NYC Energy Infrastructure Long Term Plan Review: Update Memo

prepared by London Economics International LLC for the New York Energy Consumers Council, Inc.

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In October 2021, London Economics International LLC ("LEI") was engaged by SourceOne Energy Solutions, the Durst Organization, and the New York Energy Consumers Council, Inc. ("NYECC") to review Consolidated Edison Company of New York, Inc. ("ConEd")'s long-term planning for electricity and gas infrastructure in New York City ("NYC"). On March 17, 2022, LEI issued a report titled "NYC Energy Infrastructure Long Term Plan Review" (herein referred to as the "March 2022 Report"). Subsequently, in March 2023, LEI was engaged by NYECC to prepare an Update Memo that explores developments in the last year in the electricity and gas sectors in New York State, with respect to policy and regulatory updates, investment plans, as well as relevant analysis issued by state agencies, such as the New York State Climate Action Council ("NYS CAC") and the New York Independent System Operator ("NYISO"). As in the March 2022 Report, this Update Memo focuses on implications for ConEd's service territory in NYC.

Overall, LEI finds that recent developments in New York's electricity and gas sectors generally align with LEI's findings from the March 2022 Report. On the electric side, recent reforms to the State's capacity market design and increases to the State's energy storage goals are expected to further increase renewable and storage capacity growth, placing additional strain on ConEd's system that will need to be accounted for in its transmission and distribution planning activities. Furthermore, recent analysis from NYISO highlights the risk of narrowing reliability margins in NYC, which will require ConEd to investigate additional transmission solutions as well as potential non-wires alternatives. On the gas side, LEI finds that the Joint Proposal issued in ConEd's ongoing rate case highlights a shift, at least in the short-term, away from a focus on gas main replacement to decarbonizing ConEd's system through planned initiatives such as purchasing certified gas and removing or electrifying portions of its system. However, ConEd continues to need to re-examine its long-term approach to gas infrastructure investments, which will likely be spurred on by the New York State Public Service Commission ("NYS PSC" or the "Commission")'s recent order that requires utilities to prioritize "no infrastructure options" or non-pipeline alternatives ("NPAs") as part of their long-term gas planning efforts. In addition, the NYS CAC's final Scoping Plan calls for transitioning the gas system as electrification efforts in the state continue.

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List of acronyms

BSM	Buyer-Side Mitigation
CHPE	Champlain Hudson Power Express
CLCPA	Climate Leadership and Community Protection Act
CMR	Comprehensive Mitigation Reform
CONE	Cost of New Entry
ConEd	Consolidated Edison Company of New York, Inc.
CPNY	Clean Path New York
CRP	Comprehensive Reliability Plan
DER	Distributed Energy Resource
DOE	US Department of Energy
DSIP	Distributed System Implementation Plan
EAM	Earnings Adjustment Mechanism
ELCC	Effective Load Carrying Capability
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
HVDC	High-voltage Direct Current
IRM	Installed Reserve Margin
LCR	Locational Minimum Installed Capacity Requirement
LDC	Local Distribution Company
LEI	London Economics International LLC
MGP	Manufactured Gas Plant
NENY	New Efficiency: New York
NERC	North American Electric Reliability Corporation
NOPR	Notice of Proposed Rulemaking
NPA	Non-pipeline Alternative
NYC	New York City
NYCA	New York Control Area
NYCRR	New York Codes, Rules and Regulations
NYECC	New York Energy Consumers Council, Inc.
NYISO	New York Independent System Operator

NYS CAC	New York State Climate Action Council
NYS DEC	New York State Department of Environmental Conservation
NYS DPS	New York State Department of Public Service
NYSERDA	New York State Energy Research and Development Authority
NYS PSC	New York State Public Service Commission
NYSRC	New York State Reliability Council
PAR	Phase Angle Regulator
R&D	Research and Development
RGGI	Regional Greenhouse Gas Initiative
RNA	Reliability Needs Assessment
RNG	Renewable Natural Gas
RPP	Reliability Planning Process
SEEP	System Energy Efficiency Plan
T&D	Transmission and Distribution
TRACE	Transmission Reliability and Clean Energy

1 Executive summary

LEI's March 2022 Report found that in order to support the objectives set out in the Climate Leadership and Community Protection Act ("CLCPA"), ConEd's system would need to accommodate the retirement of older peaking power resources, electrification-driven load growth, distributed energy resources ("DERs"), offshore wind resources, and power injection from high-voltage direct current ("HVDC") transmission projects bringing renewable electricity into NYC. However, LEI found that ConEd's long-term planning documents indicated a level of preparedness that was not yet aligned with the State's public policy objectives.

Since the March 2022 Report, several policy and regulatory updates, investment plans, and relevant analysis issued by state agencies such as the NYS CAC and NYISO have been released, which further support LEI's recommendations for ConEd to, at a minimum:

- ensure its planning scenarios reflect the most recent load and supply changes consistent with the State's efforts to attain its clean energy goals;

- evaluate transmission solutions and non-wires alternatives holistically to accommodate the deployment of renewables;

- evaluate transmission solutions and non-wires alternatives holistically to address shrinking reliability margins in the NYC area, caused in part by the retirement of thermal peaking generators and dependence on a few transmission interconnections. In fact, as recognized in NYISO's 2022 Reliability Needs Assessment ("RNA"), "some generation affected by the [New York State Department of Environmental Conservation ("NYS DEC")] Peaker Rule may need to remain in service until [the Champlain Hudson Power Express ("CHPE") connection] or other permanent solutions are completed to maintain a reliable grid and meet system demand";[1] and

- re-examine its long-term gas planning approach in light of the State's continued focus on assessing non-pipeline alternatives and transitioning the gas system amidst increasing electrification.

On the electric side, policy and regulatory updates since March 2022 have primarily consisted of updated guidance from the NYS PSC on implementing the CLCPA goals, capacity market reforms by NYISO to accommodate the influx of CLCPA-driven renewable resources, and expanded statewide energy storage goals announced by Governor Hochul. These updates are collectively expected to further increase the growth of renewable and storage capacity in the state, which may in turn place additional strain on ConEd's system and should be reflected in its transmission and distribution planning activities.

In addition to these policy and regulatory updates, several relevant reports have been released since March 2022, including the NYS CAC's final Scoping Plan, as well as updates to NYISO's

[1] NYISO. *2022 Reliability Needs Assessment (RNA).* November 15, 2022. P. 7.

periodic Gold Book, Power Trends Report, and Reliability Needs Assessment. Together, these documents stress the need for transmission and distribution investments to deliver energy from where generation resources are located (primarily upstate and offshore) to major load centers (primarily downstate), as well as further planning and system upgrades in ConEd's service territory to accommodate increasing amounts of offshore wind, and further investigation into potential non-wires alternatives to address shrinking reliability margins in NYC.

On the gas side, regulatory updates from the NYS PSC and analysis by state agencies such as the NYS CAC have indicated a continued focus on transitioning the gas system to ensure better alignment with the decarbonization objectives outlined in the CLCPA. The NYS PSC's order in the long-term gas planning proceeding concluded that there is a need for utilities in the state to prioritize "no infrastructure options" in order to meet emissions reduction targets. In addition, the NYS CAC's final Scoping Plan calls on the Commission to develop a detailed timeline for transitioning the State's gas system, which should align with plans for other sectors. In light of these signals from policymakers and regulatory agencies, ConEd appears to have shifted its focus away from gas main replacement to decarbonization initiatives, with plans to purchase certified gas and remove or electrify portions of its gas system included as part of the Joint Proposal filed in its ongoing rate case. While these planned initiatives are encouraging in the short-term, ConEd should continue to re-examine its long-term approach to gas infrastructure investments to minimize the risk of stranded costs as the state continues on its path of electrification.

The remainder of this Update Memo is structured as follows:

- in Section 2 and Section 3, LEI begins by reviewing key developments in the New York electricity and gas sectors, respectively, over the last 12 months. LEI focuses on broader policy updates, milestones reached in key proceedings, recently released reports from state agencies such as the NYS CAC and NYISO, as well as analysis from ConEd itself with respect to its planning and investment needs; and

- then in Section 4, LEI briefly compares and contrasts recent market developments with LEI's findings put forth in the March 2022 Report.

2 Electricity sector in New York: new developments

Although it has been just 12 months since the March 2022 Report was completed, several state policies and hallmark regulatory decisions have been issued, progress towards the CLCPA objectives has been documented in several NYISO reports, and ConEd itself has filed a Joint Proposal alongside several signatory parties as part of its ongoing rate case.

2.1 Policy and regulatory updates

Three broad policy and regulatory updates have occurred since LEI's March 2022 Report, which are related to updated regulatory guidance on the implementation of the CLCPA, changes to the capacity market design initiated by NYISO, and increases to New York's energy storage goals. Each update is briefly described in turn below. In general, these policy and regulatory developments – once complete and implemented (as market design changes and/or investments) – are expected to establish a clearer pathway to achieve the State's decarbonization goals, as well as further support reliable electricity supply to customers in New York. Additional renewable and storage investment is a likely outcome, which may place additional strain on ConEd's system and should be accounted for in ConEd's transmission and distribution planning and interconnection activities.

