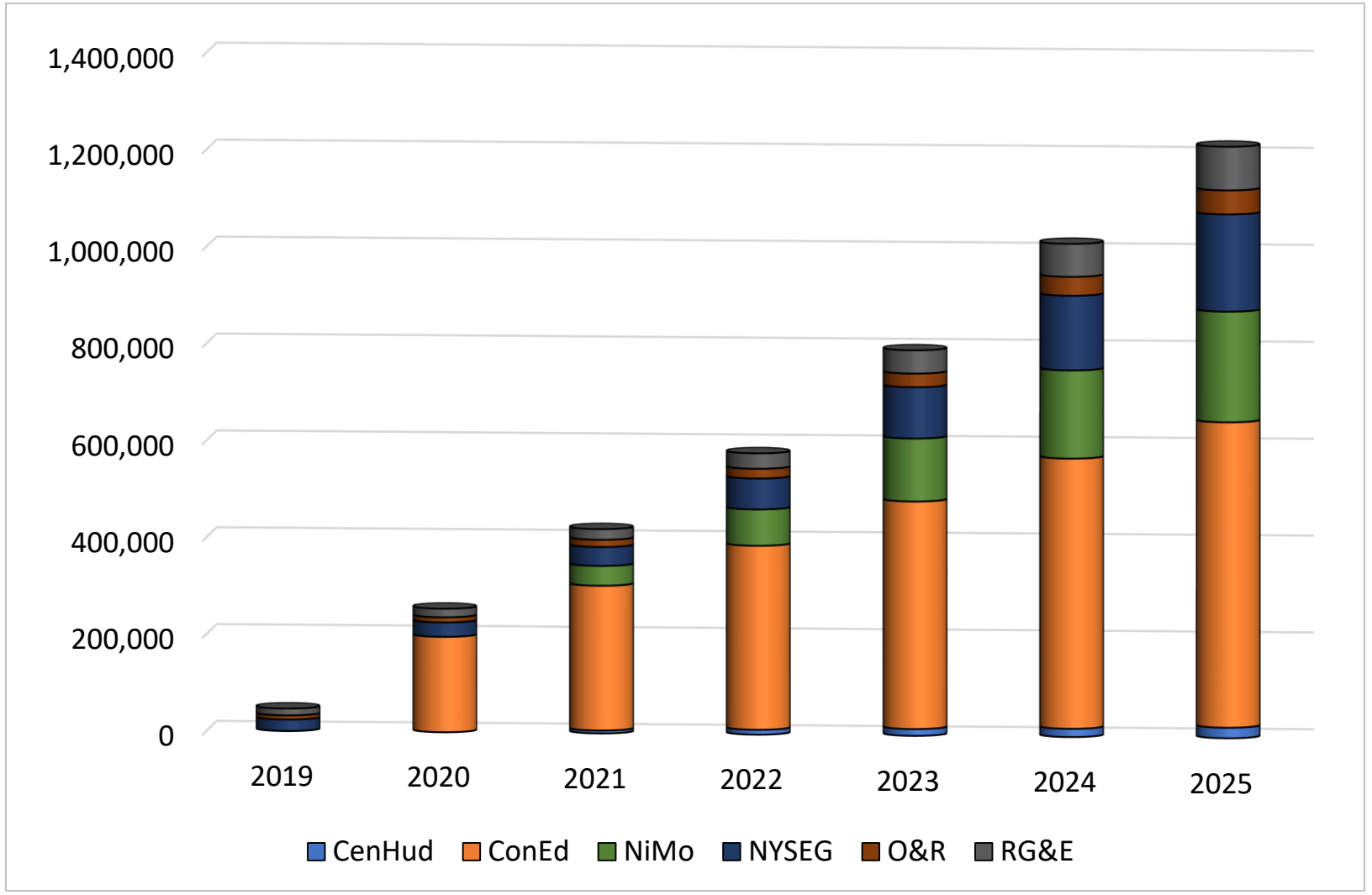
- Electricity forecast based 2015 New York Independent System Operator (NYISO) Gold Book
- Onsite generation forecast based on 2015 Energy Information Administration (EIA) Annual Energy Outlook (AEO)
- Forecasts adjusted to reflect total incremental savings

NE:NY Electric Targets (Gross MWh)

