CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CLIMATE LEADERSHIP AND COMMUNITY PROTECTION ACT PANEL

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I. Panel Introduction

A. Panel Introduction and Qualifications of Panel Members

Q. Would the members of the Panel please state their names and business addresses?

A. Yes. Patrick G. McHugh, Katherine Boden, Milovan Blair, Leonard P. Singh, Gurudatta Nadkarni, Christopher Ivan Kimball, Christopher Raup, and Venetia Lannon. The business address for each panelist is 4 Irving Place, New York, NY 10003.

Q. By whom are you employed, in what capacity, and what are your backgrounds and qualifications?

A. (McHugh)

I am Patrick G. McHugh, Senior Vice President of Electric Operations. I assumed this responsibility in July 2021, after serving as Vice President of Engineering and Planning for Con Edison. I currently have overall responsibility for Con Edison's Electric Distribution Operations, Engineering and Planning, and Con Edison's Energy Services organization, which coordinates all aspects of the delivery of electric service to customers.

I have been with the Company for over 30 years after joining in 1991 as a Management Intern, and have held

various positions with increasing responsibility including Vice President of Engineering and Planning, Vice President of Brooklyn/Queens Electric Operations, Chief Engineer of Distribution Engineering, General Manager Protective Systems Testing, Senior System Operator, and Chief District Operator. I hold a Bachelor of Science degree in electrical engineering from Clarkson University, a Bachelor of Arts degree in physics from Plattsburgh State University, and a master's degree in electrical engineering from Clarkson University. I have also completed the Siemens PTI Transmissions course.

(Boden)

I am Katherine Boden, Senior Vice President of Gas Operations for Con Edison. I am responsible for the overall Con Edison Gas Operations, Engineering, and Compliance and Quality Assessment groups, within Gas. I joined Consolidated Edison in 1990 as a Management Intern. I have held various positions of increasing responsibility in Construction, Operations, and Engineering in Electric Operations. In 2005, I was promoted to Vice President Manhattan Electric Operations, a position that I held through 2010. In 2010 I was assigned to Gas Operations as

Vice President. In 2017, I was assigned to Gas Engineering as Vice President. In 2021, I was promoted to my current position as Senior Vice Present Gas Operations.

I hold a bachelor's degree in Electrical Engineering from Polytechnic University, and a Master of Business Administration in Management from Hofstra University. I also completed PTI's Power Technology Course, PTI's Electric Distribution System Engineering Course, and Gas Technology Institute's (GTI) Registered Gas Distribution Professional Course. I sit on the Board of Solar One, the Board of the Institute of Gas Innovation Technology (I-GIT) at Stony Brook University, the Board of the Northeast Gas Association and am a member of American Gas Association Leadership Council. I am engaged in several R&D initiatives, most notably the EPRI-GTI Low Carbon Resources Initiative.

(Blair)

I am Milovan (Milo) Blair, Senior Vice President of Central Operations for Con Edison. My responsibilities include the planning, design, operation and maintenance (O&M) of the Company's electric transmission system, substations, primary control center, electric and steam

generating plants, and steam distribution system. I am also responsible for the Company's engineering and construction activities. I joined Con Edison in 1991 as a Management Intern and have served as General Manager, Substation Operations-Northern region, General Manager, System Operations; Vice President, System and Transmission Operations and Vice President Brooklyn/Queens Electric Operations.

I hold an MBA in Information Systems from St. John's University and a Bachelor of Science degree in Electrical Engineering from the City University of New York. I have completed the Senior Executive Program at Columbia University and the Siemens PTI Power Technology course. I currently serve on the executive board of the YMCA Bedford Stuyvesant Chapter and as a leadership council member of the City College of New York Grove School of Engineering. (Singh)

I am Leonard P. Singh, Senior Vice President of Customer Energy Solutions at Con Edison, a position I have held since 2021. I lead a team responsible for distributed resource integration into infrastructure planning, battery storage, energy efficiency, rate design, heating

electrification and electric vehicle initiatives, non-wires and non-pipeline solutions, utility of the future, as well as the implementation of the Company's smart meter program, its new customer information system, the integrated data energy resource, and data access framework. Prior to my current position, I held numerous positions in operations and engineering across the Company's three commodities (Electric, Gas, and Steam) since joining the company in 1991, including an operating supervisor, Construction Manager, Chief Engineer, General Manager and Vice President, with increasing responsibility and breadth. I hold a Bachelor of Science in Electrical Engineering from Massachusetts Institute of Technology, Master of Science in Electrical Engineering from Brooklyn Polytechnic University, and a Master of Business Administration from Columbia University.

(Nadkarni)

I am Gurudatta Nadkarni. I am employed by Con Edison and currently hold the position of Vice President, Strategic Planning. I am responsible for the Company's long-range planning, climate risk and resilience, strategic initiatives, and mergers and acquisitions efforts. The

most recent Long-Range Plans were completed January 2022. Before joining Con Edison, I held a number of positions in corporate strategy and development including Managing Director of growth at Duke Energy and a management consultant at McKinsey & Company. I was also a Senior Research Scientist at International Paper. I graduated from Vassar College with a Bachelor of Arts degree in Physics and Mathematics-Computer Science. I earned Master of Science degrees in Physics and Colloid, Polymer and Surface Science, and a Ph.D in Physics from Carnegie Mellon University. I also earned a Master of Business Administration degree in Finance and Marketing from the University of Chicago. I joined Con Edison as Vice President, Strategic Planning in 2008.

