

Con Edison and Orange & Rockland Plan Update Technical Conference

October 3, 2023

Meeting logistics (Agenda, Q&A, etc.)



Consolidated Edison Corporation, Inc. (Con Edison) and Orange & Rockland Utilities, Inc. (O&R) (together, the Companies) filed their Gas System Long-Term Plan update (GSLTP) on September 22, 2023. This afternoon's session reviews the major changes that were included.

Please use the "raise hand" feature of the meeting platform so that we know when there are questions to address. (We will answer questions in the order they are received.)

Agenda

- **Hybrid and Deep Pathway assumptions and dependencies**
- **More clarity on supply assets**
- **Updates to capital assumptions**
- **Updates to volume forecast assumptions**
- **Resulting updated emissions**
- **Resulting updated revenue requirement and gas system rate**
- **Inclusion of high-level information on UTEN projects**
- **Inclusion of 2023 Con Edison JP provisions** (prior presentation)
- **Updated Peak Forecast (Reference Case)** (prior presentation)

Hybrid and Deep Pathway assumptions and dependencies

In response to PA's recommendation of a bottoms-up approach for the Hybrid and Deep electrification pathways, the companies have listed dependencies that indirectly impact the assumptions

- The dependencies were derived from internal review and NYSERDA's Integration Analysis and indirectly support adoption rates for different technologies in each pathway
- The Companies determined that many of the required actions are common to both the Hybrid and Deep Electrification Pathways, particularly prior to 2030
- The precise course that the transition will follow will be affected by both regulatory/legislative and technological changes noted in subsequent slides
- Quantification of dependencies is not included unless explicitly modelled

DEPENDENCIES REQUIRED FOR ASSUMED ADOPTION

Building electrification assumptions and dependencies

Relative to the Hybrid pathway, dependencies for the Deep Electrification pathway reflect a faster pace of adoption of electric heating solutions

Assumed adoption (% of floorspace)

		Hybrid	Deep
2030			
Electric heat pump adoption	SFH	18%	23%
	MFH	9%	22%
	COM	9%	23%
	Total	10%	22%
HP water heater adoption	SFH	21%	21%
	MFH	16%	22%
	COM	18%	23%
	Total	18%	22%
2043			
Electric heat pump adoption	SFH	60%	73%
	MFH	26%	72%
	COM	28%	76%
	Total	36%	74%
HP water heater adoption	SFH	72%	76%
	MFH	65%	76%
	COM	49%	76%
	Total	62%	76%

Dependencies for assumed adoption

	Hybrid	Deep
** Ongoing: Develop the skilled workforce necessary to deliver upgrades at the required pace and scale	✓	✓✓
** Ongoing: Facilitate deployment of innovative third-party financing models	✓	✓✓
* Ongoing: Protections for low-income customers who do not currently pay directly for heating	✓	✓✓
** Ongoing: Policy support for technical innovations to enable electrification of difficult-to-convert customers		✓
* By 2030: Compression of building permitting cycle for building electrification and envelope upgrades	✓	✓✓
* By 2030: Ability to gradually modify the gas footprint by eliminating any new customer connections and requiring existing customers in targeted areas to disconnect from the gas system	✓	✓✓
* By 2030: Regulations that phase out fossil fuel use in new buildings , without exceptions	✓	✓✓
* By 2030: Policies that support bundling electrification with building envelope upgrades	✓	✓✓
* By 2030: Adoption of ultra-low GWP refrigerants		✓
* By 2030: Expanded incentives for early retirement of old heating systems		✓
* By 2030: All new sales of heating systems for low-rise residential buildings are heat pumps		✓
* By 2035: Regulations that phase out fossil fuel use in existing buildings , without exceptions		✓
* By 2035: All new sales of heating systems for MFH and COM are heat pumps		✓
* By 2040: Zero emission power sector	✓	✓✓

* = relies on regulatory/policy development; ** = relies on market/technology development

✓ = required to achieve pathway; ✓✓ = deeper intervention will be required relative to the other pathway

Explicitly modeled in pathways analysis

DEPENDENCIES REQUIRED FOR ASSUMED ADOPTION

Energy efficiency assumptions and dependencies

These dependencies were not explicitly modeled but are assumed to be required to enable the adoption rates for energy efficiency in the pathways