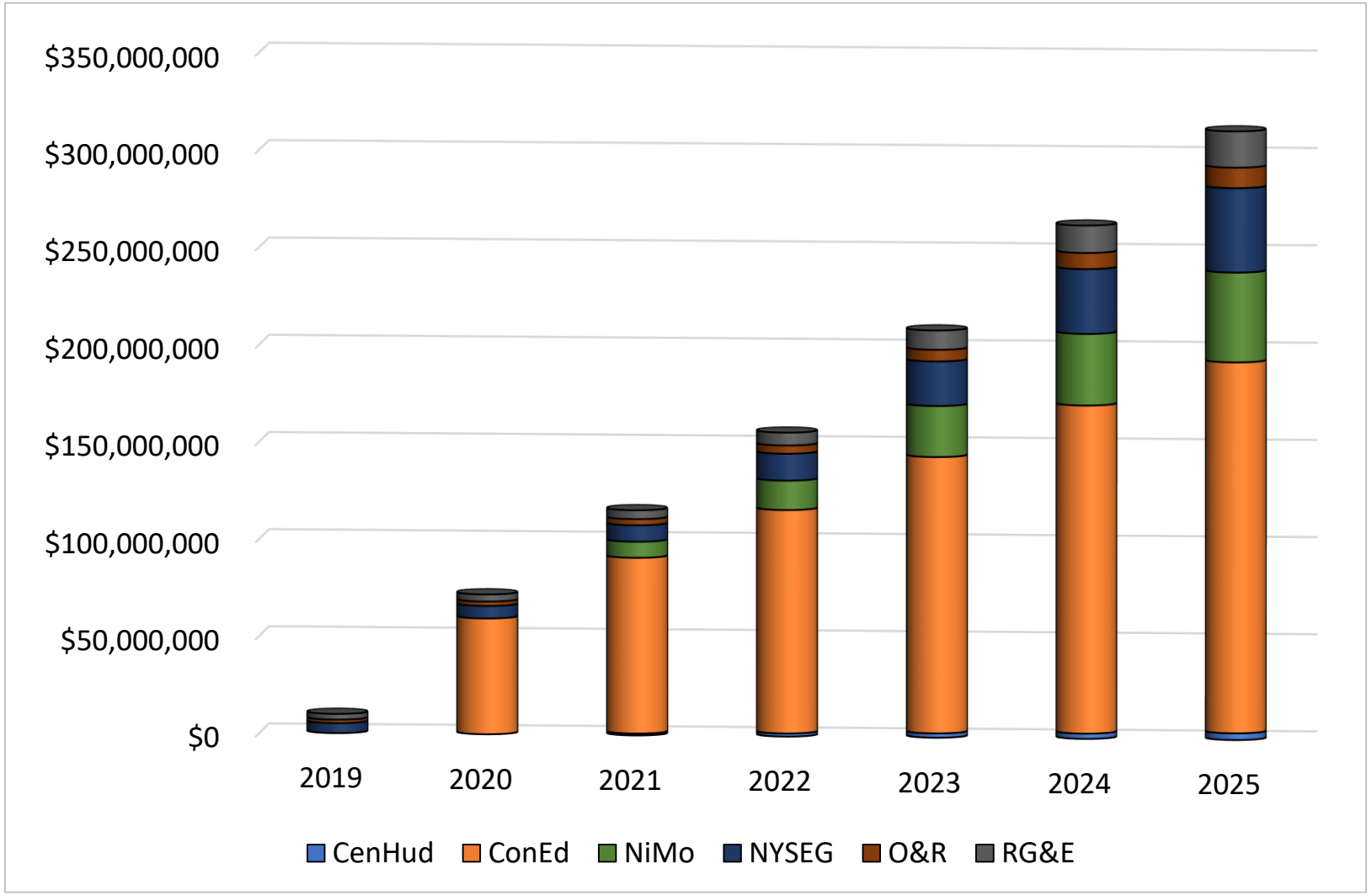


Aligns with 2% of forecasted IOU sales

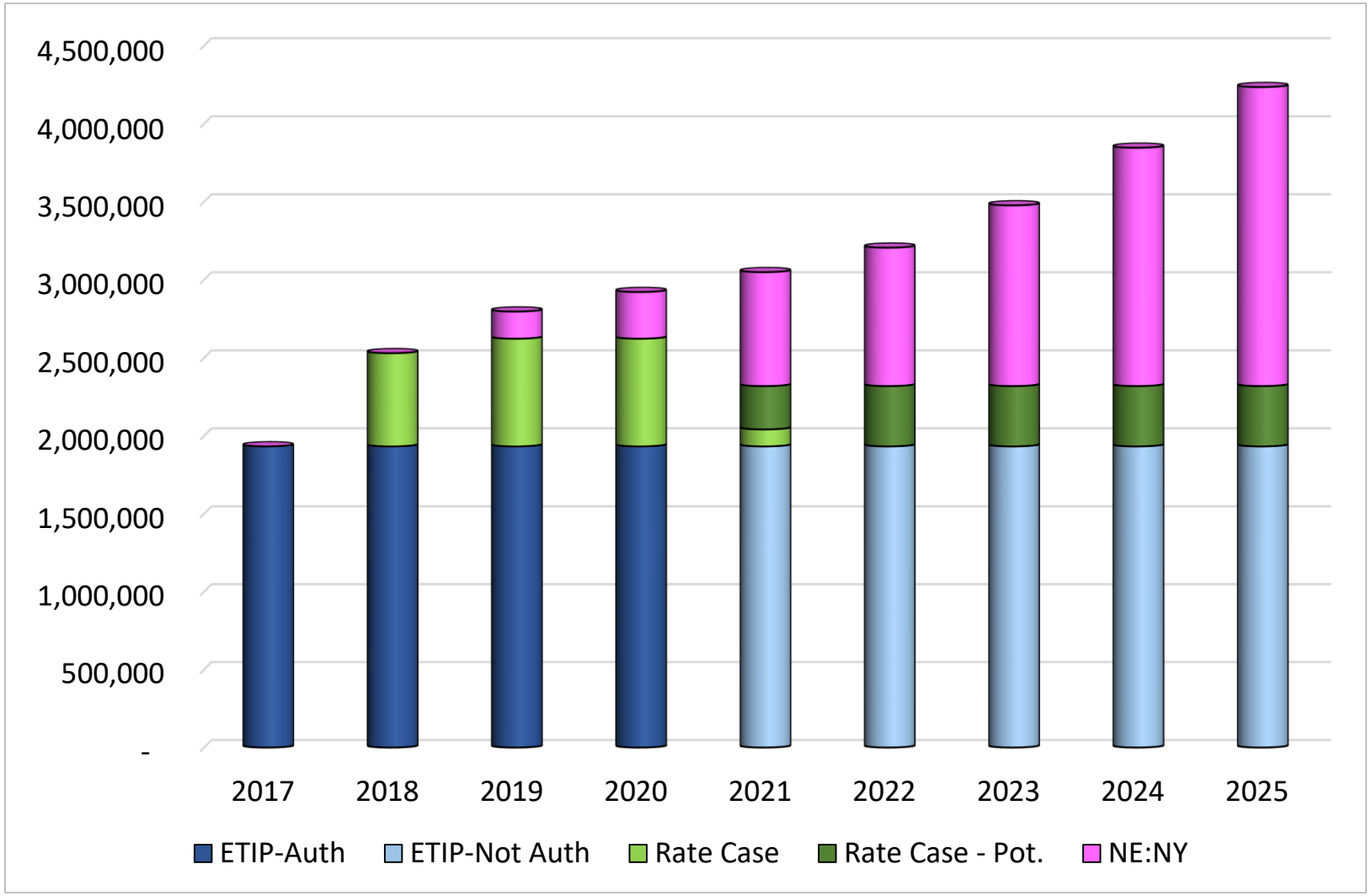
NE:NY Electric Targets (Gross MWh) by IOU