2.1.1 NYS PSC's CLCPA implementation order

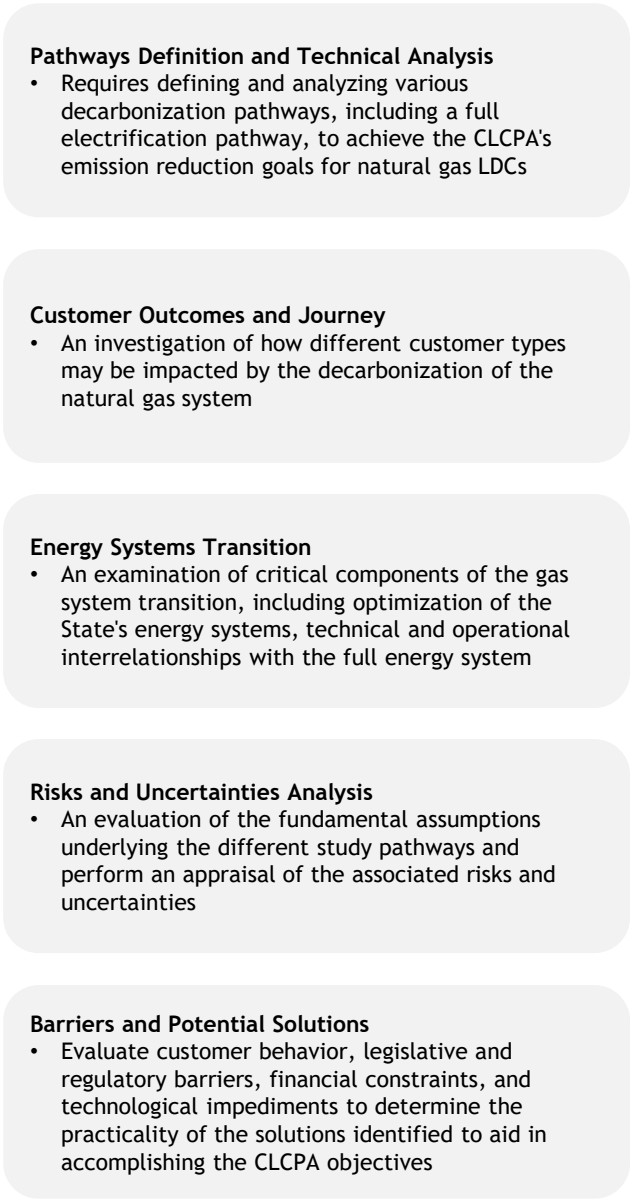
In May 2022, the NYS PSC initiated a proceeding to track the State's progress towards meeting the CLCPA goals and provide policy guidance.[2] At a high level, the CLCPA goals include a reduction in economy-wide greenhouse gas ("GHG") emissions of 40% from 1990 levels by 2030 and 85% by 2050, as well as reaching 70% renewable electricity by 2030 ("70x30") and 100% zero-emissions electricity by 2040 ("100x40").

The NYS PSC's CLCPA implementation order directed utilities, including ConEd, to work with the Commission to develop a framework for statewide GHG emissions reporting consistent with the methodology required by the CLCPA. The proposed framework was filed in December 2022 and currently awaits Commission approval. The order also directed utilities to prepare a GHG Emissions Reduction Pathways Study to analyze the scale, timing, costs, risks, uncertainties, and customer bill impacts of achieving significant and quantifiable emissions reductions from the use of gas delivered by the utilities. A proposed approach for the study was filed by the joint utilities for public comment on March 31, 2023 and is summarized in Figure 1 below.[3]

[2] NYS PSC. *Order on Implementation of the Climate Leadership and Community Protection Act (Case 22-M-0149)*. May 12, 2022.

[3] NYS PSC. *Joint Local Distribution Companies Proposal GHG Emissions Reduction Pathways Study (Case 22-M-0149)*. March 31, 2023.

Figure 1. Workstreams in the joint utilities' GHG Emissions Reduction Pathways Study proposal



Source: NYS PSC. *Joint Local Distribution Companies Proposal GHG Emissions Reduction Pathways Study (Case 22-M-0149).* March 31, 2023.

2.1.2 NYISO capacity market reform

In January 2022, NYISO filed a broad set of proposed capacity market design reforms – the Comprehensive Mitigation Reform ("CMR") – with the Federal Energy Regulatory Commission ("FERC"), to eliminate barriers for certain clean energy resources seeking to interconnect to the grid in support of the State's clean energy goals. The New York transmission owners, including ConEd, submitted comments during the proceeding supporting NYISO's CMR proposal in its

entirety. In May 2022, FERC approved NYISO's CMR proposal, with changes to take effect on May 1, 2024.[4]

The CMR includes two key dimensions:

- first, the CMR exempts certain resources from being reviewed under NYISO's buyer-side mitigation ("BSM") rules if they serve the goals of the CLCPA.[5] The change is expected to remove perceived obstacles for new CLCPA projects as those resources will be able to participate directly in the NYISO-administered spot capacity markets. However, while the exemption aims to encourage the participation of clean energy resources, this is likely to lower capacity prices as new policy-driven resources come online. When combined with energy prices, these lower capacity prices may not be sufficient to fully remunerate CLCPA-driven investments, which means that contracting for these resources by agencies such as NYSERDA will likely have to continue; the costs of the additional compensation provided by the NYSERDA contracts will then be allocated to utilities and recovered from customers in supply and delivery rates on customers' utility bills. As such, ConEd will need to monitor and consider the potential impact of continued allocation of CLCPA program costs on overall customer affordability; and

- second, the CMR adopts a marginal capacity accreditation market design to improve the accuracy of the capacity values assigned to all capacity supply resources from a resource adequacy perspective.[6] The mechanism aims to ensure continued reliability as New York decarbonizes its electricity supply, and supports other non-renewable resources that may need to remain online to maintain system reliability. Furthermore, resources that provide little additional reliability benefit to an area will receive lower capacity revenues and lower capacity accreditation over time, including offshore wind, solar, and battery storage resources. This may further drive the need to continue contracting for these resources through various centralized initiatives and under state "policy mandate" programs and for the recovery of any associated costs from ratepayers.[7]

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[4] FERC. *Docket No. ER22-772-001.*

[5] NYISO's BSM rules require all new resources in mitigated capacity zones to be subject to a price floor when bidding into the capacity market. The price floor is equal to 75% of the unit's net cost of new entry ("CONE"). Under the CMR, resources that meet New York's CLCPA goals will no longer face lower-end limits on their capacity bids. (Source: Utility Dive. *FERC approves NYISO plan to end 'buyer-side mitigation' for clean energy resources.* May 11, 2022)

[6] The CMR allows NYISO to use Installed Reserve Margin ("IRM") and Locational Minimum Installed Capacity Requirement ("LCR") models for capacity accreditation evaluations. As a result, resources will receive capacity payments based on both: (i) the marginal reliability they contribute to the system using a system effective load carrying capability ("ELCC") or equivalent methodology; and (ii) their individual performance. (Source: Ibid)

[7] It was beyond the scope of this memo to catalogue all CLCPA programs and their costs. However, on a state-wide basis, LEI anticipates that additional costs (before accounting for the wholesale price reduction effects) may be in the hundreds of millions of dollars to billions of dollars per year over time, given the scope of CLCPA-related investment known today.

2.1.3 Expanded energy storage mandate

Governor Hochul, in her 2022 State of the State address on January 5, 2022, announced an expansion of the State's energy storage target to 6 GW by 2030, doubling the previous 2030 target under the CLCPA. In response, the New York State Department of Public Service ("NYS DPS") and the New York State Energy Research and Development Authority ("NYSERDA") released New York State's Energy Storage Roadmap in December 2022.[8] To achieve the higher target, the roadmap proposes two key initiatives and sets out a procurement schedule (see Figure 2):

- 3 GW of bulk storage resources will be procured through a new, centralized, competitive mechanism – the Index Storage Credits; and
- 1.5 GW of new retail storage and 0.2 GW of new residential storage resources will be supported through an expansion of NYSERDA's existing region-specific block incentive programs.

Figure 2. New energy storage program procurement schedule

New Program Procurements	2023	2024	2025	2026	2027	2028	2029	2030
Bulk (3,000 MW)	0	1,000	1,000	1,000	0	0	0	0
Retail (1,500 MW)	0	375	375	375	375	0	0	0
Residential (200 MW)	13	27	27	27	27	27	27	27
Annual Total	13	1,402	1,402	1,402	402	27	27	27
Cumulative Total	13	1,415	2,817	4,218	4,620	4,647	4,673	4,700

Source: NYS PSC. *New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage (Case 18-E-0130)*. December 28, 2022. P. 34.