(Kimball)

I am Christopher Ivan Kimball, Vice President of Energy Management, a position I have held since July of 2012. I joined Con Edison in 1987 as a Management Intern and held various positions of increasing responsibility. In December 1998 I was transferred to Consolidated Edison Energy, Inc. (“Con Edison Energy”) as Director of Asset management where my responsibilities included day-to-day scheduling, fuel

procurement, electricity market sales and planning, and associated regulatory and accounting matters of generating facilities owned by Consolidated Edison Development, Inc. ("Con Edison Development") and other contracted generating facilities. In August 2008, I returned to Con Edison as Director of Electricity Supply, responsible for day-to-day electricity supply operations, including the scheduling of generation and load bids with the New York Independent System Operator ("NYISO") and neighboring control areas; developing the overall electric power procurement plans for full service customers; developing and implementing Con Edison's electric hedging program; strategically evaluating and participating in capacity and transmission congestion contract ("TCC") auctions; managing contractual rights with various non-utility generators; and processing monthly invoices for wholesale purchases and sales of capacity, energy, and TCCs for Con Edison and its affiliates, Orange and Rockland Utilities, Inc. ("ORU") and Rockland Electric Company ("RECO").

I hold a Bachelor of Science degree and a Master of Science degree in Nuclear Engineering from Rensselaer Polytechnic Institute.

(Raup)

I am Christopher Raup, Vice President, Energy Policy and Regulatory Affairs (EPRA). In my current position, as of January 1, 2022, I oversee the State Regulatory Affairs and Energy Markets Policy Group, with responsibility for managing the regulatory relationship with our state utility regulators (the New York Public Service Commission and the New Jersey Board of Public Utilities) and federal economic regulator (the Federal Energy Regulatory Commission). The EPRA team also represents the Company at business meetings of the two independent system operators which the Company participates in (NYISO and PJM, Inc.) and coordinates the development and advocacy of energy policy positions for the Company, for example, our efforts to participate in the Climate Leadership and Community Protection Act ("CLCPA") implementation process. I have over 20 years of utility industry experience in a variety of positions of increasing responsibility, including from 1996 through 2004, working at KeySpan Energy as a compressed natural gas ("CNG") station designer, CNG station operations manager, and project specialist in Strategic Planning; and since 2006, working at Con Edison as a project specialist in the Energy

Markets Policy Group, project manager and, later, director in State Regulatory Affairs, project manager and, later, director in the REV Demonstration Projects group, and director in the Utility of the Future group.

I hold a Bachelor of Engineering degree in Mechanical Engineering from The Cooper Union for the Advancement of Science and Art in New York City, and a Master of Business Administration from the Rotterdam School of Management in the Netherlands.

(Lannon)

I am Venetia Lannon, Vice President, Environment, Health and Safety. I joined Con Edison in April 2021. Prior to joining the Company, I was Vice President at Matrix New World Engineering, with market development responsibilities including climate adaptation services with a focus on nature-based systems for waterfront facilities, green infrastructure, and renewable energy. Before joining the private sector, I spent 20 years in public service most recently as former Governor Cuomo's Deputy Secretary for the Environment. In this capacity, I served as environmental policy advisor to the Governor and his cabinet and oversaw the operations of the state’s

environmental agencies, including the Department of Environmental Conservation ("DEC"), the Office of Parks Recreation & Historic Preservation, the Environmental Facilities Corporation and the Adirondack Park Agency. Previously, I was appointed by former Governor Cuomo as Regional Director for the DEC, overseeing 200 staff and all aspects of the DEC's work in New York City. Prior to that, I held several positions working for the City of New York, as a Senior Vice President of the New York City Economic Development Corporation ("EDC") and as Deputy Director of the Recycling Bureau at the New York City Department of Sanitation, was responsible for the composting program.

I hold a Bachelor of Arts degree from Vassar College and a master's degree in public administration, focusing on environmental policy, from Columbia University.

B. Testimony Purpose and Format

Q. What is the purpose of your testimony?

A. Our purpose is to discuss Con Edison's support for the clean energy transition and to demonstrate that the Company's rate filings are consistent with and otherwise comply with the requirements of the CLCPA applicable to utility rate cases. In making this showing, we summarize

the investments and programs the Company is proposing in this filing to help the State achieve CLCPA requirements, as well as the Company's existing efforts to contribute to meeting CLCPA goals. We also calculated emissions reductions associated with our clean energy investments and emissions associated with our electric and gas delivery volume forecasts, which show that the electric and gas filings are directionally consistent with the CLCPA at this early stage of its implementation.

Q. Please briefly summarize Con Edison's approach to climate change.

A. Con Edison is addressing climate change through a two-pronged approach: mitigation and adaptation. We aim to mitigate climate change by:

- Building a grid that facilitates delivery of 100% clean energy by 2040, targeting net-zero emissions by 2040;
- Decarbonizing and reducing the use of fossil natural gas, and pursuing new opportunities to use our gas system to help achieve CLCPA objectives; and

- Engaging our customers in the clean energy future with increased energy efficiency program offerings; development of electric vehicle charging infrastructure; innovative heating electrification program offerings; and programs to increase distributed energy resource offerings for customers, particularly low-and-moderate customers and those residing in disadvantaged communities.