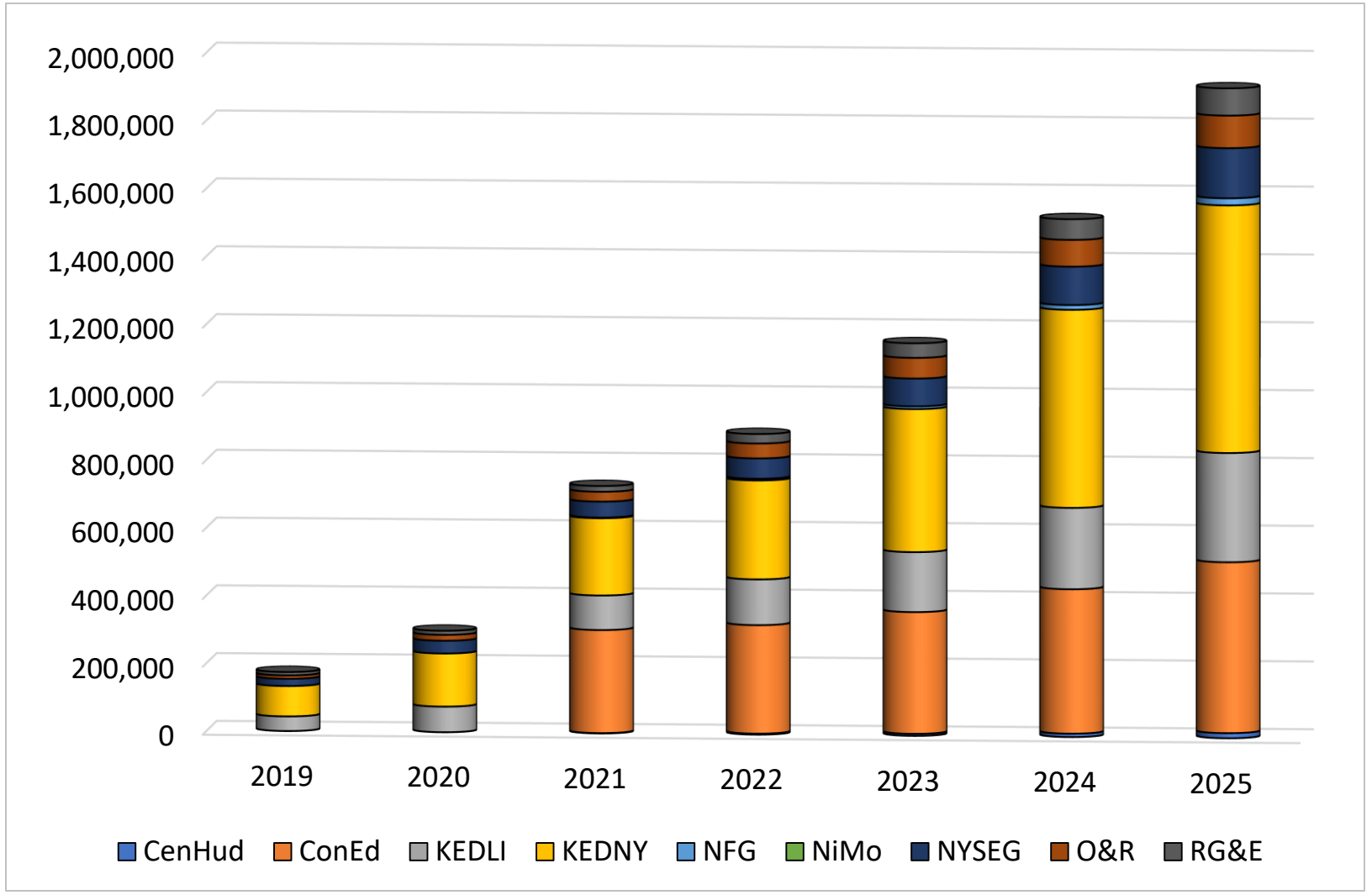
NE:NY Incremental Electric Budgets by IOU



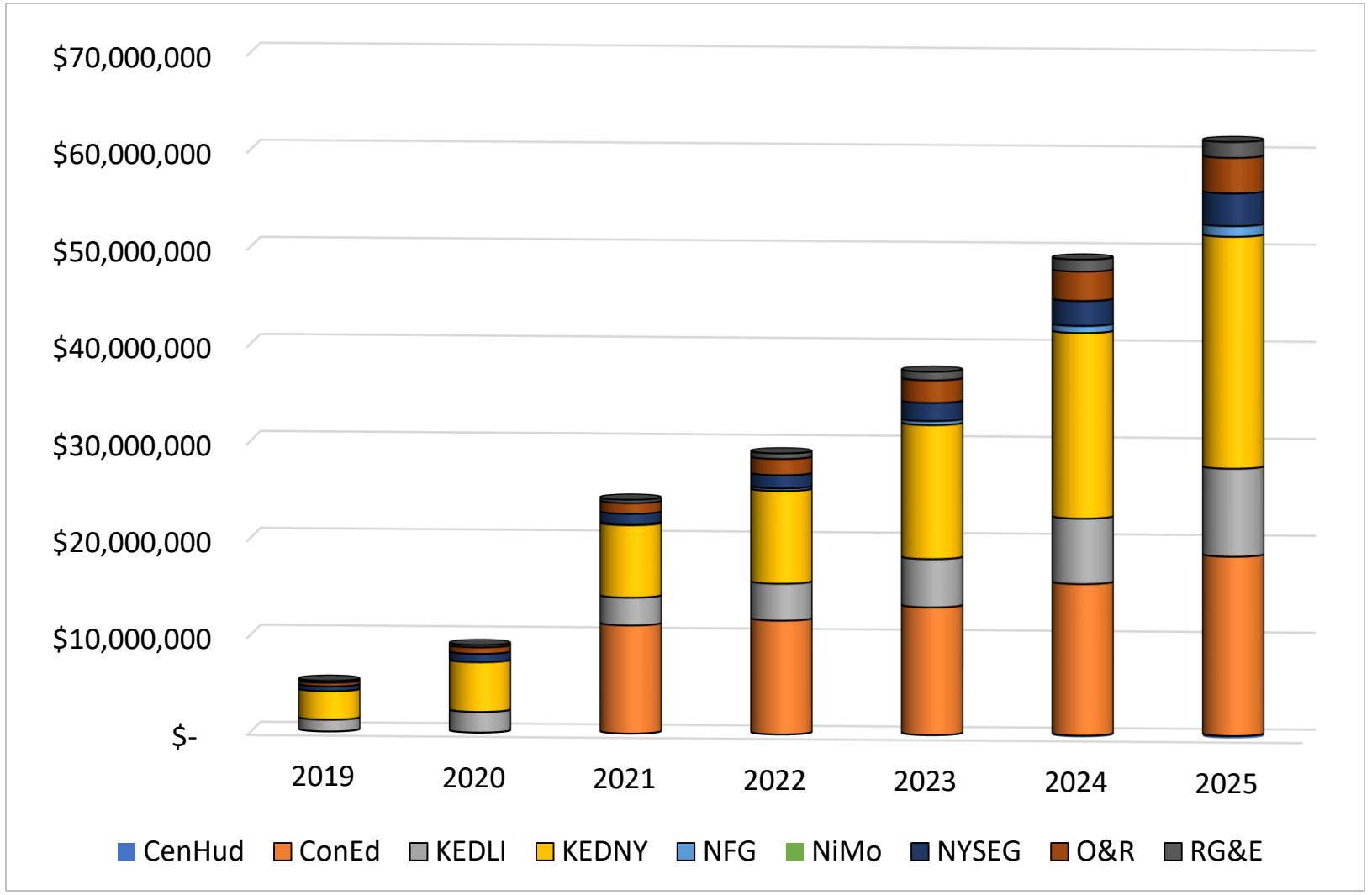
NE:NY Gas Targets (Gross MMBtu)