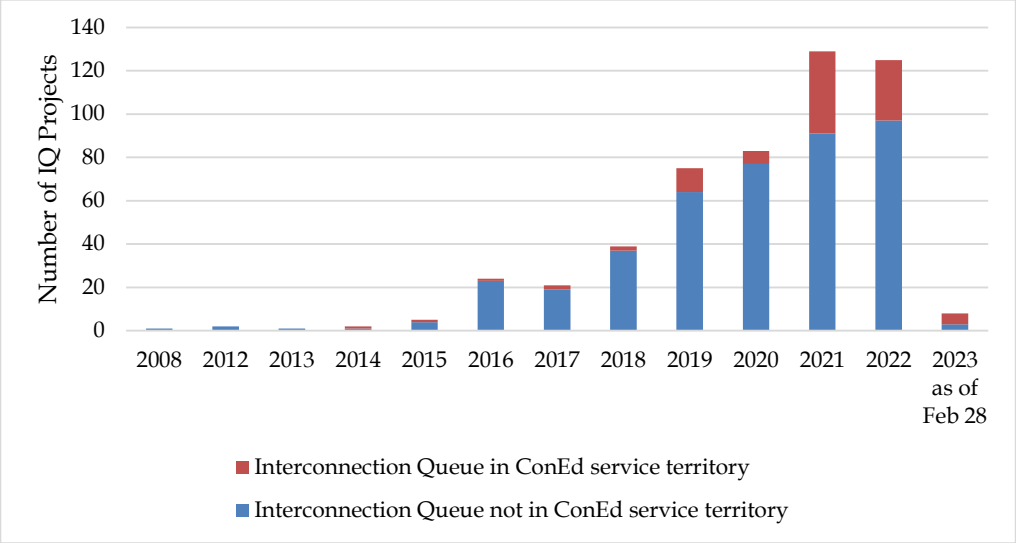
NYISO has reported a significant increase in the number of interconnection queue ("IQ") requests received in recent years, around 25%-33% of which are for resources located in ConEd's service territory (see Figure 3). Storage resources have contributed to this increase in active IQ projects, as shown in Figure 4 below. In the March 2022 Report, LEI acknowledged that ConEd included a discussion of its plans for "storage hubs" in its January 2022 Electric Long-Range Plan, which are designed to allow for the interconnection of storage resources in ConEd's service territory.[9] The recent increase in the State's energy storage targets and the proposed procurement schedule, which seeks to procure significant storage resources in the 2024-2026 timeframe in particular (see Figure 2 above), will further the need for ConEd to accommodate interconnection of these resources, and should be accounted for in ConEd's planning activities. Notably, the Joint Proposal

[8] NYSERDA. *New Framework Announced to Achieve Nation-Leading Six Gigawatts of Energy Storage by 2030.* December 28, 2022.

[9] ConEd. *Electric Long-Range Plan.* January 2022. P. 34.

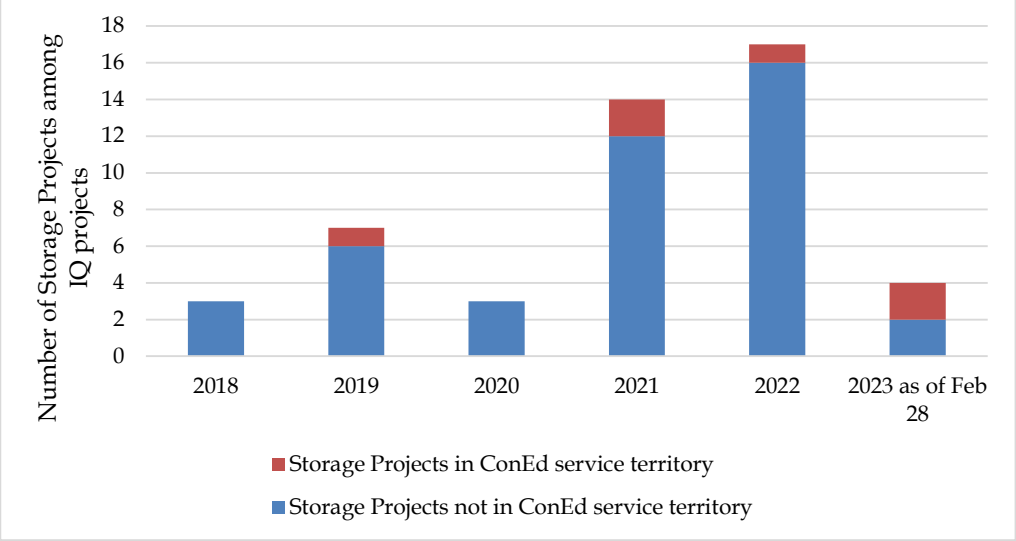
filed in ConEd's ongoing rate case includes two energy storage projects, which LEI describes in further detail later in Section 2.4.3.

Figure 3. NYISO active interconnection queue, all projects (2008-2023)



Source: NYISO. *Interconnection Queue.* With data as of February 28, 2023.

Figure 4. NYISO active interconnection queue, storage projects (2018-2023)



Source: NYISO. *Interconnection Queue.* With data as of February 28, 2023.

2.1.4 System planning directives

In response to the Coordinated Grid Planning Process proposal submitted jointly by the investor-owned utilities in New York State, including ConEd (as discussed in Section 5.3 of LEI's March

2022 Report), the NYS PSC has initiated a series of ongoing additional planning actions, including:[10]

- studying a potential meshed offshore transmission system for offshore wind;
- integrating energy storage in offshore wind projects;
- directing the use of high-voltage direct current ("HVDC") and advanced grid technologies to maximize the efficiency of offshore wind transmission projects;
- authorizing ConEd to propose a hub for the injection of offshore wind into NYC (see Section 2.4.1 for further details); and
- directing a research plan for additional onshore bulk transmission projects, and various initiatives on energy storage.

2.2 New York State Climate Action Council's Scoping Plan (December 2022)

In December 2022, the NYS Climate Action Council released its final Scoping Plan,[11] which sets out economy-wide recommendations to achieve the CLCPA's goals. The NYS CAC was created under the mandate of the CLCPA to prepare a roadmap to achieve the State's clean energy and climate goals and is made up of 22 voting members that represent New York State agencies and authorities. The Scoping Plan will be incorporated into the State's Energy Plan and will be updated every five years.

The integration analysis of the Scoping Plan finds that although achieving deep decarbonization is feasible by 2050, it will require critical investments and significant transformation in every sector, for example:

- **transportation sector:** Governor Hochul directed the NYS DEC to implement regulations requiring all new passenger cars, pickup trucks, and SUVs sold in the state to have zero-emissions by 2035. The Scoping Plan envisions that by 2030, approximately 3 million zero-emission vehicles will be needed (predominantly electric vehicles), accounting for nearly all new light-duty vehicle sales and almost half of new medium- and heavy-duty vehicle sales. By 2050, the Scoping Plan projects that nearly all vehicles in the state will have zero tailpipe emissions; and
- **building sector:** the Scoping Plan envisions that by 2030, heat pumps will account for most new purchases of space and water heating appliances, and will be used in 1-2 million homes and 10%-20% of commercial spaces. By 2050, the Scoping Plan projects that around

[10] NYISO. *Power Trends 2022: The Path to a Reliable, Greener Grid for New York.* June 2022. P. 44.

[11] New York State Climate Action Council. *Scoping Plan: Full Report.* December 2022.

85% of homes and commercial building spaces in the State will be electrified with a mix of energy-efficient heat pump technologies and thermal energy networks.

For the electricity sector, the Scoping Plan organizes its recommendations into three key themes: (i) transforming generation, (ii) enhancing the grid, and (iii) investing in new technology. As transportation and space heating transition to electricity, the Scoping Plan anticipates annual electricity demand will more than double by 2050. If the Scoping Plan is correct in its projections, then ConEd's current system planning is far behind, as its planning documents still rely on NYISO's baseline load forecast, which projects demand will only increase by around 30% by 2050 (see Section 2.3.1 for further details). Furthermore, the Scoping Plan forecasts a need for between 111-124 GW of total generation capacity by 2040, which represents a three-fold increase from the 37 GW installed as of 2022.[12]

In line with the findings in LEI's March 2022 Report, the Scoping Plan stresses the need for transmission and distribution investments to ensure delivery of energy given that generation resources are expected to be located primarily upstate and offshore, while load pockets will continue to be concentrated downstate, in and around the New York City metropolitan area. Specifically, the Scoping Plan recommends further planning and system upgrades in New York City and Long Island to facilitate 9 GW of offshore wind (notably higher than the 3 GW discussed in LEI's March 2022 Report). The Scoping Plan also calls on the NYS PSC to work with utilities and the NYISO to investigate potential non-wires alternatives (as recommended in LEI's March 2022 Report), speed up the pace of processing interconnection applications, and ensure adequate staffing levels at utilities and agencies.

As shown previously in Figure 3 in Section 2.1.3, the number of active projects in the NYISO interconnection queue over the last four years has nearly tripled the historical annual average. The substantial influx of new projects in the IQ has created an administrative challenge and bottleneck, which NYISO is currently attempting to resolve by developing reforms to streamline the interconnection process, balance flexibility considerations, and offer expedited interconnection study results (feasibility study, system impact study, and facilities study).[13]

Furthermore, the Scoping Plan recommends the development of an economy-wide cap-and-invest program to facilitate a clean technology market. Under the program envisioned in the Scoping Plan, which would co-exist with the Regional Greenhouse Gas Initiative ("RGGI"), large-scale GHG emitters and distributors of heating and transportation fuels would be required to purchase allowances for the carbon emissions associated with their activities. New York policymakers expect that in-state power plant generators would receive credits for payments made for RGGI allowances under the new system. The new cap-and-invest program may drive up the costs of certain services as emitters pass along the costs to customers.