Assumed energy efficiency savings¹

	Hybrid	Deep
2030	9%	16%
2043	23%	32%

¹Reflects average total energy savings applied to all building types

Dependencies for assumed adoption

	Hybrid	Deep
* Ongoing: Coordination of utility program offerings with state and city programs for LMI customers	✓	✓✓
* Ongoing: Codes and standards to improve energy efficiency, reduce emissions, and enhance building resilience in new construction and major retrofits	✓	✓✓
* By 2030: Expanded funding for EE incentives to target building envelope improvements	✓	✓✓
** By 2030: Increased participation in programs for improved controls and demand response	✓	✓✓
* By 2035: Expanded EE funding for low and moderate-income customers	✓	✓✓
* By 2035: Codes and standards to improve energy efficiency, reduce emissions, and enhance building resilience in existing buildings	✓	✓✓

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DEPENDENCIES REQUIRED FOR ASSUMED ADOPTION

Low-carbon fuel assumptions and dependencies

Because more adoption of low-carbon fuels is assumed in Hybrid, more market development and coordination efforts are required in Hybrid relative to Deep Electrification

Assumed adoption in gas system (TBTU)

	Hybrid	Deep
2030		
RNG	4 (1 TBTU from AD in our service territories, 4 TBTU from AD in other parts of NYS and Eastern US)	1 (from AD in our service territories)
H₂	0	0
SNG	0	0
2043		
RNG	45 (4 TBTU from AD and 7 TBTU from TG in our service territories, 33 TBTU from AD in other parts of NYS and Eastern US)	8 (4 TBTU from AD and 4 TBTU from TG in our service territories)
H₂	7	0
SNG	0	0

Dependencies for assumed adoption

	Hybrid	Deep
* By 2023: Hydrogen Hub approval (DOE); with a subsequent review by the PSC of matching funds	✓	
* Ongoing: Support for continued use of our gas system to deliver low-carbon fuels for heating needs and dispatchable generation as an integral part of maintaining system reliability / resource adequacy	✓✓	✓
* By 2030: Recognition and awareness of low-carbon fuels as a decarbonization solution and regulatory establishment of LCF definitions certification processes	✓✓	✓
** By 2030: Market growth for RNG produced from anaerobic digestion (AD) facilities, including government incentives to support the development of projects (e.g., tax credits)	✓✓	✓
* By 2030: Approval to interconnect with and purchase RNG from AD facilities within our service territories	✓	✓
* By 2030: Approval for pilots for LCF to test the impacts of these fuels in gas system planning (e.g., RNG interconnection)	✓✓	✓
* By 2030: Approval to pass through costs of LCF to the customer	✓	✓
* By 2030: Approval to purchase RNG from AD facilities in other parts of NYS and the Eastern US	✓	
** By 2035: Commercialization of and market growth for RNG produced from thermal gasification (TG) facilities, including government incentives to support the development of projects	✓✓	✓
* By 2035: Approval to interconnect with and purchase RNG from TG facilities within our service territories	✓✓	✓
* By 2035: Approval for construction of dedicated hydrogen pipeline that delivers hydrogen to CECONY service territory and approval to recover costs	✓	
** By 2040: RNG is fully scaled from all feedstocks available to us at an average price of \$19/MMBTU	✓✓	✓
* By 2040: Approval for pilots for LCF to test the impacts of these fuels in gas system planning (e.g., hydrogen blending) and proven means to control emissions from hydrogen combustion	✓	
* By 2040: Regional hydrogen supply chain and scale-up of renewable generation fleet to power hydrogen production	✓	
** By 2040: DOE Hydrogen Shot production cost declines achieved (80% reduction)	✓	

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Explicitly modeled in pathways analysis

DEPENDENCIES REQUIRED FOR ASSUMED ADOPTION

CapEx assumptions and dependencies

Most of the CapEx dependencies rely on or encourage customer adoption of electric end-use solutions, which will allow us to strategically downsize the gas system footprint in each pathway

Assumed total capital expenditures

	Hybrid	Deep
2030		
MRP and service replacements	\$3.7B	\$3.1
Customer connections	\$401M	\$397M
CES programs	\$378M	\$334M
Total	\$7.8B	\$7.0B
2043		
MRP and service replacements	\$6.6B	\$3.5B
Customer connections	\$436M	\$401M
CES programs	\$455M	\$357M
Total	\$15.0B	\$9.5B