NE:NY Gas Targets (Gross MMBtu) by IOU



NE:NY Incremental Gas Budgets by IOU



Summary and Related Items

- Targets
- Budgets and unit costs
- TBtu and electric percent of sales targets

Q&A, Comments, Discussion

Utility-NYSERDA Coordination & Collaboration

Evolution, Principles, & Customers

- Initial Steps
  - Incremental approach that benefits customers
  - QA/QC and contractor eligibility may be initial areas of coordination
  - Other opportunities include additional coordination in LMI and Heat Pumps
  - Statewide vs. targeted outreach

- Focal Elements / Principles of Collaboration
  - Customer benefit, market impact, and market clarity
  - Leveraging each others offerings
  - Maintaining Flexibility

- Market Clarity and Customer Experience
  - Clean Energy Dashboard

Collaboration Models & Policies

- Collaboration Structure
  - Support strategy and planning needs
  - Sharing information through regular engagement

- Collaboration Models
  - Several models to be outlined in the filing
  - Combined and joint efforts result in incremental benefits

- Pilot / Program Opportunities
  - Reporting of savings during pilot period

- Complimentary incentives
  - Incentives or services that are not duplicative
  - Rationale & objectives will be defined within SEEP & CEF filings

Q&A, Comments, Discussion

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NE:NY: Low-to Moderate-Income (LMI) Matters

Presented in Coordination with NYSERDA

Technical Conference

March 8, 2019

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Agenda

- Landscape of LMI Sector and Efforts to Date
- Direction of Activities in Future : Outline of a Statewide Coordinated LMI Portfolio
- Status of Coordinating Activities

Landscape of LMI Sector and Efforts to Date

Context

- 3.5 million low to moderate-income (LMI) households in NYS
  - Low-income household: annual income at or below 60% state median income SMI
  - Moderate-income household: annual income between 60% SMI and 80% SMI or AMI, whichever is greater

- Energy costs have a disproportionate impact on LMI households; energy burdens can exceed 20% for low-income households

- Barriers to energy efficiency include: first cost and access to capital for both residents and building owners; lack of information on available programs and opportunities to improve efficiency; structural deficiencies and presence of health and safety problems; split incentive for renters

- Over $700 million in ratepayer and federal funds spent annually on energy affordability and access to clean energy solutions for LMI residents

Current Ratepayer-Funded LMI Initiatives

- Approximately $70 million invested annually through the Clean Energy Fund to address energy affordability and access to clean energy solutions
  - Standard offer programs such as EmPower NY, Assisted Home Performance, Multifamily Performance Program, New Construction, and Solar for All
  - Market development initiatives to advance soft cost reductions and test new approaches such as RetrofitNY
- Utility Low-Income Discount Program ($260 million annually)
- Utility-administered energy efficiency programs, REV demonstrations, and pilots
- Coordination across state agencies to reduce redundancy and increase impact of limited funds

Stakeholder Input (1)

- Streamlining program participation
  - Single point of entry, referral to other programs
  - Data sharing between utilities and state agencies
- Cobranding and coordinating outreach
  - Including outreach to human service providers
- Holistic approach to addressing energy burden (EE, bill discount, renewables)
- Program design based on regional characteristics and with input from communities
- Addressing affordable multifamily buildings in a comprehensive manner

Stakeholder Input (2)

- Use of direct-install or other light-touch interventions to increase reach of programs
- Consider aggregation to reduce project cost
- Provide some level assistance to households just over income thresholds
- Need to address health and safety issues in the home
- Models to enable heat pump adoption
- Leniency for benefit/cost requirements

Accelerated EE Targets Order- LMI Portfolio (1)

- Directed a minimum of 20% of budgets ($320 million) to LMI energy efficiency initiatives

- Advanced concept of statewide ratepayer supported LMI portfolio
  - Single platform for program administration
  - Statewide portfolio to include NYSERDA CEF initiatives and utility-administered programs
  - Leverage NYSERDA ability to operate at statewide level, coordinate with other state agencies, and ability to test novel solutions before broad deployment, workforce training, and financing solutions.
  - BCA at the portfolio level, separate from other program BCA and not counting toward each utility's aggregate portfolio BCA

- Programmatic considerations include:
  - Addressing multifamily buildings in a more comprehensive way
  - Direct-install
  - Community-based approaches

Accelerated EE Targets Order- LMI Portfolio (2)