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[12] Note that a detailed review of the Scoping Plan and independent verification of the calculations was beyond the scope of this memo.

[13] NYISO. *The NYISO Interconnection Process.* January 2023.

2.3 NYISO's recent reports

NYISO has published updates to three of its key periodic reports since LEI's March 2022 Report was completed, including the 2022 Load & Capacity Data Report ("Gold Book"), 2022 Power Trends Report, and 2022 Reliability Needs Assessment. The 2022 Gold Book indicates the gap between the baseline load forecast used by ConEd for its planning purposes and the CLCPA scenario identified in LEI's March 2022 Report still exists, emphasizing the extent of the challenge to meet the State's long-term decarbonization goals. The 2022 Power Trends Report and 2022 RNA also identify narrowing reliability margins in NYC, which point to the long-term difficulties the NYC system and ConEd will face in trying to meet the CLPCA goals while maintaining system reliability. LEI summarizes key findings from these reports below. In Section 2.3.4, LEI highlights specific findings for the NYC area.

2.3.1 2022 Load & Capacity Data Report (the "Gold Book", April 2022)

Released in April 2022, the 2022 Gold Book[14] presents NYISO's updated load and capacity data for 2022 and beyond: energy and peak demand forecasts are provided through 2052, while generating capacity is projected through 2032. LEI's March 2022 Report focused on two modeling scenarios from the 2021 Gold Book in particular, the baseline scenario[15] and the CLCPA case.[16] While the CLCPA case focuses on the anticipated load trajectory if CLCPA targets are achieved on time, the baseline scenario projects lower levels of electrification and is typically relied on by NYISO and the State's transmission owners for planning purposes. As stated in the March 2022 Report, LEI concludes that the baseline scenario is not consistent with attainment of the State's policy targets; electrification load needs to be much higher than forecasted under the baseline scenario in order to achieve decarbonization of the energy sector consistent with legislative mandates.

Compared to the 2021 Gold Book, the baseline load forecast in the 2022 Gold Book has increased across the entire 30-year forecast horizon (see orange solid and dotted lines in Figure 5 below). Although LEI's March 2022 Report points out that the baseline scenario does not necessarily represent a path to achieving public policy targets for decarbonization under the CLCPA mandate, the updated 2022 Gold Book does forecast a higher baseline scenario that reduces the gap (but does not completely close the gap) with the CLCPA case (see blue line in Figure 5). By 2050, load under the CLCPA case is still projected to be 30% higher than load under the 2022 Gold Book baseline scenario, illustrating the extent of the challenge to meet the State's long-term decarbonization goals.

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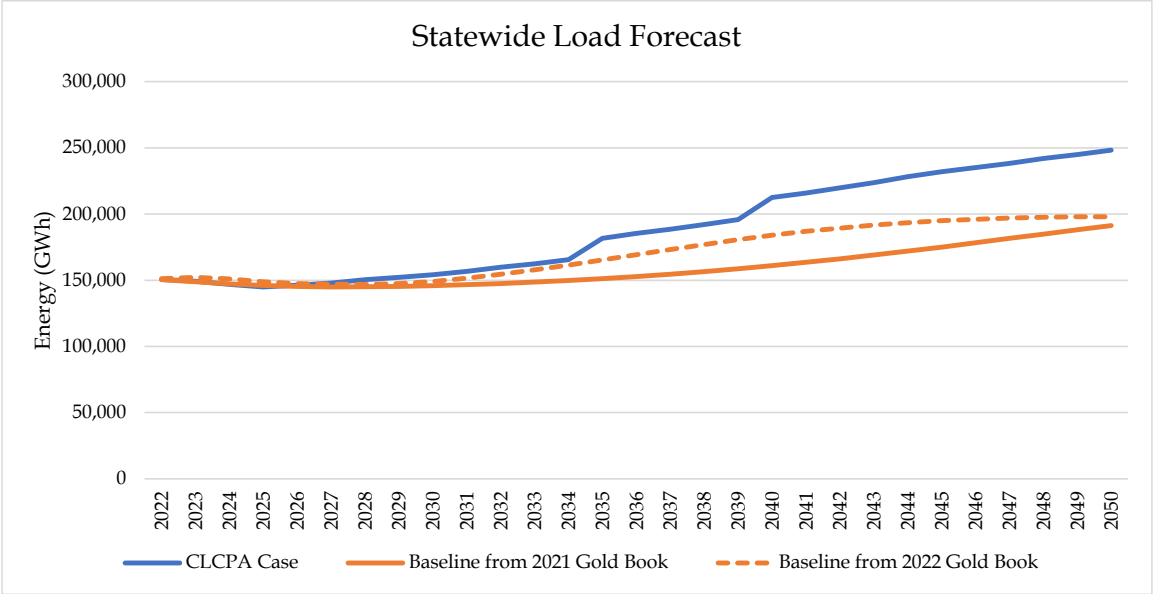
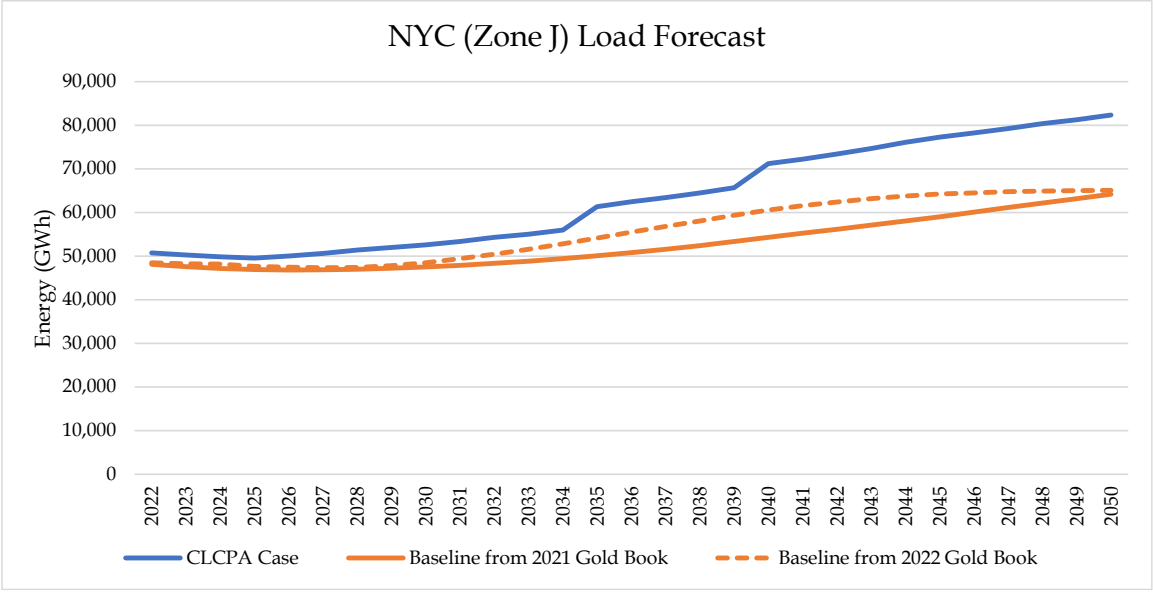
[14] NYISO. *2022 Load & Capacity Data Report.* April 2022.

[15] The baseline scenario represents NYISO's view of the load trajectory under typical economic growth conditions, substantial attainment of current energy efficiency programs, and medium penetration of distributed solar resources, electric vehicles, and electrification.

[16] The CLCPA case is based on NYISO's Climate Change Impact Study Phase I Report, which was published in December 2019, and was included in the 2021 Gold Book for reference.

Figure 5. NYISO statewide and NYC baseline vs. CLCPA load forecast (2021 vs. 2022 Gold Book)





Note: The CLCPA case is based on NYISO's Climate Change Impact Study Phase I Report, which was published in December 2019, and was included in the 2021 Gold Book for reference. Shift changes in values for 2035 and 2040 in the CLCPA case reflect significant assumed changes in end-use technologies necessary to work towards CLCPA policy targets.

Source: NYISO 2021 Gold Book; 2022 Gold Book.

At this time, and as illustrated in Figure 5 above, the gap between the load forecasts under the baseline scenario and the CLCPA case still exists. According to NYISO's Gold Book scenario assumptions, the difference between the scenarios can largely be attributed to the fact that the baseline scenario assumes only medium electrification of space heating and other end users, whereas the CLCPA case assumes a very high saturation of electric heating and space conditioning, and significant electrification of other end users.