We are also adapting our system to reliably serve customers under projected future atmospheric conditions (for example, higher temperatures) that are the result of expected climate change. This includes enhancing our ability to withstand and recover from more severe and frequent extreme weather events, as discussed in more detail in the Electric Storm Response and Resilience and Electric Infrastructure and Operations Panels. Accordingly, this testimony is focused on, with respect to the CLCPA, our efforts to mitigate climate change as reflected in this rate filing.

Q. Please describe how the remainder of this testimony is organized.

A. The testimony below is organized as follows:

- Section II describes Con Edison's support for a clean energy future and the CLCPA
- Section III covers the long-term impact of the CLCPA on our business
- Section IV discusses proposed investments and programs in this rate case that further the CLCPA
- Section V discusses the CLCPA requirements applicable to utility rate cases.

II. Con Edison's Support for Clean Energy and the CLCPA

A. Con Edison's Clean Energy Commitment

Q. Does Con Edison support New York State's transition to clean energy?

A. Yes. Con Edison is all-in on clean energy and has adopted a Clean Energy Commitment that sets forth its pledge to be a leader in the clean energy transition.

Q. Please explain Con Edison's Clean Energy Commitment.

A. Con Edison is committed to investing in, building, and operating reliable, resilient, and innovative energy infrastructure, advancing electrification of heating and transportation, and aggressively transitioning away from fossil fuels to a net-zero economy by 2050 while being

informed by principles of affordability, equity, and environmental justice. Our Clean Energy Commitment has five pillars:

1. **Build the Grid of the Future**: Build a resilient, 22nd century electric grid that delivers 100% clean energy by 2040.
2. **Empower All of Our Customers to Meet Their Climate Goals**: Accelerate energy efficiency with deep retrofits, aim to electrify most building heating systems by 2050, and go all-in on electric vehicles.
3. **Reimagine the Gas System**: Decarbonize and reduce the utilization of fossil natural gas, and explore new ways to use our existing, resilient gas infrastructure to serve our customers' future needs.
4. **Lead by Reducing Our Company's Carbon Footprint**: Aim for net-zero emissions by 2040, focusing on decarbonizing our steam system and other company operations.
5. **Partner with Our Stakeholders**: Enhance our collaboration with our customers and stakeholders

to improve the quality of life of the neighborhoods we serve and live in, focusing on disadvantaged communities.

Each pillar includes initiatives that identify current or proposed future Company programs. These initiatives may be viewed at this link: Our Clean Energy Commitment | Con Edison.[1]

Q. Does Con Edison review its Clean Energy Commitment?

A. Yes. The Clean Energy Commitment is a “living” document capable of being updated to reflect policy or technological changes.

Q. What past efforts has Con Edison undertaken that demonstrate its commitment to clean energy?

A. Con Edison has a history of promoting clean energy, including:

Energy Efficiency & Heating Electrification

Con Edison’s energy efficiency programs have grown 21% since 2019, serving more than 600,000 customers in 2021. Its Clean Heat heating electrification program has grown by 354% since inception in 2020, reaching more than 9,500 customers and exceeding its program targets by more than

[1] https://www.coned.com/en/our-energy-future/our-energy-vision/our-energy-future-commitment

two-fold in 2021. The Company has recently expanded its programs that serve low-income customers, offering greater support and additional funding to support these customers in benefiting from the clean energy transition.

Electric Vehicles

The Company has two programs that promote Electric Vehicles ("EV"): the SmartCharge NY program and the PowerReady program. The SmartCharge NY program, launched in April 2017, incents EV drivers to shift to off-peak charging (past midnight) and thereby lessen the impacts of EV charging on the local grid. Approximately 15% of passenger EVs in our service territory have enrolled in SmartCharge NY. The PowerReady program, launched in July 2020, provides incentives for make-ready infrastructure (both on the utility and customer side) to facilitate installing chargers, lowering the upfront cost of building chargers with higher levels of incentives available to customers in disadvantaged communities. The PowerReady program has resulted in the development of the largest public universal charging hub in the Americas in Brooklyn. PowerReady has set targets of 457 direct current fast charging and 18,539

level 2 in the Company's territory. Applications in and around disadvantaged communities have been robust.

Interconnection of Solar and Storage

Con Edison has a robust process for integrating distributed clean energy sources into its distribution system. We changed our network system design to safely allow power to flow back on the network system, which provided our grid the ability to interconnect and integrate Distributed Energy Resources ("DERs") onto our system. Through 2021, we have interconnected 398 MW of solar and 18 MW of storage. In addition, we participate in the Interconnection Policy and Technical Working Groups. The purpose of the Interconnection Policy Working Group is to explore policy and process issues relevant to the interconnection of distributed generation in New York. The goal of the Interconnection Technical Working Group is to identify, discuss, and resolve technical barriers and challenges associated with the DER interconnection process and the Standardized Interconnection Requirements in New York State in an efficient and effective manner.