Dependencies for assumed adoption

	Hybrid	Deep
* By 2023: Regulations that phase out fossil fuel use in new buildings, with current list of exceptions continuing to serve gas to customers	✓	✓
* By 2026: Ability to begin reducing MRP mileage gradually through 2032 from the current 80 miles/year (CECONY)	✓	✓✓
** By 2026: Begin phasing down all Gas EE programs through 2035	✓	✓✓
* 2026-2035: Gradual migration of EE and NPA related costs from the gas rate base to the electric rate base	✓	✓
* By 2028: NPA electrification work funded via electric rate base	✓	✓
* By 2029: Ability to begin paring back capital investments in multiple categories (MRP, pressure control regulator stations, meters, etc.) to right-size investments		✓
* By 2030: Obligation to serve and customer subsidies (100-foot rule) eliminated	✓	✓
* By 2030: Ability to fund a dedicated hydrogen pipeline to serve dedicated infrastructure (CECONY)	✓	
* By 2030: Ability to modify the gas footprint by eliminating any new customer connections and requiring existing customers to disconnect from the gas system		✓
* By 2030: Ability to gradually modify the gas footprint by eliminating any new customer connections and requiring existing customers in targeted areas to disconnect from the gas system, while maintaining the gas system in select areas	✓	
* By 2032: Regulations that phase out fossil fuel use in new buildings, without exceptions		✓
* By 2032: Ability to wind down the MRP to only service emergent needs while being able to expand leak surveillance and repair activities		✓
* By 2032: Continue the MRP program primarily in the zones to keep gas. Zones to electrify will only have LPP work performed to address emergent needs	✓	

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Explicitly modeled in pathways analysis

More clarity on supply assets

- Definition of Reverse AMAs
- Information on delivered services
- Impact of Tenn 300L coming into service:
 - Yonkers trucked CNG station will no longer be required
 - Current moratorium on new firm gas demand will no longer be required
- Impact of Iroquois ExC coming into service:
 - Decrease reliance on delivered services

Delivered Services as a Percentage of Peak Demand	Neither project in-service [MDT (%)]	Only East 300 In-Service [MDT (%)]	Only ExC In-Service [MDT (%)]	ExC & East 300 In-Service [MDT (%)]
Winter 2024-2025	176 (9%)	61 (3%)	176 (9%)	61 (3%)
Winter 2025-2026	189 (10%)	74 (4%)	127 (7%)	12 (1%)
Winter 2026-2027	193 (10%)	78 (4%)	131 (7%)	16 (1%)
Winter 2027-2028	192 (10%)	77 (4%)	129 (7%)	14 (1%)
Winter 2028-2029	182 (9%)	67 (3%)	120 (6%)	5 (0%)
Winter 2029-2030	172 (9%)	57 (3%)	110 (6%)	0 (0%)
Winter 2030-2031	153 (8%)	38 (2%)	91 (5%)	0 (0%)
Winter 2031-2032	140 (7%)	25 (1%)	77 (4%)	0 (0%)
Winter 2032-2033	121 (6%)	6 (0%)	58 (3%)	0 (0%)
Winter 2033-2034	99 (5%)	0 (0%)	36 (2%)	0 (0%)
Winter 2034-2035	77 (4%)	0 (0%)	14 (1%)	0 (0%)

Updates to Hybrid capital forecast

We've refined some assumptions in our Hybrid capital forecast and have made general minor tweaks to some calculations

CECONY O&R

Major updates to Hybrid CapEx

Impact to CapEx

Changed MRP assumption to further reduce investments after 2040 to better align with Reference case

↓

Updated service replacement investments to match pace of MRP reduction

↓

Updated transmission/generation investments to align with Reference case

↑

Changed new business investments assumption to incorporate gas bans with exceptions beginning in 2026

↓

Reduced main replacement, LCF, and NPA investments to maintain consistency across utilities

↓

	5/31 Filing	Update	
CECONY total CapEx (2023 – 2043)	\$14.8B	\$14.3B	↓4%
O&R total CapEx (2023 – 2043)	\$798M	\$681M	↓15%

Updates to Deep Electrification capital forecast

We've refined some assumptions in our Deep Electrification capital forecast and have made general minor tweaks to some calculations