In addition, the baseline scenario does not include any potential increases to load from low-carbon fuel production, such as hydrogen production via electrolysis, even though load growth from this source could be significant in future decades. For example, on April 7, 2023, New York along with other Northeastern states submitted a proposal for a Northeast Regional Clean Hydrogen Hub to the US Department of Energy ("DOE"), competing for a $1.25 billion share of the $8 billion in federal hydrogen hub funding available as part of the Infrastructure Investment and Jobs Act.[17] According to the NYS CAC, its Integration Analysis scenarios assume that large-scale hydrogen production may be needed to meet state decarbonization goals; as an example, the Integration Analysis Scenario 2 projects over 40,000 GWh of additional annual electricity usage for in-state hydrogen production by 2050.[18]

2.3.2 2022 Power Trends Report (June 2022)

Released in June 2022, the 2022 Power Trends Report[19] is NYISO's annual analysis of factors influencing the State's power grid and wholesale electricity markets. The Power Trends Report primarily relies on data from the 2022 Gold Book. Key takeaways from NYISO's 2022 Power Trends Report are generally consistent with LEI's findings from the March 2022 Report:

- **the influx of CLCPA-driven renewable resources will continue:** NYISO's newly established market rules (including those discussed previously in Section 2.1) will continue to advance the State's clean energy goals, driving significant investments in wind, solar, and battery storage and creating new risks and opportunities. The Power Trends Report predicts that CLCPA programs will lead to "an electric system that is increasingly dynamic, decentralized, and reliant on weather-dependent renewable generation";[20]

- **transmission and distribution ("T&D") utilities, including ConEd, will have to address growing reliability concerns.** NYISO notes that "[r]eliability margins are shrinking. Generators needed for reliability are planning to retire. Delays in the construction of new supply and transmission, higher than expected demand, and extreme weather could threaten reliability and resilience in the future";[21]

- **significant retirement of thermal generation will be replaced by renewables, which utilities, including ConEd, will need to accommodate and interconnect:** "[a] successful transition of the electric system requires replacing the reliability attributes of existing fossil-fueled generation with clean resources with similar capabilities. These attributes are

[17] NYSERDA. *Hydrogen.*

[18] NYS CAC. *Appendix G: Integration Analysis Technical Supplement to New York State Climate Action Council Scoping Plan.* December 2022. P. 52.

[19] NYISO. *Power Trends 2022: The Path to a Reliable, Greener Grid for New York.* June 2022.

[20] Ibid. P. 5.

[21] Ibid. P. 5.

critical to a dynamic and reliable future grid."[22] To enhance reliability, utilities will need to pursue planned T&D upgrades to increase the capacity of renewable energy that can be carried from generators to load; and

- **substantial transmission investment is needed to prepare the grid for offshore wind investments:** specifically, "[n]ew transmission is being built but more investment is necessary to support the delivery of offshore wind energy to connect new resources upstate to downstate load centers where demand is greatest. Planning for new transmission to support offshore wind is underway."[23]

2.3.3 2022 Reliability Needs Assessment (November 2022)

Released in November 2022, NYISO's 2022 Reliability Needs Assessment[24] evaluates the reliability of the New York bulk electric grid from 2026 through 2032,[25] considering forecasts of peak power demand, planned upgrades to the transmission system, and changes to the generation mix over the next ten years. The 2022 RNA is the first stage of the 2022-2023 Reliability Planning Process ("RPP") and will be followed by the 2022-2032 Comprehensive Reliability Plan ("CRP"). The 2022 RNA is based on information from the 2022 Gold Book, 2022 FERC 715 filings (power flow cases and auxiliary files), historical data, and market participant data. The prior RNA was issued in November 2020.[26]

Although the 2022 RNA primarily assesses transmission security and resource adequacy under NYISO's Base Case scenario (which aligns with the 2022 Gold Book's baseline demand forecast), it also includes other scenarios that are modeled for informational purposes, such as the 70x30 Policy Case, which aligns with the CLCPA goals. Key takeaways from the updated analysis include:

- **unlike the 2020 RNA, the 2022 RNA did not identify any actionable reliability transmission needs:** the 2022 RNA concluded that, as planned, the New York State Bulk Power Transmission Facilities will meet all currently applicable reliability criteria through 2032 for forecasted system demand, based on expected weather and under the assumption that proposed projects will meet their scheduled in-service dates (see Section 2.3.4.1 for further details);

- **however, the new RNA notes that narrowing reliability margins are a concern:** the 2022 RNA finds that resource adequacy and transmission security margins are tightening across the New York grid, from Buffalo to Long Island, but especially in the NYC area

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[22] Ibid. P. 5.

[23] Ibid. P. 5.

[24] NYISO. *2022 Reliability Needs Assessment (RNA).* November 15, 2022.

[25] The 2022 RNA study period assesses year 4 (2026) through year 10 (2032). Years 1 through 5 are assessed on a quarterly basis as part of NYISO's Short-Term Reliability Process.

[26] NYISO. *2020 Reliability Needs Assessment (RNA)*. November 18, 2020.

(see Section 2.3.4.2 for further details). Furthermore, a growing reliance on assistance from neighboring regions outside the state increases the risk of loss of load;

- **consistent with the 2020 RNA, the 2022 RNA finds that electrification will drive the state to become a winter peaking system:** the statewide grid is projected to become a winter peaking system by 2034, primarily driven by the electrification of space heating and transportation. Although the 2022 RNA expects the grid to meet reliability requirements in the winter for the next ten years, the system is expected to be stressed if there are gas supply shortage conditions, which can occur during cold snaps; and

- **achieving the CLCPA goals while maintaining reliability will require significant dispatchable resources:** with the increased intermittent renewable generation needed to meet the state policy goal of 70% renewable energy by 2030, the 2022 RNA estimates that at least 17 GW of existing thermal resources must be retained to continue to reliably serve forecasted demand. Beyond 2030, the 2022 RNA notes that dispatchable emissions-free resources will be needed to balance intermittent supply with demand.

LEI discusses the impact of the 2022 RNA findings on ConEd and the NYC service territory in Section 2.3.4 below.

2.3.4 Implications for the NYC area

Below, LEI highlights the specific findings from NYISO's recently released reports that have direct implications for ConEd and the NYC service territory.

2.3.4.1 Resolving short-term reliability needs identified in the 2020 RNA

As discussed in Section 5.2 of LEI's March 2022 Report, the 2020 RNA identified reliability criteria violations and system deficiencies that constituted actionable reliability needs in NYC starting in 2024 through 2030. These needs were primarily driven by a combination of high forecasted peak load and the assumed unavailability of around 1,500 MW of generation in NYC, as a result of the NYS DEC Peaker Rule.[27] In response to the 2020 RNA, ConEd identified three transmission projects (referred to as the Transmission Reliability and Clean Energy, or "TRACE", projects in LEI's March 2022 Report) – construction on one of these projects is currently underway; a complete status update on these projects is provided in Section 2.4.1 below.

After the 2020 RNA was published and ConEd identified the three TRACE projects, NYISO incorporated these transmission projects into its system planning analysis. NYISO also reduced its load forecast to account for the economic and societal effects arising from the COVID-19 pandemic and associated lockdowns. As a result of these updates, there were no remaining

[27] As described in Sections 3.1.7 and 4.2.1 of LEI's March 2022 Report, the Peaker Rule requires peaking generation units to reduce emissions of various pollutants causing smog, with compliance obligations phasing in between 2023 and 2025. Approximately 3,300 MW of simple-cycle turbines will be affected by the rule.

violations of reliability design criteria identified by the end of the 2020-2021 RPP cycle, the 2021-2030 CRP, nor the 2022 RNA.[28]

2.3.4.2 NYC's longer-term reliability challenges

While no actionable reliability needs have been identified in the current planning cycle, the 2022 RNA recognizes that reliability margins are expected to decrease over time as the clean energy transition gains momentum. As noted previously in Section 2.3.3, this is especially a concern in NYC, where there is limited generation and significant dependence on a few transmission interconnections to serve forecasted demand.

Under expected summer weather conditions, the NYC grid as planned and described in NYISO's 2022 RNA would have a limited transmission security margin by 2025 (about 50 MW), with the margin approaching zero within ten years, primarily due to the planned unavailability of simple-cycle combustion turbines to comply with the Peaker Rule by 2025.[29] Although the summer margin improves in 2026 with the scheduled addition of the Champlain Hudson Power Express ("CHPE")[30] connection from Quebec to NYC, the margin again shrinks thereafter as demand within NYC grows due to the electrification of heating and transportation.[31] Until the CHPE or other solutions are in-service, reliability margins will continue to be less than 100 MW under expected system demand conditions. In fact, reliability margins within NYC may be insufficient even under expected weather conditions if: (i) forecasted demand in NYC increases by as little as 60 MW in 2025; (ii) the CHPE project experiences a significant delay; or (iii) there are additional generator deactivations beyond what is already planned.[32] These risks could be exacerbated if the higher 70x30 Policy Case materializes.

In parallel, demand forecast uncertainty poses risks to system reliability in NYC throughout the next ten years, especially in 2025, when thermal generators are unavailable during the summer due to the Peaker Rule and the CHPE is not yet scheduled to be in service. In fact, the long-term demand forecast for NYC, which will be updated as part of the next Gold Book to be released by the end of April or early in May 2023, is expected to increase (and further exacerbate reliability challenges) due to strong commercial and residential growth, along with greater anticipated electrification of transportation and heating appliances.

These reliability challenges are amplified when considering the potential for extreme weather events, such as heatwaves or storms, which are beyond the expected weather conditions that underly current planning processes. Planning for more extreme system conditions, including heatwaves, cold snaps, and the corresponding impacts on fuel availability, is currently beyond

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[28] NYISO. *2022 Reliability Needs Assessment (RNA).* November 15, 2022. P. 20.

[29] Ibid. P. 7-8.

[30] While the CHPE is expected to contribute to reliability in the summer, the facility is modeled as not having any capacity obligation in the winter.