Non-Pipes Alternatives (NPA)

Con Edison has advanced NPAs to defer or avoid traditional gas infrastructure in line with evolving Commission and State policy. In 2020, consistent with the terms of the current rate plan, the Company proposed a broad NPA Framework. While that filing was pending, the Company identified several promising NPAs. The Company made three important steps toward implementing NPAs in 2021. First, in July, the Company released an RFP for an Implementation Contractor for its Main Replacement NPA program and expects to select a vendor in Q1 2022. In December, the Company released RFPs for area projects in Soundview in the Bronx and Port Chester in Westchester. Finally, in December 2021, the Company petitioned the Commission for authorization to proceed with those three projects and one in Bayside Queens with specific accounting treatment and incentives.

Non-Wires Solutions (NWS)

The Company also supports clean energy through its NWS programs. The Brooklyn-Queens Demand Management (“BQDM”) program, the first “non-wires” program in New York State, began in 2014 and continues today to support peak demand reduction through customer-sided solutions that help defer

traditional infrastructure upgrades. Since BQDM, the Company has launched two additional NWS programs: Water Street/Plymouth Street and Newtown. In 2021, the Water Street/Plymouth Street NWS portfolio achieved its goal of eliminating the need for the Company to install cooling and reconductoring upgrades through implementation of energy efficiency and distributed generation. The Newtown NWS remains an active portfolio with the goal of achieving 21 MW of peak load relief through energy efficiency and energy storage and deferring capital infrastructure upgrades in the area through 2024. Together with BQDM, these NWS programs have supported the installation of over 15 MW of distributed generation, including dispatchable energy storage in specific Brooklyn and Queens networks. The Company continues to evaluate new system expansion projects for pursuit as a Non-Wires Solution across its service territory.

Steam System

Consistent with the CLCPA, by 2040 Con Edison plans to decarbonize its East River cogeneration assets, which provide approximately 50 percent of the Company’s steam production, through low carbon fuels or carbon capture

strategies. In addition, the Company plans to retire its five electric production gas turbine units as described in the Electric Infrastructure and Operations Panel testimony.

Company Emissions Reductions

Con Edison also leads by example. Between 2005 and 2020, we reduced our own carbon footprint by 54% (direct emissions), the equivalent of taking 500,000 vehicles off the road with respect to GHG emissions. In addition, in 2020 we released 98% less SF6 than in 1996, well ahead of our commitment in the 1999 memorandum of understanding with the U.S. Environmental Protection Agency (EPA). We also joined the EPA's Natural Gas STAR Methane Challenge in 2016 with a goal to replace 4% of our cast iron and unprotected steel mains each year. Since 2017, have replaced 342 miles of this main, representing an average replacement rate of 4.5%. We continue to make progress in this area, and in support of the CLCPA, have joined the ONE Future Coalition to reduce industry methane emissions to 1% or less by 2025.

B. The CLCPA

Q. What is the CLCPA?

A. The CLCPA is New York State's comprehensive climate change, clean energy, and environmental justice act. The CLCPA

provides for reducing the State's GHG emissions economy-wide and seeks to improve the resiliency of communities across New York, as well as provide opportunities for residents and communities to partner with businesses, schools, and government to create a green economy and build a more sustainable future. The Act also provides that these goals will be achieved while adhering to environmental justice principles. The CLCPA seeks to achieve these outcomes by establishing GHG emissions limits, requiring specific amounts of renewable energy and other clean energy resources to be built, and mandating a certain portion of benefits be provided to disadvantaged communities.

Q. Please describe the CLCPA's clean energy requirements.

A. The CLCPA requires 70% of Statewide electric generation to be renewable by 2030 and 100% of Statewide electricity to be zero-emissions by 2040. In addition, the law requires the Commission to develop programs to procure 9 GW of offshore wind by 2035, and 6 GW of solar by 2025. While the law requires that 3 GW of energy storage be procured by 2030, the Governor has recently proposed to increase this goal to 6 GW of energy storage by 2030.

Q. Please describe the CLCPA's emissions reduction requirements.

A. The CLCPA establishes Statewide emissions reduction targets of: (1) 40% from 1990 levels by 2030; (2) 85% from 1990 levels by 2050; and (3) a goal of net zero emissions economy wide by 2050.

Q. Please explain the CLCPA's disadvantaged community requirements as they apply to utility rate cases.

A. Our understanding from counsel is that the Commission has determined that the CLCPA prohibits it from approving a rate plan that disproportionately burdens disadvantaged communities. As part of this analysis, the Commission will also evaluate if the approved rate plan provides benefits to disadvantaged communities.

Q. Does Con Edison support the CLCPA's clean energy and disadvantaged community requirements?

A. Yes, and as discussed later in this testimony, Con Edison's rate filing proposes electric and gas rate plans that enable the Commission to determine that the rate plan complies with the CLCPA review requirements applicable to utility rate cases because they are fully consistent with CLCPA goals (to the extent known) and principles.

Q. Why do you say to the extent known?

A. As the Commission noted in *National Grid*[2] and confirmed in Niagara Mohawk,[3] "[t]he CLCPA is still a nascent law whose implementation remains a work-in-progress in the State, albeit an important one."

Q. What is the Climate Action Council?

A. The Climate Action Council is the committee created by the CLCPA that is charged with developing a draft and final Scoping Plan of recommendations to meet the law's requirements and targets.