CECONY

O&R

Major updates to Deep Electrification CapEx

Impact to CapEx

Updated Public Improvement investment forecast



Reduced LCF and NPA investments to maintain consistency across utilities



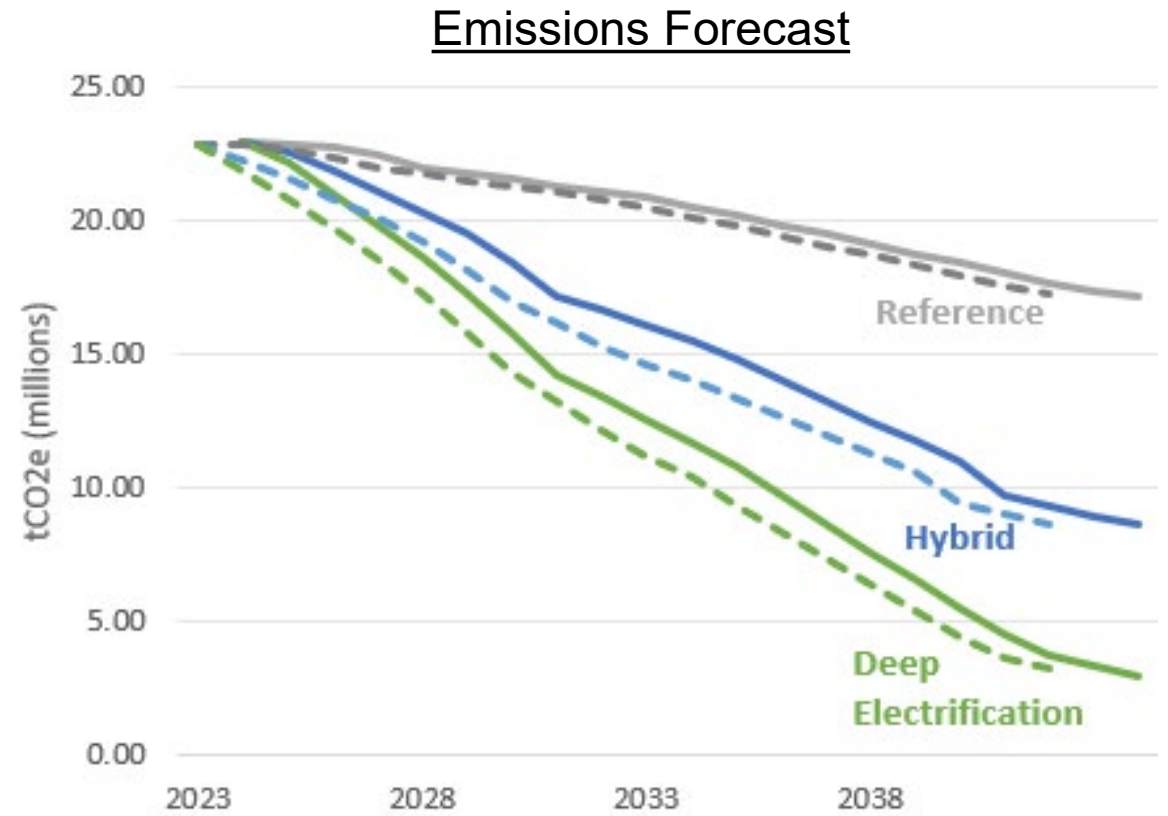
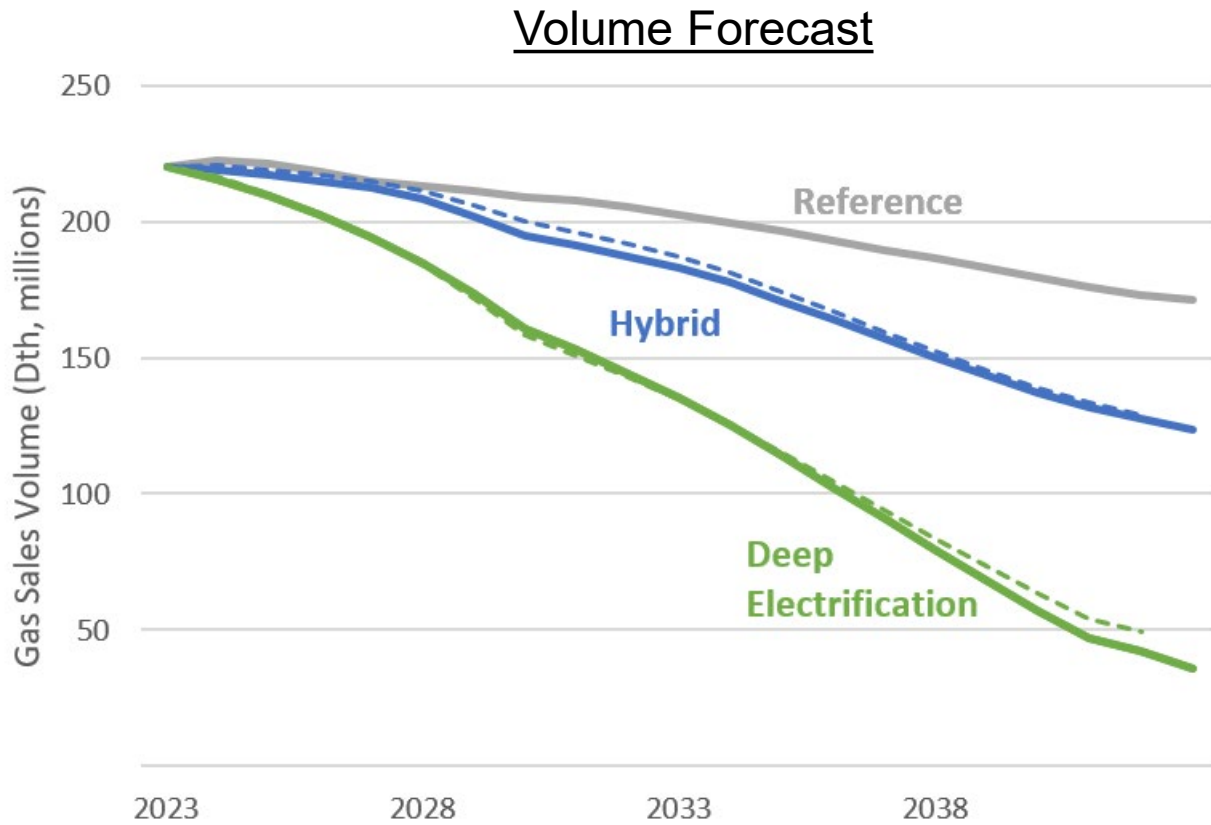
	5/31 Filing	Update	
CECONY total CapEx (2023 – 2043)	\$9.08B	\$9.06B	↓0.2%
O&R total CapEx (2023 – 2043)	\$450M	\$417M	↓7%