- LMI portfolio objectives:
  - Increasing scale of customer adoption
  - Optimizing resources between program administrators
  - Increasing program accessibility for customers and property owners, with seamless experience between NYSERDA and utilities
  - Reaching customers not currently or traditionally served
  - Addressing multifamily housing
  - Testing new program administrative approaches
  - Improving coordination

- Implementation to begin in 2020

- Statewide ratepayer LMI implementation plan to be filed within 60 days of PSC 2019 order approving targets/budgets

Direction of Activities in Future: Outline of a Statewide Coordinated LMI Portfolio

Outline of a Statewide Coordinated LMI Portfolio (1)

- Guiding principles for a statewide portfolio:
  - Advancing energy affordability is primary goal
  - Administrative efficiencies to reduce admin costs
  - Simplified process for customers, including application process and consistent messaging
  - Consistent approach statewide to aid market participants (contractors)
  - Increase the number of households served annually
  - Ability to reach customers and communities that otherwise wouldn't be reached
  - Increasing adoption of energy efficiency in affordable multifamily

- Leverage strength of utilities and NYSERDA in portfolio development and initiative design

- Emphasis is on complementary approach between NYSERDA and utility investment and activity

Outline of a Statewide Coordinated LMI Portfolio (2)

- Statewide platform concept:
  1. Customer facing platform
     - statewide brand and utility specific co-branding
     - focus on residential end use customers and multifamily building owners
     - consistent information on programs, resources, energy literacy on utility and NYSERDA webpages
  2. Administrative/ IT platform
     - NYSERDA-administered statewide IT platform for 1-4 family homes programs
     - For utility-administered programs, utility infrastructure will be used
     - Data sharing for referral of multifamily buildings, tracking of utility customers participating in 1-4 family programs, planning, EM&V, and BCA
     - NYSERDA to facilitate income eligibility determinations

Outline of a Statewide Coordinated LMI Portfolio (3)

Possible Roles & Responsibilities

Utilities

- Data analytics to support outreach strategy.
- Primary customer outreach and enrollment
- Provision of utility bill discounts, DPAs, etc.
- Connecting customer to other relevant utility rebates/programs
- Administration of utility-specific programming (e.g. multifamily programs)

NYSERDA

- Administration of statewide implementation and integrated database (intake and project tracking) for 1-4 family energy efficiency
- Offering default multifamily programming, where utility does not offer multifamily program
- Administering affordable new construction initiatives
- Facilitating income-eligibility determinations
- Management of network of service providers for statewide programs
- Coordination with state agencies, non-utility programs, and trade associations
- Funding of pilots and novel solutions under CEF to inform future utility investment

Outline of a Statewide Coordinated LMI Portfolio (4)

- Intervention mix
  - Residential (1-4 family homes) energy efficiency- both comprehensive and direct install
  - Multifamily energy efficiency
  - Community-based approaches
  - Upstream approaches
  - Alignment with utility bill discount and other intervention types (renewables)
  - Expected that programs will evolve over time

- Planning and Program Review
  - NYSERDA and utilities will develop a program review and planning committee
  - Will coordinate with NYSERDA/DPS LMI working group (in development) and low-income interagency task force

- Portfolio-level BCA (methodology to be determined)

- Final budget allocations to be based on in depth analysis during program design phase

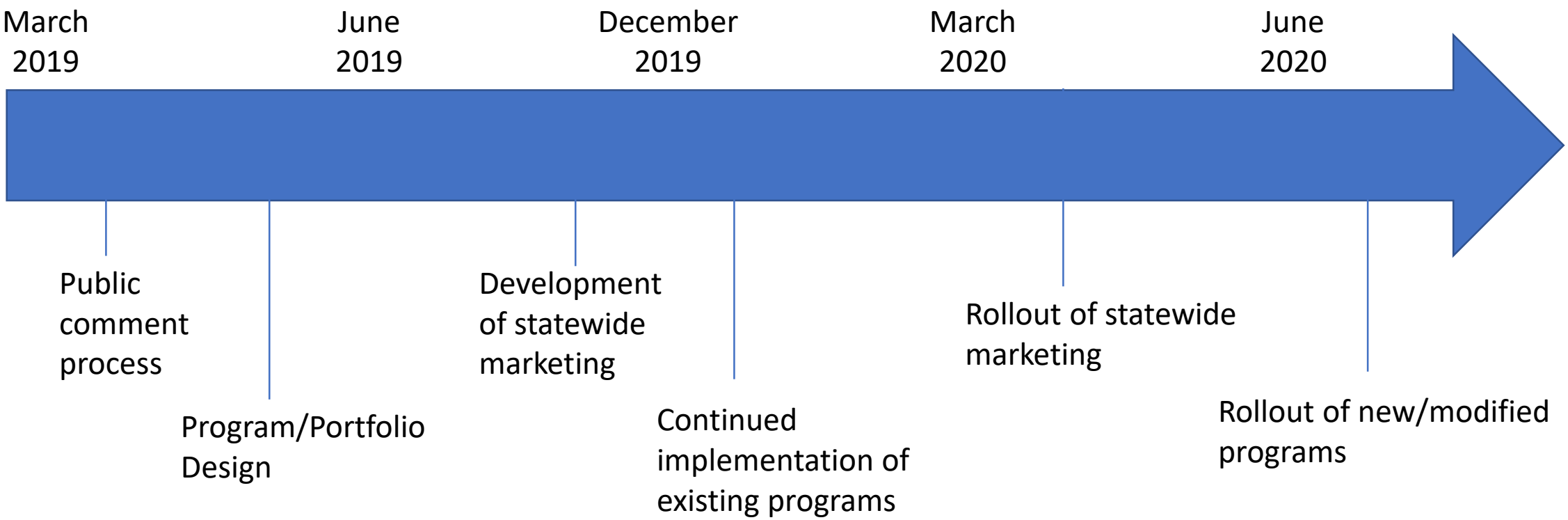
Status of Coordinating Activities

Status of Coordinating Activities

- Regular planning sessions leading up to March 31 proposal

- Workstream development to inform program and implementation design phases to include:
  - Program design, including budget allocations
  - Development of heat pump strategy
  - Development of statewide marketing/branding
  - Develop approach for enhanced data sharing
  - BCA methodology
  - Development of approach for planning and review