Q. What is the status of the Climate Action Council's Scoping Plan?

A. The Council released a draft Scoping Plan on December 30, 2021, noting that the draft is for public review and does not carry the Council's formal endorsement. The draft

[2] Case 19-G-0309 et al., *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of The Brooklyn Union Gas Company d/b/a National Grid NY for Gas Service*, Order Approving Joint Proposal, As Modified, And Imposing Additional Requirements (Aug. 12, 2021) at 71 (*National Grid*).

[3] Case 20-E-0380 et al., *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service*, Order Adopting Terms of Joint Proposal, Establishing Rate Plans and Reporting Requirements (Jan. 20, 2022) at 78 ("[I]mplementation of the CLCPA remains a work in progress.")(*Niagara Mohawk*).

Scoping Plan states that, as required by the CLCPA, the Council will hold regional public hearings. In addition, the public has 120 days from January 1, 2022 to comment on the draft. The Council will then evaluate the input it receives, determine whether to revise the draft, and issue the final Scoping Plan. The final Scoping Plan is to be released no later than January 1, 2023.

Q. Has the Department of Environmental Conservation (DEC) adopted climate regulations applicable to the utility sector?

A. No. DEC must promulgate regulations by January 1, 2024. State agencies, including the Commission, will work with DEC to promulgate the necessary regulations.

Q. What does the early stage of CLCPA implementation mean for Con Edison?

A. It means that the full picture of what ultimately will be required for CLCPA compliance is not yet clear and depends on decisions of uncertain timing.

Q. What is Con Edison doing in the interim?

A. Con Edison recognizes its crucial role in developing the infrastructure required to facilitate renewable power and storage and to enable increased electrification of heating

and transportation. And, as we explain herein, our rate filing reflects this recognition. For example, the Company is proposing emissions mitigation measures as part of these proceedings, planning the electric infrastructure needed to facilitate the achievement of Statewide clean energy goals, including the Reliable Clean City Projects and Gateway Park Area Substation, and investing hundreds of millions of dollars in its nation-leading customer programs to enable participation in the clean energy future. Under current Commission policy, Con Edison is not allowed to build and own electric generation so we cannot play a direct role in achieving the CLCPA's electric generation goals. We note, however, that we believe the Commission should allow us to have a role in achieving these ambitious goals and have included in this filing an innovative solar generation proposal to fund low-income discounts.

III. The CLCPA's Impact Con Edison's Businesses

Q. Do you foresee potential changes to Con Edison's businesses because of the CLCPA's clean energy requirements and the clean energy transition?

A. Yes. We anticipate a decrease in fossil fuel gas consumption and an increase in electric usage driven by

building and transportation electrification. We also foresee a shift from fossil fuels to renewable electric generation and low carbon energy sources, and an increased emphasis on demand response, energy efficiency, distributed energy resources, energy storage, and innovative system designs to manage system and customer needs.

A. The CLCPA's Impact on Long-Term Planning

Q. How is Con Edison planning to prepare for the clean energy future?

A. In order to meet the CLCPA's clean energy requirements and Con Edison's Clean Energy Commitment, we have developed Long-Range Plans that examine three possible future pathways to 2050. Each pathway examines a different potential scenario for electrification and adoption of low carbon fuels, which allows us to understand the type of investment decisions we would need to make in each scenario. Regardless of which pathway we pursue in the future, the initial 10 years are consistent and can be reflected in our current 10-year plans and include key investments foundational to the businesses and the clean energy future, including energy efficiency, heat pump incentive programs, and main replacement. This approach

allows us to remain flexible and find the best approach for our customers.

Q. Please elaborate on the areas covered by your Long-Range Plan.

A. The Long-Range Plan covers:

- Transmission and distribution infrastructure needed to integrate clean energy sources like offshore and onshore wind, utility scale solar, and distributed resources;
- Infrastructure and programs required for more utility and customer energy storage;
- Investment in community renewable generation to serve our low-and moderate-income customers and more broadly for utility owned renewable generation;
- Supporting R&D efforts in production, transport, and storage of low carbon fuels and integrating them into our existing energy infrastructure.
- Targeting emissions reduction on our gas system today, with continued replacement of leak prone mains.
- Accelerating energy efficiency programs to meet our goals

- Providing customers with financial incentives to electrify heating and transport and shift away from fossil fuel sources.

B. The CLCPA's Impact on Con Edison's Electric System

Q. Please explain how you think the CLCPA will affect Con Edison's electric system.

A. Our electric system is necessary to connect customers to the clean energy sources required to meet the CLCPA's renewable energy and emissions reduction requirements. Further, because of electrification, we expect that our system will experience increased usage and shifting peaks (but we do not expect the electric peak to shift from summer to winter until the end of the 2030s). Thus, we anticipate that the CLCPA and clean energy transition will require Con Edison to make significant investments in its electric transmission and distribution system to enable safe and reliable delivery of large-scale clean energy resources, such as offshore wind, and to accommodate increasing electrification and changes in customer use patterns.

C. The CLCPA's Impact on Con Edison's Gas System

Q. Please explain how you think the CLCPA will affect Con Edison's gas system.

A. We expect to see a decline in gas sales and in usage of our gas delivery system because of energy efficiency and electrification undertaken to help the State meet the CLCPA's clean energy and emissions reduction requirements. For details on the rate filing gas forecast please refer to the Gas Forecasting Panel.