Updates to volume and emissions forecast assumptions

In addition to general minor tweaks to some calculations, we updated the pathway modeling to ensure consistent methodology between utilities and allow for partial electrification of gas customers

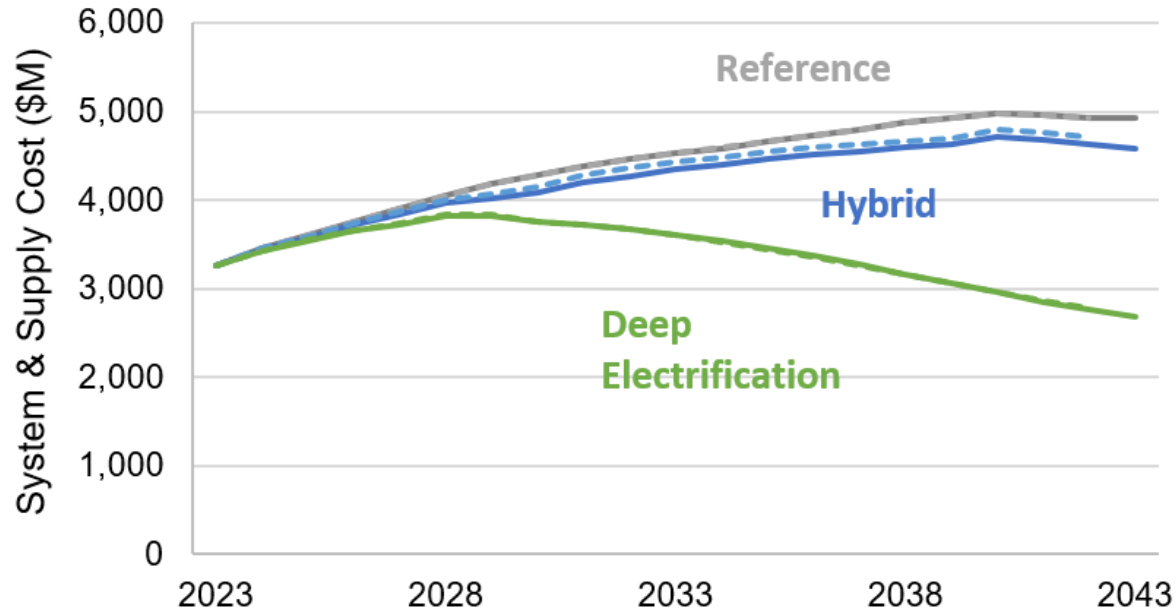
Major updates	Impact to:	
	Gas Volume	Gas Emissions
Integrated O&R modeling with CECONY model to ensure consistent calculations between utilities	↓	
Updated EUI's to split out O&R and CECONY gas floorspace by end-use (space heating, water heating, cooking/other)	↑	
Increased O&R water-heating electrification from 65% to 80% in the Hybrid case to be aligned with CECONY	↓	
Broke out scope 1 emissions calculations for O&R and CECONY based on their respective inventory of gas mains by material		↑