Illustrative Timeline



Open Discussion

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NE:NY - NYS Utility Heat Pump Programs

Technical Conference

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Heat Pumps in the NENY Order

- Electric utilities to work in consultation with NYSERDA and include a heat pump proposal in April 1 filing

- Heat pump savings target of 5 TBTU established for electric utilities
  - Filing should detail utility-level targets
  - $250M indicative budget (embedded within $1.6B NENY cap)

- Design guidance
  - Drive market scale to reduce costs
  - Provide clear and stable market signal
  - Simple, workable for consumers; uniform for providers
  - Smooth transition from current programs

Roles

- Utilities operate heat pump resource acquisition programs
  - Provide incentives
  - Commercial, industrial and residential segments eligible (subject to contributing to EE funding in rates), including new construction market
  - Marketing of programs
  - Execute Quality Assurance and Measurement & Verification of installations
  - Recover utility program costs through delivery rates or surcharges

- NYSERDA performs market enablement function
  - Establish statewide messaging ‘toolkit’
  - Operate workforce training program
  - Support community-based grass roots heat pump campaigns
  - Observe utility efforts, to encourage best practices

Timing

- Utilities file heat pump proposal in NENY filing on April 1
- Commission order anticipated in late Q3 2019
- Utilities file implementation plans 60 days later
- Utility heat pump programs available in January 2020

Statewide Consistency

- Upfront incentives, standardized by region
- Leverage NYSERDA and utility contractor approval and quality control efforts
- Consideration of declining incentives utilizing block concept in later years and review of incentives
  - Incentive levels to be informed by experience with technology and costs, program experience and market demand
- NYSERDA messaging, adapted by utility for their markets

Targets, Budgets, and Savings

- Utilities accept initial targets and budgets based on residential potential

- Flexibility is critical
  - Timing and geographic targets, technology/customer segment incentives
  - Annual check-in on results and discussion of going-forward changes
  - Ramp up period

- For now, utilities recommend not reducing cost impact of heat pump incentives based on inverse cost shift
  - Utility rate designs included in rate cases can impact amount of inverse cost shift

- Targets and budgets are premised on using potential developed in NYSERDA Heat Pump potential study
  - Utilities are relying on the methodology used to develop the 5 TBTU goal and $250M budget

Incentives

- Incentive level proposals under development, based on NYSERDA ‘missing money’ analysis and informed by currently available NYSERDA and utility incentives
  - Structured to enable statewide heat pump adoption, and thus reflective of different cost and missing money levels in different parts of the State

- Specific incentive levels to be shared with stakeholders during the implementation phase

- At the same time mindful of ratepayer cost, pursuing the greatest level of uptake in parts of the State where costs are lower, as per the adoption projection

Rate Design

- Some utilities have proposed or are offering technology-agnostic rate designs that may be attractive to customers with heat pumps
  - National Grid beneficial electrification rate
  - Central Hudson time of use rate
  - Con Edison Innovative Pricing Pilot

- Important to get rate design right
  - Reflect high load factor nature of heat pumps
  - Send pricing signal that peak load impact has costs

- Some utilities already committed to offer annual rate impact credits

- Adoption of alternative rates impacts inverse cost shift

Geographic Targeting

- Utilities at their option can utilize extra value from Non-Wires and Non-Pipes Alternatives for heat pumps
  - Geographic adders to ‘steer’ existing heat pump demand
  - New funds to support incremental demand

- Not proposing specific adder programs in April 1 filing
  - Guidance in Con Edison NPS order regarding gas customer funding and efforts to offset upstream supply needs

Transition

- Incentive levels for utility programs in 2020 consider levels available in 2019
- Reflect NYSERDA program manual in establishing QA/QC
- Leverage NYSERDA contractor eligibility and training requirements

LMI Customers

- Value proposition is clear for LMI homeowners converting from fuel oil to heat pumps

- Utilities understand the interest in providing LMI customers with access to benefits of heat pumps
  - But bill savings is critical for this segment, many unknowns

- Exploring additional heat pump solutions for LMI customers
  - Scalable solutions needed
  - Address landlord/tenant issues, technical challenges
  - Dedicating a portion of heat pump budget to this segment

Other Issues Still to be Addressed

- Incentive intervention points
- Encouraging envelope tightening
- Heat Pump savings methodology and modifications to Technical Resource Manual

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Heat pump analysis to support development of NE:NY utility heat pump proposal

March 8, 2019

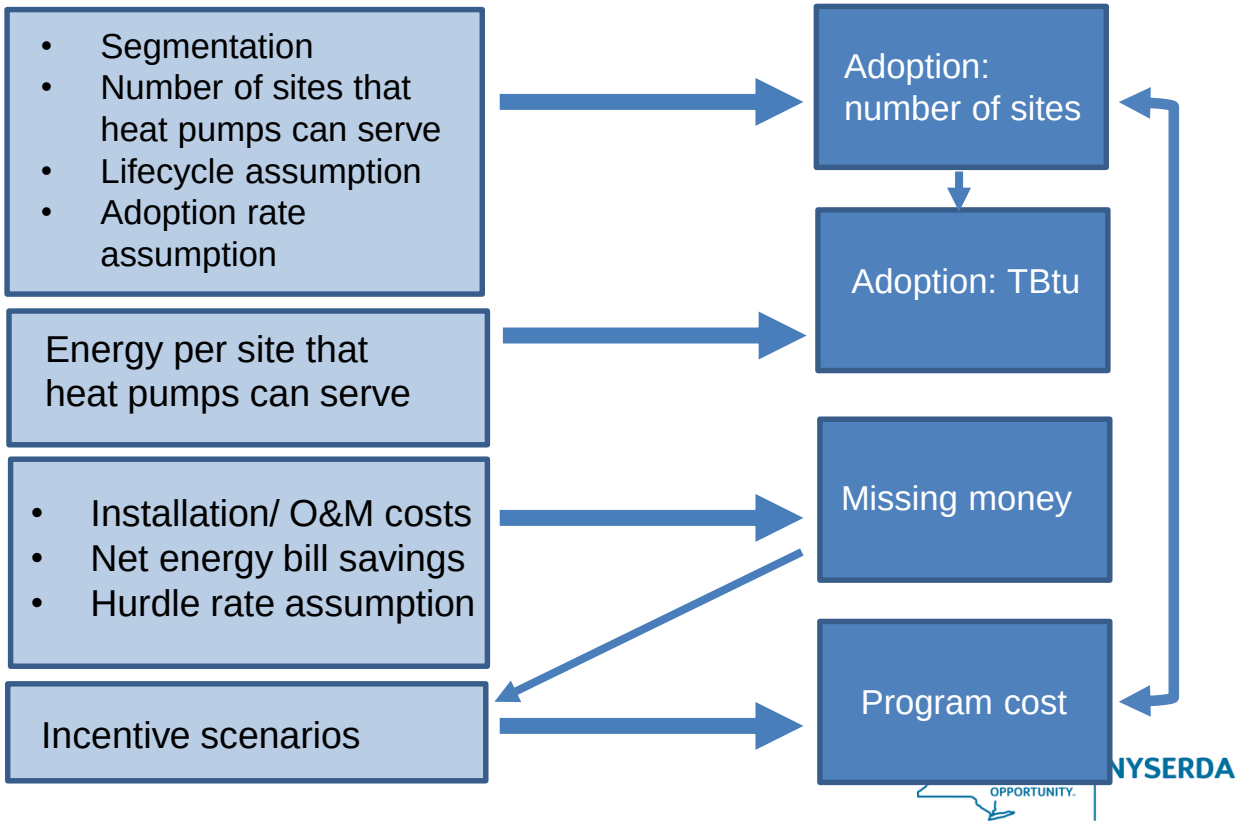
Erich Scherer,
Senior Advisor, Clean Energy Strategy and Analysis