Because we have an obligation to operate our gas system safely and reliably for our 1.1 million existing customers and the public as long as customers are served by the system, we will continue to make safety and reliability investments in our system. But we also note that, as briefly discussed below and further described by the Gas Infrastructure, Operations, and Supply Panel, we are the first utility in the State to propose steps to reduce gas connections such as asking the Commission to waive the revenue test and other customer allotments for new customer connections.

Q. Does the CLCPA permit Con Edison to make safety and reliability investments in its gas system?

A. Yes. In *National Grid* (p.80), the Commission explained that the CLCPA's required emissions reductions do not "override" the statutory mandate that utilities provide safe and reliable gas service at just and reasonable rates or the Commission's obligation to enforce this mandate. The Commission further explained that "[u]ntil technologies advance to a point where natural gas is no longer needed for heat and hot water, the Commission must ensure the reliability of gas delivery systems throughout the State" (p.74). To illustrate the stakes, the Commission cited the deaths and significant inconvenience caused by the long-term gas outages in Texas in the winter of 2021 as an example "of what can go wrong if gas supplies are suddenly halted during the coldest days of the year" (p.74). In *Niagara Mohawk* (p.80), the Commission confirmed that ensuring safe and adequate service remains its "core responsibility" and observed that "failure to maintain safe and adequate electric and gas systems throughout the [S]tate would undermine the intent of the CLCPA." Con Edison also regards safe and reliable service as its core responsibility and is directly subject to the statutory mandate referred to by the Commission.

Therefore, we will continue to propose investments necessary to keep the gas system safe and reliable.

Q. Can you further explain your approach to the gas system in light of the CLCPA?

A. Yes. Our approach is to operate the gas system safely and reliably and to continue reducing fugitive emissions, in particular methane emissions, from upstream sources of natural gas and our existing infrastructure, while we transition gas heating customers to electric heating where feasible and look for opportunities to pivot our existing gas assets to future cleaner usages.

Q. Why is the Company focusing on methane emissions?

A. Natural gas contains methane, a potent greenhouse gas, that once emitted into the air is 86 times more potent than carbon dioxide if modeled on a 20-year time frame, as provided for in the CLCPA. Methane is the largest component of natural gas and can be emitted during normal operating activities such as transportation, prior to combustion. The Company is committed to reducing these emissions whenever possible, including through its leak prone pipe program and proposed certified natural gas procurement pilot.

Q. Does replacing leak prone pipe really reduce methane emissions?

A. Yes. Per our annual reporting to the EPA, emissions from Con Edison's gas system have dropped over 50% since 1990 using the EPA methodology (See Figure 1 below). However, this methodology does not account for our leak backlog reduction, where actual leaks are repaired in a timely manner.

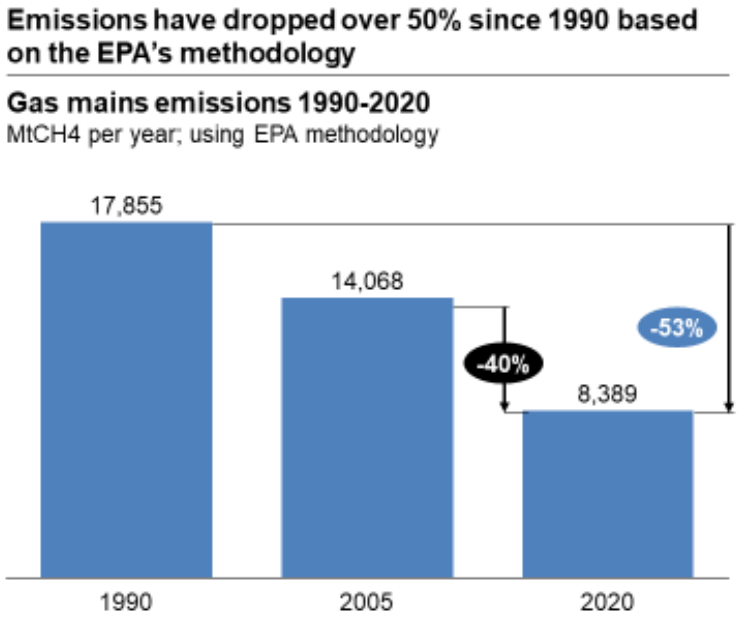


Figure 1: Cummulative emission reductions from gas main replacement (Source: Con Ed's Gas Distribution System Annual DOT Reports combined with the EPA's Subpart W Greenhouse Gas Reporting Program)

Q. Is Con Edison studying alternative fuels for distribution through its gas system?

A. Yes. Con Edison is participating in studies and collaboratives to understand the effects of hydrogen on our system. Some of these collaboratives include the EPRI/GTI collaborative called the Low-Carbon Resources Initiative (LCRI), the Center for Hydrogen Safety, and the Institute of Gas Innovation and Technology (IGIT) at Stony Brook University. We also support research into RNG and synthetic gas.