[31] NYISO. *2022 Reliability Needs Assessment (RNA).* November 15, 2022. P. 7-8.

[32] Ibid.

established design criteria. While the question of whether these events should be incorporated in design conditions is still under investigation,[33] this means that there are currently no system-wide plans from NYISO to prepare for more extreme weather.[34]

As it stands, the NYC system is heavily reliant on a single project (the CHPE) to address future resource adequacy and reliability concerns. Without other permanent solutions in place, NYISO suggests that in order to maintain grid reliability, some thermal generators affected by the Peaker Rule may need to remain in service until the CHPE or other solutions are completed.[35] In order to mitigate these reliability risks in NYC while supporting the CLCPA goals, ConEd may have to evaluate additional transmission solutions or potential non-wires alternatives, as well as continue its focus on energy efficiency and demand response efforts.

2.4 ConEd updates

Since January 28, 2022, ConEd has been undergoing a rate case proposing to change its three-year electric and gas rate plans. LEI reviewed recent updates to ConEd's transmission and distribution system plans as summarized in the Joint Proposal issued in ConEd's ongoing rate case.

2.4.1 Transmission planning update

As discussed in Section 5.2 and Section 5.3 of LEI's March 2022 Report, ConEd identified three Reliable Clean City Projects (previously referred to as the TRACE projects) which are intended to address local transmission deficiencies (due to the planned retirement and unavailability of fossil fuel-fired generation) by upgrading ConEd's electric substations and building new local transmission lines. The projects will increase the transfer capacity between the bulk power system and local transmission system, as well as allow greater delivery of renewable energy from outside of NYC.[36]

The Reliable Clean City Projects are designed to address short-term reliability needs and include:

- a new (2nd) 345/138 kV phase angle regulator ("PAR") controlled Rainey-Corona feeder;

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[33] Specifically, FERC issued a Notice of Proposed Rulemaking ("NOPR") in June 2022 to "address reliability concerns pertaining to transmission system planning for extreme heat or cold weather events that impact the Reliable Operation of the Bulk-Power System" (Docket No. RM22-10-000). In response to the NOPR, NYISO supported FERC's guidance to the North American Electric Reliability Corporation ("NERC") and the industry at large to help stakeholders plan for, and develop responses to, extreme heat and cold (*see* FERC. *Comments of the New York Independent System Operator, Inc. (Docket No. RM22-10-000).* August 26, 2022). At the state level, the New York State Reliability Council ("NYSRC") has established goals to identify actions to preserve New York Control Area ("NYCA") reliability during extreme weather events and other extreme system conditions (*see* NYSRC. *NYSRC 2022 Goals.* Revised May 8, 2022).

[34] NYISO. *2022 Reliability Needs Assessment (RNA).* November 15, 2022. P. 12.

[35] Ibid. P. 7.

[36] NYS PSC. *PSC Approves $800 Million Investment to Maintain and Improve Reliability, Achieve Climate-Change Goals, Enhance Resiliency of NYC Transmission Grid (Case No. 19-E-0065).* April 15, 2021.

- a new (3rd) 345/138 kV PAR controlled Gowanus-Greenwood feeder; and
- a new 345/138 kV PAR controlled Goethals-Fox Hills feeder.

Construction on the Rainey-Corona feeder in Queens began in January 2022 and is expected to be completed by summer 2023. The project will address hyper local transmission reliability deficiencies in the Queens transmission load area after ConEd retires gas turbine generators in Astoria by May 2023. The additional Reliable Clean City Projects in Brooklyn and Staten Island are expected to be completed by summer 2025.[37]

ConEd also proposed multiple Phase 2 transmission projects, including two clean energy hubs, to facilitate the retirement of peaker generation units and unlock new delivery pathways for renewable power to reach customers in NYC. The Phase 2 transmission projects are designed to address longer-term reliability needs and are planned to be in-service beginning in 2027.[38]

In January 2022, the NYS PSC issued an order authorizing ConEd to file additional details with respect to its proposed Brooklyn Clean Energy Hub, which is expected to support the interconnection of between 5-6 GW of offshore wind into lower Manhattan.[39] In April 2022, ConEd filed a petition with the NYS PSC seeking cost recovery for the Brooklyn Clean Energy Hub (estimated at $1 billion), and proposed locating the project next to the existing Farragut Substation and the East River. At the time, ConEd anticipated the Brooklyn Clean Energy Hub would require demolition of retired facilities and that construction would be completed in two stages. The first stage would be completed in 2027, at which point the Brooklyn Clean Energy Hub would be in service and ready to accept large-scale renewable generation. The second stage would be completed by 2032, increasing the project's capability to receive additional offshore wind generation, and enhancing its ability to withstand extreme weather.[40]

However, interveners raised several concerns regarding ConEd's proposal, including questioning the merits of interconnecting between 5-6 GW of offshore wind at essentially a single location, as well as the lack of consideration of the potential to interconnect around 2.6 GW of energy-generating resources at the Astoria Annex and Rainey Substations – i.e., the CHPE and Clean Path New York ("CPNY") projects. Although ConEd submitted a revised petition proposing two alternative project configurations in December 2022,[41] the City of New York raised similar concerns regarding reliability, resiliency, and cost-effectiveness in its latest comments filed in March 2023. The proceeding is still ongoing, with the City of New York urging the NYS

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[37] ConEd. *Reliable Clean City Projects.*

[38] NYS PSC. *Utility Transmission and Distribution Investment Working Group Report (Case 20-E-0197).* November 2, 2020.

[39] NYS PSC. *Order on Power Grid Study Recommendations (Case Nos. 20-E-0197, 18-E-0071, and 15-E-0302).* January 20, 2022.

[40] NYS PSC. *Petition of Consolidated Edison Company of New York, Inc. for Approval to Recover Costs of Brooklyn Clean Energy Hub (Case 20-E-0197).* April 15, 2022.

[41] NYS PSC. *Consolidated Edison Company of New York, Inc. Petition Supplement to Propose an Alternative Brooklyn Clean Energy Hub (Case 20-E-0197).* December 13, 2022.

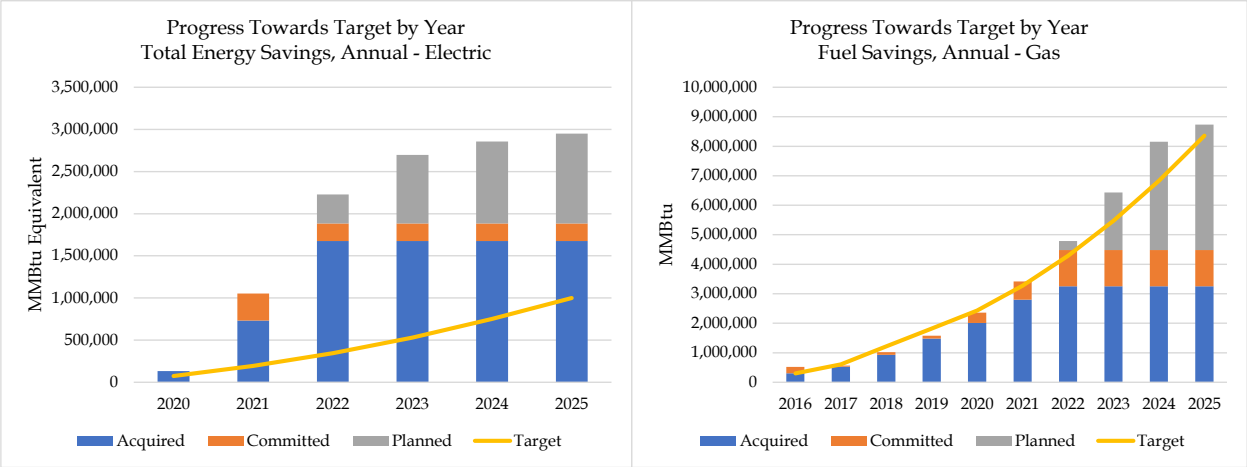
PSC and ConEd to conduct more analysis and assess other options for addressing the offshore wind interconnection issue.[42]

2.4.2 Distribution planning update

Although it has been a year since LEI's March 2022 Report, ConEd has not released updated distribution system plans, such as the System Energy Efficiency Plan ("SEEP"),[43] the Five-year Capital Spending Plan, or the Distributed System Implementation Plan ("DSIP"). However, there is additional information about ConEd's progress with respect to its energy efficiency goals from NYSERDA's Clean Energy Dashboard.

According to its 2021 SEEP Annual Report, ConEd achieved electric savings (656,371 MWh) that exceeded the New Efficiency: New York ("NENY") electric target (438,207 MWh) in 2021, and had already expended $101 million out of a $151 million total budget for its electric energy efficiency portfolio. On the gas side, the 2021 SEEP Annual Report noted that ConEd fell short of its 2021 NENY target (achieving 513,068 MMBtu of gas savings relative to a target of 810,762 MMBtu), and had expended $28 million out of a $31 million total budget for its gas energy efficiency portfolio. This shortfall was attributed to the delay of a major gas project and multiple multifamily gas efficiency projects.[44]

Figure 6. ConEd's annual and forecasted energy efficiency savings, electric (left) and gas (right)



Source: NYSERDA Clean Energy Dashboard.