Resulting updated volume and emissions forecasts

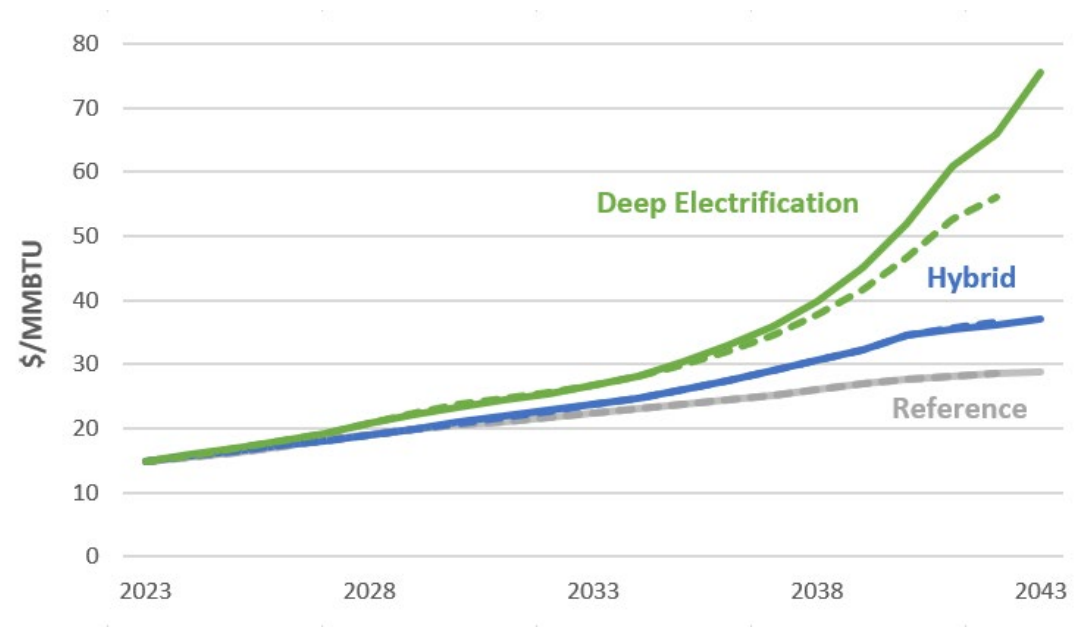


Resulting updated revenue requirement and gas system rate

Revenue Requirement



Gas System Rate



Resulting updated revenue requirement and gas system cost

Representative Gas Costs

	Pathway	2023	2042	2050
May filing	Reference	\$1,700	\$3,400	\$3,600
	Hybrid	\$1,700	\$4,300	\$5,800
	Deep Electrification	\$1,700	\$6,600	\$ ↑↑↑↑

	Pathway	2023	2043	2050
Sept filing	Reference	\$1,700	\$3,400	\$3,500
	Hybrid	\$1,700	\$4,300	\$5,700
	Deep Electrification	\$1,700	\$8,800	\$ ↑↑↑↑

Inclusion of high-level information on UTEN projects

- Con Edison and O&R have each submitted proposed UTEN projects
- Case 22-M-0429, Proceeding to Implement the Utility Thermal Energy Network and Jobs Act (Thermal Energy Network Proceeding)
- Supplemental Information for Consolidated Edison Company of New York, Inc.'s Utility Thermal Energy Network Pilot Project Proposals (filed May 19, 2023, updated August 16, 2023)

Questions?