Q. Why are you studying alternative uses of the gas system?

A. Many studies show that in scenarios where the state achieves its decarbonization goals via electrification, peak load increases substantially and the system becomes winter peaking (as opposed to peaking in the summer, as it does today). The CLCPA Draft Scoping Plan, for example, shows peak electric load nearly doubling, and the electric system becoming winter peaking in 2035. Using the existing gas system to transport clean energy heating may reduce the need to make substantial investments in increasing electric transmission capability. The capability is there: currently the gas system transports three times the energy on a peak winter day than the electric system does on a peak summer day. A low carbon gas distribution system can

continue to serve our customers, especially where electrification is difficult or cost prohibitive, contributes to resilience, and can help to mitigate what could otherwise be a costly buildout of the electric system. Additionally, the gas system is comprised of 4,400 miles of useful pipeline infrastructure and represents an embedded value from which future customers can and should continue to benefit, consistent with the CLCPA.

D. The CLCPA's Impact on Interactions with Customers

Q. Explain how the CLCPA will affect Con Edison's interactions with its customers.

A. Customers will play an important role in meeting CLCPA goals. Prior to the CLCPA, customers were already beginning to use technologies to reduce emissions through installing more efficient heat pumps in their homes, using electric vehicles, or installing their own energy resources such as rooftop solar. To assist our customers in continuing to adopt clean energy technologies, we will focus on providing resources and educational tools that allow customers to take full advantage of these technologies to decrease emissions. Additionally, the Company will provide additional resources to customers in disadvantaged

communities so they can also benefit from the clean energy transition. Con Edison will also require additional infrastructure, both physical and IT, to integrate these new resources safely and reliably into the grid.

Q. Is Con Edison proposing investments in this filing to enhance customer engagement?

A. Yes. As described more fully by the Customer Energy Solutions Panel, the Company's proposed investments include: Customer Recommendations & Analysis tools, DER and heating electrification make-ready proposals, the Clean Energy Credit for Low-Income Customers, a solar smart inverter customer program, and an expansion of its Innovative Pricing Pilot.

IV. Clean Energy Investments and Program Proposals

A. Electric Investments and Programs

Q. What electric investments or programs is Con Edison proposing in this rate case to mitigate emissions and facilitate the State achieving its CLCPA goals?

A. As described more fully by the Electric Infrastructure and Operations Panel, over a three-year term, the Company is proposing:

Gateway Park Area Station

Con Edison plans to invest $250 million to begin construction of the Gateway Park Area Station, which will be supplied with renewable energy by the Brooklyn Clean Energy Hub. This project is needed to reliably electrify parts of Brooklyn and Queens, including disadvantaged communities.

Crown Heights Network Split

Con Edison is proposing to invest $12.5 million to split the Crown Heights network into two load areas to alleviate load growth expected to occur because of electrification. This network serves, in large part, disadvantaged communities. Switches will be installed so load can be shifted between these networks. Splitting the networks and installing switches so load can be transferred in Brownsville and Bensonhurst load areas increases the reliability and resiliency of the networks in the near and long term. The newly formed network will be supplied by the Gateway Park Area Station. The additional system capacity will facilitate the continued customer adoption of building

and transportation electrification resources without negatively impact reliability.

Light Duty Electric Vehicle Charging Make-Ready Program

Con Edison is proposing to invest $114.3 million to fund the utility-side capital costs associated with EV charging station deployment.

New Business Capital

Con Edison is proposing to invest $573 million to expand the capability of the distribution system to support the connection of new load, including load for new buildings that are increasingly fully electrified to comply with Local Law 97.

Williamsburg Network Improvement

Con Edison is proposing to invest $65.3 million to create two smaller load areas out of the Williamsburg Network to de-load existing feeders and prepare the network to accommodate load growth from new business and electrification, while increasing reliability.

Primary Feeder Relief

Con Edison is proposing to invest $31.3 million in the reinforcement of primary distribution feeds that are projected to operate above their thermal ratings, in some cases because of increased temperatures and electrification.

Farragut(STATCOM)

Con Edison is proposing to invest $130 million for the establishment of a static synchronous compensator ("STATCOM") at the Farragut Substation to address reliability needs driven by Fault-Induced Delayed Voltage Recovery caused by future load growth, including growth attributable to heating and transportation electrification, and the retirement of fossil fuel peaking units to reduce emissions.

Parkview TR5 and Feeder 38M85

Con Edison is proposing to invest $102 million for the establishment of a supply feeder from the Mott Haven Substation to the Parkview Substation. The capacity added through this project will accommodate anticipated load growth due to the expansion of the MTA's 2nd Avenue Subway line and load growth related to building electrification.

Retrofit Over-Duty 13kV and 27kV Circuit Breaker Program

Con Edison is proposing to invest $41.4 million to replace several existing 13kV and 27kV circuit breakers that are currently not rated to interrupt maximum fault, supporting system integrity and facilitating the interconnection of clean distributed generation to the electric system.

Goethals Circuit Switcher

Con Edison is proposing to invest $10 million to establish a new 345kV SF6 circuit switcher at the Goethals 345kV Substation to address Fault-Induced Delayed Voltage Recovery issues related to load growth, including growth attributable to heating and transportation electrification, and the retirement of fossil fuel peaking units to reduce emissions.

Q. Does Con Edison have any previously approved electric system investments that mitigate emissions and facilitate the State achieving its CLCPA goals?

A. Yes. As discussed further by the Electric Infrastructure and Operations Panel, the Commission approved three Con

Edison transmission projects, collectively referred to as the Reliable Clean City Projects, that will allow high emission peaking generators to retire without compromising reliability. The Reliable Clean City Projects will also eliminate some transmission system constraints that would otherwise prevent renewable resources (such as new offshore or upstate wind) from reaching New York City customers.