Analytical approach

Objective: support the forthcoming utility heat pump proposal by providing analysis that:

- projects heat pump uptake by utility; and
- provides incentive level and program cost/ budget projections,

to deliver a 5 TBtu savings target over the program period 2020-2025, as per the NE:NY Order.



Energy savings as counted towards the 5 TBtu target

Savings calculated on a net all-fuels onsite annual energy savings basis:

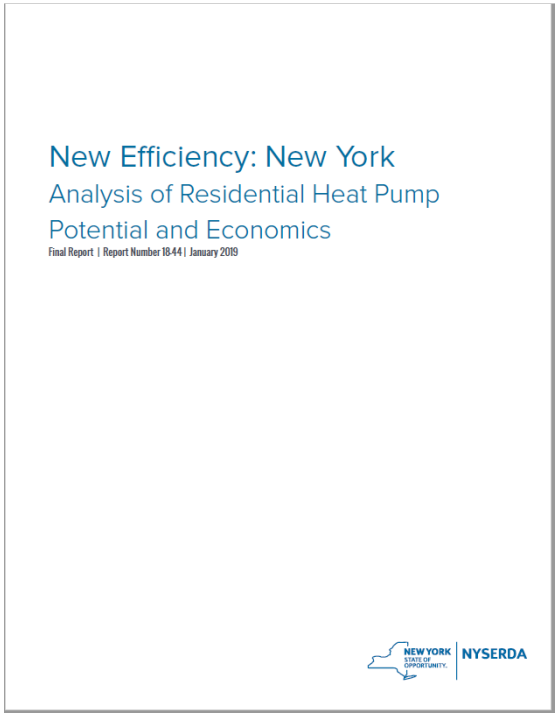
- Net all fuels: offsets the avoided oil/gas use against the electricity used for the heat pump
- Onsite: the amount of energy used at the point of consumption (as opposed to generation) is counted
- Annual: the target is expressed in annual energy savings (as opposed to lifetime)

Savings are thus calculated as the amount of oil/gas (or electric resistance) heating fuel that would have been used in the absence of a heat pump, plus the amount of electricity that would have been used for air-conditioning, minus the amount of electricity used by the heat pump for heating and cooling.

Assessment of the savings quantification is ongoing in order to ensure alignment with other savings calculation tools (Technical Resource Manual).

NYSERDA Report

- NYSERDA analysis on small residential heat pump potential and economics in New York
- Published in January 2019
- Available at: https://www.nyserda.ny.gov/Researchers-and-Policymakers/Clean-Heating-and-Cooling
- Analysis of large scale heat pump installations ongoing



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Economics: “missing money”

- Missing money is the amount that a customer would need to receive, on top of energy bill savings, in order for the additional cost of a heat pump (above a conventional HVAC system) to deliver a reasonable payback.
- Missing money is shown as upfront rebate equivalent, assuming no incentive other than GSHP ITC.
- Segmentation covers heat pump technology, utility and counterfactual heating fuel. Key missing money indicator is single-family residential replacing oil heating.
- Provided to inform the utility proposal together with other factors that will inform the incentive approach.

Current incentives and missing money per thermal ton; 2019; single family replacing oil	Ducted ASHP	Minisplit	GSHP
Current NYSERDA incentives (approx)	*$500*	*$500*	*$1,500*
Current utility incentives (approx)	*$150-$300*	*$200-$225*	*$0-$300*
Missing money - downstate	$2,735	$2,352	$2,675
Missing money - midstate	$1,753	$1,570	$1,740
Missing money - upstate	$847	$846	$1,142

Indications:

- Current incentives in Downstate (ConEd) low compared to missing money across all technologies
- GSHP midstate currently broadly right, upstate somewhat high
- ASHP midstate/ upstate currently low in most cases

Adoption projection (GBtu)

- Assumes that incentives are structured to broadly provide adequate “missing money” across all utilities
- Year-on-year adoption projection intended to be indicative – as per the Order, a NY Sun style block structure may be used to drive adoption, as opposed to fixed annual deployment targets

GBtu savings	2020	2021	2022	2023	2024	2025	Total
Central Hudson	38	51	67	76	88	102	**420**
ConEd	59	98	129	145	169	197	**798**
NYSEG	140	234	309	353	412	473	**1,922**
NiMo	138	185	244	282	329	377	**1,556**
O&R	14	19	25	28	33	39	**159**
RGE	10	17	23	27	32	36	**145**
Total	**399**	**604**	**797**	**912**	**1,064**	**1,224**	**5,000**

Adoption projection (thermal tons/ installs)

- For illustration – number of installs needed to deliver the savings target depends on the average size of installations and the savings per ton.
- Number of installs based on small-scale residential installations. Large scale installations expected to be eligible and will count towards the target, but not assessed in this analysis.