Based on NYSERDA's Clean Energy Dashboard, with data through 2022 Q3, ConEd is still on track to exceed its targets on the electric side (see the chart on the left-hand side in Figure 6).

[42] NY PSC. *NYC Comments on Proposed Brooklyn Clean Energy Hub (Case 20-E-0197).* July 11, 2022; NY PSC. *NYC Comments on Alternative Clean Energy Hub Petition (Case 20-E-0197).* March 6, 2023.

[43] The latest SEEP was filed on September 15, 2020 for the period 2019 through 2025. In contrast, the SEEP Annual Report discussed in this section is the annual performance report, which tracks progress on the SEEP.

[44] ConEd. *2021 System Energy Efficiency Plan (SEEP) Annual Report.* March 31, 2022.

However, on the gas side, while ConEd's planned savings align with the NENY targets, the savings that have been acquired and committed so far fall short of the targets (see the chart on the right-hand side in Figure 6).[45]

2.4.3 Rate case update (Case Nos. 22-E-0064 & 22-G-0065)

In February 2023, ConEd, the City of New York, NYS DPS Staff, NYECC, and other signatory parties filed a Joint Proposal for ConEd's three-year electric and gas rate plans.[46] These updated rate plans were negotiated over more than eight months in response to ConEd's initial proposal in January 2022. Notably, the Joint Proposal recommends levelized annual revenue requirement increases of around 4% for 2023 to 2025,[47] which is lower than the increase anticipated in the Electric Long-Range Plan published in January 2022 (discussed in Section 4.3.2 of LEI's March 2022 Report), in which ConEd estimated increases to its electric revenue requirement of approximately 9% per year through 2031.

On the electric side, the Joint Proposal contains numerous provisions and includes multiple projects that are intended to support the CLCPA goals by:

- enhancing existing energy efficiency programs;
- enhancing the electric system in anticipation of transportation and building electrification;
- providing funding for improved electric reliability and resiliency;
- facilitating clean energy;
- encouraging the continued development of non-wires alternatives;
- improving data sharing for energy efficiency benchmarking; and
- providing data on the results of programs and electric service outages in disadvantaged communities.

For example, the Joint Proposal puts forth expanded reliability and resiliency programs to support electrification efforts in ConEd's service territory. In addition, the Joint Proposal includes several new programs, including:[48]

- **a new set of customer recommendation and analysis tools**, which will help guide customers through energy efficiency and electrification decisions as well as simplify

[45] NYSERDA. *Clean Energy Dashboard.*

[46] NYS PSC. *Summary of Joint Proposal (Case Nos. 22-E-0064 and 22-G-0065).* February 16, 2023.

[47] NYS PSC. *Joint Proposal (Case Nos. 22-E-0064 and 22-G-0065).* February 16, 2023.

[48] Ibid. P. 12.

program participation for contractors installing associated equipment. The cost is estimated to be $35 million;

- **a new DER make ready program for low-income customers**, with a capital investment of approximately $26 million, which will help defray the costs of installing solar and energy storage equipment for low-income customers to ensure that they also benefit from New York's clean energy transition; and

- **two new company-owned and operated energy storage systems** to help meet system needs at the Glendale and Freshkills substations in Queens and Staten Island, respectively. The 5.8 MW/23.3 MWh storage system at the Glendale substation and 11.6 MW/46.4 MWh storage system at the Freshkills substation are expected to provide peak shaving and voltage support services.

Furthermore, the Joint Proposal sets forth a portfolio of earnings adjustment mechanisms ("EAMs")[49] to incentivize ConEd to pursue activities in support of the CLCPA goals, including:[50]

- the **Smart Building Electrification metric**, which aims to support the cost-efficient electrification of buildings by encouraging ConEd to consider the use of ground-source heat pumps, waste heat recovery systems, building envelope measures, and advanced building controls;

- the **Demand Response and Managed Charging metrics**, which are intended to incent increasing participation in demand response programs to minimize the costs of building out new system architecture and equipment to serve increased demand;

- the **Light-Duty Vehicle Emissions and Transportation Interconnection Timeline metrics**, which seek to accelerate light duty electric vehicle adoption and consequently reduce emissions, by accelerating ConEd's timeline for interconnecting transportation electrification projects; and

- the **DER Utilization – Solar and Storage metrics**, which are intended to expand the deployment of solar DERs in ConEd's service territory, support the installation of customer-sited energy storage systems of 5 MW or less, and encourage ConEd to interconnect as many clean energy resources as possible to meet and exceed New York's solar and energy storage deployment goals.

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[49] EAMs are performance incentive metrics implemented to support the Reforming the Energy Vision plan in New York. Each utility proposes to the NYS PSC performance areas, metrics, targets, and incentive levels it wishes to earn. Most of the EAMs center around innovative or emergent performance targets. EAMs are incentive-only mechanisms which reward utilities but do not penalize them if targets are not met. Although the NYS PSC prefers having a similar selection of EAMs across utilities, EAMs are ultimately set on a case-by-case basis.

[50] Ibid.

In March 2023, NYS DPS Staff issued a statement in support of the Joint Proposal, recommending that the Commission adopt the provisions and establish electric and gas rate plans for ConEd effective as of January 1, 2023.

In the March 2022 Report, LEI determined that ConEd's long-term planning efforts have to some degree incorporated investments to support electric vehicles and building electrification, promote energy efficiency programs, and invest in grid modernization to support DERs on its system. The programs and EAMs included in the Joint Proposal further ConEd's efforts to facilitate the CLCPA's goals.

3 Gas: new developments

Since March 2022, several regulatory decisions and policy papers have been released related to natural gas use in New York, which impact natural gas system planning and investment in the state. The regulatory decisions and policy papers reflect the directives in the CLCPA to reduce GHG emissions 40% below 1990 levels by 2030 and 85% by 2050. For example, the NYS PSC issued an order in the state-wide gas planning proceeding described in Section 7.3 of LEI's March 2022 Report. The NYS CAC's final Scoping Plan, which LEI discussed from the perspective of the electric sector previously in Section 2.2, also put forth recommendations to divest from gas infrastructure in the State. Furthermore, ConEd's Joint Proposal, which LEI discussed from the perspective of the electric sector previously in Section 2.4.3, also included guidance on natural gas programs to enable greater alignment with the CLCPA objectives. In response to these developments, ConEd has put forth initiatives as part of its Joint Proposal that move away from gas main replacement and instead focus on decarbonization efforts, for example through plans to purchase certified gas and remove or electricity portions of its gas system. These are an indicator that ConEd has begun to re-examine its planned investments, as recommended by LEI in the March 2022 report.

3.1 NYS PSC's gas planning order (May 2022)

In May 2022, the NYS PSC issued an order in Case No. 20-G-0131[51] establishing long-term gas planning procedures in the state. The proceeding was initiated after gas utilities, including ConEd, instituted moratoria as a result of safety and reliability concerns with gas service provision, as well as supply constraints, which created an inability to extend service to new customers. The NYS PSC viewed these moratoria as an opportunity to seek alternatives to natural gas usage and to address the CLCPA requirements of reducing emissions from all sectors of the economy. The NYS PSC order in Case No. 20-G-0131 establishes several requirements for gas planning, including requiring utilities to summarize emissions impacts in their long-term plans, which will have an impact on ConEd and NYC infrastructure plans. The NYS PSC order in Case No. 20-G-0131 also sets forth the following:

- **requirement to include a "no infrastructure option":** utilities are required to propose and prioritize retirements of leaking/leak-prone gas pipeline segments and other "no infrastructure option" scenarios as alternatives to traditional projects for meeting reliability needs. These scenarios could include demand response, electrification, and energy efficiency programs (including weatherization). If a "no infrastructure option" is found not to be feasible, the utility is expected to submit sufficient documentation to support its claim. The order also recommends that utilities include NPA suitability criteria when filing their long-term plans. In accordance with this, ConEd submitted an NPA Implementation Plan to the Commission in the months following the order's release. ConEd, in its recent Joint Proposal, also plans to develop NPA projects using this framework over the three rate years. This is described in more detail in Section 3.3 below;

[51] NYS PSC. *Order Adopting Gas System Planning Process (Case No. 20-G-0131).* May 12, 2022.

- **examination of renewable natural gas ("RNG") use:** the NYS PSC did not institute an RNG requirement at this time, given that RNG availability in the state is still limited. However, the order explicitly encourages utilities to consider its use in their long-term plans. RNG has the potential to reduce GHG emissions and local pollution by meeting an estimated 10% of New York's current gas demand; and

- **utilities required to file reports on the 100-foot rule:** Part 230 of the New York Codes, Rules and Regulations ("NYCRR"), also known as "the 100-foot rule", essentially enables customers within 100 feet of an existing gas line to request connection to a utility's gas service, and requires utilities to construct the necessary connection facilities at no cost to the requesting customer. This rule, as identified by the order, does not support GHG emissions reduction efforts and conflicts with the CLCPA goals, as it requires the construction of additional pipeline infrastructure. As such, the rule will be revised following the submission of reports by the utilities on the costs they faced in adhering to the 100-foot rule from 2017 to 2021.

The NYS PSC order further acknowledges that hydrogen could play a key role in the decarbonization of the State's natural gas distribution system, but deferred any concrete action on this until it could consider the recommendations included in the NYS CAC's final Scoping Plan, which LEI discusses next.

3.2 NYS CAC's Scoping Plan (December 2022)

In December 2022, the NYS CAC released its final Scoping Plan,[52] detailing actions to achieve economy wide GHG emissions reductions in line with the CLCPA targets. As it pertains to the gas sector, the Scoping Plan puts forth several policy recommendations to promote energy efficient buildings, utilize waste gases, and transition the State's natural gas distribution systems:

- **buildings:** the Scoping Plan calls for the state to adopt advanced codes that require new residential and commercial buildings to be net-zero and highly efficient without fossil-fuel use. It also recommends the adoption of equipment standards which will require existing buildings to transition to newer and efficient technologies, such as energy efficient heat pumps. As discussed previously in Section 2.2, the Scoping Plan targets electrifying around 85% of homes and commercial buildings in the state by 2050 through these policies. As of 2021, around 60% of homes in the state are heated with natural gas;[53]

- **waste biogas utilization:** the Scoping Plan proposes a set of policies to direct solid waste management facilities to capture unavoidable biogases for local use, while the state continues its electrification process and to avoid reliance on fossil fuels; and

- **gas system transition and further NYS PSC action:** the Scoping Plan notes that coordination across different sectors will be required to reduce natural gas use while

[52] New York State Climate Action Council. *Scoping Plan: Full Report.* December 2022.

[53] US Energy Information Administration. *State Profile and Energy Estimates: New York.* November 17, 2022.

downsizing the gas distribution system. A detailed framework supporting this integrated planning is laid out in the Scoping Plan to ensure this transition occurs without compromising reliability or resiliency.

Specifically, the Scoping Plan calls on the NYS PSC to support the implementation of NYS DEC regulations and to formulate additional regulations that set emissions reduction targets for gas utilities. In addition, it requests that the NYS PSC direct utilities to implement various decarbonization measures, such as the deployment of advanced leak detection technology to repair and replace leak-prone pipes. It also encourages stakeholders to continue their research and development ("R&D") efforts on emissions measurement technologies in gas production and transmission, which would facilitate the development of a program that more accurately estimates emissions and improves inventory reporting. Finally, the Scoping Plan recommends that the NYS PSC develop a detailed timeline for the State's gas system transition that aligns with the target dates of other sectors to ensure continuous reliability of energy delivery.

3.3 ConEd's Joint Proposal (February 2023)

In February 2023, ConEd and other signatory parties filed a Joint Proposal,[54] which LEI discussed previously in Section 2.4.3 as it relates to ConEd's electric operations. The Joint Proposal outlines several provisions for ConEd's gas operations in order to have it reconcile with the CLCPA targets, including:

- **energy efficiency programs:** ConEd will invest approximately $400 million between 2023 and 2025 on three energy efficiency programs related to its gas operations – namely, the Low Moderate Income, Non-Low Moderate Income and Heat Pump (Clean Heat) programs;

- **certified natural gas pilot:** the Joint Proposal supports a pilot program for ConEd enabling the purchase of certified gas. Certified gas is natural gas that is assessed by an independent third party to have been produced under best practices for minimal environmental and community impacts. This program is projected to cost over $800,000 per year during the rate period, where purchases would be limited to suppliers with the required certifications;

- **advanced leak detection:** at least one-third of ConEd's gas distribution system will undergo advanced leak detection in each year of the three-year rate period, to identify and reduce the number of high emissions leaks;

- **gas infrastructure reduction or replacement program:** the Joint Proposal supports funding for the continuation of a program that involves the removal or electrification of gas mains that are either located at the end of ConEd's system or that connect only a small number of customers. The Joint Proposal also supports requiring customers to provide

[54] NYS PSC. *Summary of Joint Proposal (Case Nos. 22-E-0064 and 22-G-0065)*. February 16, 2023.

written confirmation that they have been provided information on non-fossil fuel alternatives and are aware of climate protection laws and regulations before connecting to ConEd's natural gas service;

- **gas service line replacement program:** the Joint Proposal also includes a new program, where ConEd commits to promoting electrification efforts over the replacement of gas mains and investing in NPA projects;

- **environmental remediation:** ConEd plans to continue remediation activities at all 51 of its former manufactured gas plant ("MGP") sites to address any possible environmental damages; and

- **R&D:** the Joint Proposal details focused R&D spending for ConEd on enhanced decarbonization technologies, such as leak detectors and emissions avoidance.

Based on the revised figures set forth in the Joint Proposal for its planned gas capital expenditures, ConEd has agreed to decrease its planned investments over the three-year rate period by almost $250 million relative to its initial proposal (see Figure 7 below) and shift the focus on electrification and other alternatives.

Figure 7. ConEd planned capital expenditures (gas)

	$ millions		
	2023	2024	2025
Initial Proposal	$1,177	$1,215	$1,150
Joint Proposal	$1,120	$1,115	$1,060
Difference	$57	$100	$90

Source: NYS PSC Joint Proposal.

4 Impact on LEI's findings from the March 2022 Report

LEI briefly summarizes the findings put forth in its March 2022 Report with respect to the electric and gas sectors (see Section 4.1), before discussing how the recent developments explored above continue to support its recommendations (see Section 4.2).

4.1 Summary of the March 2022 Report

Figure 8 summarizes the key recommendations from LEI's March 2022 Report, which are described in further detail below.

Figure 8. Major takeaways of LEI's review of ConEd's plans

Source: See Figure 1 of LEI's March 2022 Report.

On the electric side, LEI's March 2022 Report found that ConEd's planning analyses did not appear to have contemplated a combination of factors, including additional programs to support or mandate electrification, additional incentives for the purchase of electric vehicles, the retirement of existing thermal generation resources, the need to interconnect large quantities of new clean energy resources, and the uncertainty surrounding future developments. As a result, LEI recommended that ConEd should ensure its capital plans incorporate these investments needed to maintain system reliability while achieving the State's public policy objectives. With respect to load forecasting, LEI's March 2022 Report emphasized that this would need to incorporate assumptions above and beyond the baseline scenarios that NYISO and transmission owners currently rely on for system planning, which are not entirely consistent with the CLCPA targets. Furthermore, LEI stressed the importance for ConEd to not only account for increasing penetration of distributed and demand-side resources, including energy storage resources, in its transmission and distribution planning, but also to appropriately consider cost-effective non-

wires alternatives that complement transmission infrastructure investments and avoid unnecessary spending which would result in even higher costs to ratepayers.

On the gas side, LEI's March 2022 Report found that although the CLCPA targets and other local mandates are expected to cause a decline in natural gas demand over time, ConEd's plans for future investment in gas infrastructure seemed to be expansive and inconsistent with local gas usage policies. For example, LEI found that the demand forecasts underlying ConEd's capital plans did not account for the impact of NYC Local Law 154 on energy use in new buildings. Overall, LEI cautioned that increased investment in gas infrastructure would pose the risk of stranded costs if gas usage declines as forecast.

4.2 Impact of recent developments on LEI's findings

In terms of the electric load forecasts underlying ConEd's planning activities, the updated Gold Book described in Section 2.3.1 incorporates a higher baseline load forecast that better aligns but still does not close the gap to the CLCPA case. For example, by 2050, the CLCPA case is still 30% higher than the 2022 Gold Book baseline forecast, illustrating the extent of the challenge to meet the State's long-term decarbonization goals. Consistent with the recommendations in LEI's March 2022 Report, the updated baseline forecast should be incorporated in ConEd's planning efforts going forward; ConEd should also consider the extent to which higher load forecast assumptions that are more in line with achieving the CLCPA targets should be included for system planning purposes.

As for electric transmission planning, the updated RNA (described in Section 2.3.3) draws attention to the shrinking reliability margins in New York City as a result of the unavailability of gas plants in compliance with the NYS DEC's Peaker Rule. Furthermore, transmission security margins are heavily reliant on the timely completion of planned transmission projects, including the CHPE. Higher than forecasted demand, significant delays in projects, additional generator unavailability, or extreme weather events all could cause reliability deficiencies in ConEd's service territory. As such, and consistent with the recommendations in LEI's March 2022 Report, these factors should be considered as ConEd evaluates additional transmission solutions and non-wires alternatives.

With respect to electric distribution planning, the expanded statewide energy storage mandate described in Section 2.1.3 will require ConEd to continue its grid modernization efforts to accommodate the increased deployment of DERs. The Joint Proposal in ConEd's ongoing rate case includes a DER Make-Ready program for low-income customers, which represents a step in the right direction for strengthening ConEd's efforts in support of public policy goals.

Finally, for the gas sector, the NYS PSC's order adopting a gas system planning process (described in Section 3.1) and the NYS CAC's final Scoping Plan (described in Section 3.2), both encourage utilities to consider NPA investments as the state transitions the gas system, which is consistent with the recommendations in LEI's March 2022 Report for ConEd to re-examine its planned gas infrastructure investments. The Joint Proposal highlights a shift, during the three-year rate plan, away from a focus on gas main replacement to decarbonizing ConEd's system through planned initiatives such as purchasing certified gas and removing or electrifying portions of its system.

5 Appendix: List of works cited

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