Installs/year	2020	2021	2022	2023	2024	2025	Total
Central Hudson	617	840	1,111	1,264	1,474	1,704	**7,010**
ConEd	1,021	1,717	2,235	2,524	2,949	3,441	**13,887**
NYSEG	2,089	3,519	4,747	5,416	6,317	7,261	**29,349**
NiMo	1,971	2,634	3,615	4,156	4,848	5,549	**22,773**
O&R	230	319	417	473	551	644	**2,635**
RGE	154	258	361	428	499	571	**2,270**
Total	**6,082**	**9,287**	**12,486**	**14,261**	**16,638**	**19,171**	**77,925**

Thermal tons/year	2020	2021	2022	2023	2024	2025	Total
Central Hudson	1,689	2,281	2,977	3,399	3,961	4,607	**18,915**
ConEd	2,802	4,690	6,052	6,833	7,986	9,426	**37,789**
NYSEG	5,714	9,589	12,666	14,569	16,989	19,584	**79,111**
NiMo	5,404	7,222	9,597	11,187	13,048	14,946	**61,403**
O&R	632	864	1,113	1,262	1,470	1,739	**7,079**
RGE	431	719	944	1,153	1,344	1,538	**6,130**
Total	**16,672**	**25,365**	**33,350**	**38,402**	**44,798**	**51,841**	**210,427**

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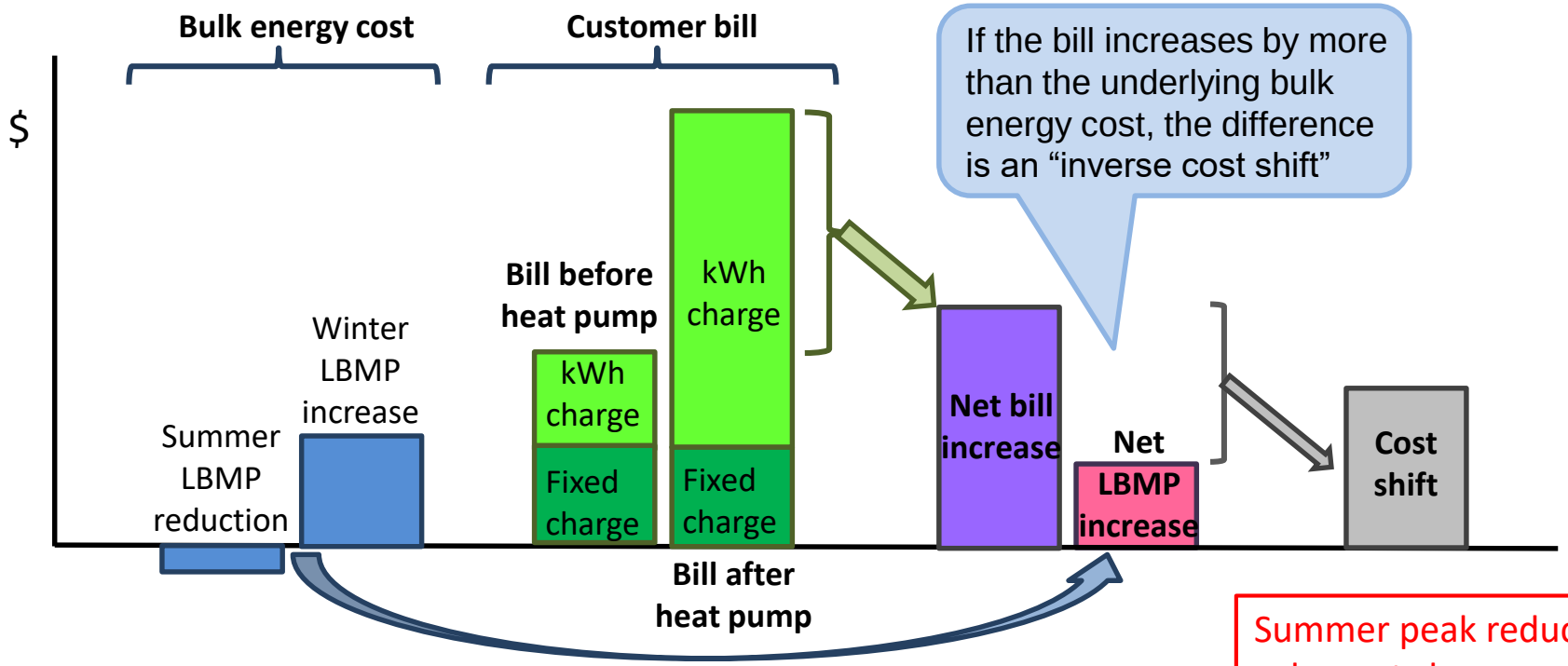
Heat pump program budget

- NE:NY Order estimates a program budget of $250M to achieve the 5 TBtu target
- NYSERDA is providing analysis to support utility heat pump budget proposal in the March filing, based on the above missing money estimates and adoption projections
- Budget analysis is ongoing to reflect:
  - discussions with utilities on the program and incentive structure
  - considerations relating to low and moderate income customers
  - alignment of savings methodology with TRM
- Program spend on heat pumps does not necessarily constitute a net cost to ratepayers, due to the “inverse cost shift” effect.

Inverse cost shift



Summer peak reduction value not shown

Inverse cost shift – case studies

- Lifetime inverse cost shift exceeds missing money – a program that pays a subsidy at the missing money level would still deliver a net benefit to ratepayer bills.
- Case studies show inverse cost shift for GSHP; cost shift for ASHP is higher still due to the higher electricity consumption of ASHP (as a result of a lower efficiency factor than GSHP).

Single family GSHP replacing oil, 2019	Missing money	Inverse cost shift per year	Cost shift, NPV lifetime
Downstate	$2,675	$207	$3,297
Midstate	$1,740	$136	$2,638
Upstate	$1,142	$99	$1,767