Q. Why is Con Edison not proposing more electric transmission projects like the Reliable Clean City Projects in this rate case?

A. In the *Phase II Order*,[4] the Commission instructed utilities not to propose local transmission and distribution investments needed to meet CLCPA objectives in their individual rate cases. Instead, the Commission stated that it will establish a Statewide proceeding for utilities to submit "the portfolio of [local transmission and distribution] upgrades that they have determined, through the coordinated planning process [established by the

[4] Case 20-E-0197, *Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act* (*Accelerated Renewable Act Implementation Proceeding*), Order on Local Transmission and Distribution Planning Process and Phase 2 Project Proposals (Sept. 9, 2021) at 29, 34 (*Phase II Order*).

Commission in the *Phase II Order*], support timely achievement of CLCPA targets and meet the relevant criteria and approved Benefit-Cost Analysis].” The Commission explained that “[s]uch a proceeding would allow for a holistic review of proposed projects and costs across the state and would also provide Staff and other interested parties opportunities to evaluate and comment on those proposals. Following the review of the project portfolio, the Commission would approve, modify, or reject proposed investments and determine the resulting revenue requirements, just as it would do in a rate case” (p. 29-30).

Q. Does Con Edison have any Phase II projects?

A. Yes.

Q. What are they and what is their status?

A. Con Edison has proposed Phase 2 transmission projects, which include “Clean Energy Hubs” for offshore wind and other new resources to connect and deliver power to New York City customers, aiding the State in meeting the CLCPA goal of 9,000 MW of offshore wind by 2035. These transmission projects will help future NYSERDA solicitations facilitate construction of offshore wind

projects through the purchase of Offshore Wind Renewable Energy Credits and produce the most competitive, efficient results for all New Yorkers. On January 20, 2021, the Commission authorized Con Edison to file a comprehensive petition seeking approval of a Clean Energy Hub in Brooklyn.[5]

B. Gas Investments and Programs

Q. What gas investments or programs is Con Edison proposing in this rate case to mitigate emissions and facilitate the State achieving its CLCPA goals?

A. As described more fully by the Gas Infrastructure, Operations, and Supply Panel, over a three-year term, the Company is proposing the following investments and programs:

Main & Service Replacement Program

Con Edison is proposing to invest $404.8 million in RY1, $425.2 million in RY2, and $442.2 million in RY3 to continue to prioritize high risk pipe for replacement to support continued safe and reliable service for existing and future hard-to-electrify

[5] *Accelerated Renewable Act Implementation Proceeding*, Order on Power Grid Study Recommendations (Jan. 20, 2022) at 22.

customers and reduce fugitive emissions from this pipe, which is prone to leaking. The Company is also proposing to enhance methane reduction under this program while maintaining the focus on safety. Non-pipe alternatives and main elimination will also be considered as options to reduce the amount of high-risk pipe on the system.

Natural Gas Detection Devices

Con Edison is proposing to invest $97.1 million to continue installation of Advanced Metering Infrastructure-enabled natural gas detectors in homes and businesses throughout the service territory. These devices are constantly monitoring for methane and can detect gas leaks that the human nose may not. Because they are linked to our emergency response center through our Advanced Metering Infrastructure, we can respond to alarms in real time and quickly mitigate the amount of emissions release by isolating the source of the leak or making repairs.

Methane Capture Technology

Con Edison is proposing to invest $3 million in methane capture technologies as part of its commitment

to eliminate emissions during routine operations. Tools, such as ZEVAC (Zero Emissions Vacuum), and others in development, allow the reliability work to continue while significantly reducing the release of methane into the environment.

Advanced Leak Detection

Con Edison is proposing to invest $1.5 million in advance leak detection technology while continuing efficient repair work. Leak detection technology continues to evolve and the Company is seeking to expand its use of advanced leak detection equipment to supplement the extensive work it already does to find leaking main and service pipes. The Company has some of the fastest response and repair times in the industry.

RNG Interconnection

Con Edison is proposing to invest $1.5 million to connect our first RNG facility in Westchester County. The Company will use this interconnection to facilitate other additional interconnection opportunities to our distribution system. RNG, and the

use of certified gas, is another tool to reduce the gas system's climate change impact.

Certified Natural Gas

Con Edison is proposing to invest $800,000 to pilot the procurement of natural gas that is certified to have followed the best environmental practices. Certified natural gas is natural gas originating from producing sites that have undergone third–party certification to verify that the operator has met high environmental standards and best practices for methane emissions reduction in their operations.

Q. Is Con Edison taking any other steps to reduce emissions?

A. Yes. We are: (1) proposing to remove many financial incentives for new gas customer connections; (2) increasing our clean energy outreach and education for customers, contractors, and others; and (3) changing our design philosophy.

Q. Please describe the Company's proposal to eliminate financial incentives for new gas customer connections.

A. While the Public Service Law currently requires Con Edison to serve gas customers who request service, the Company's tariff provisions exceed the statutory requirements under the Public Service Law in several respects. In this filing, and as described more fully by the Gas Infrastructure, Operations, and Supply Panel, we are seeking to eliminate these "extra" tariff obligations by:

- Removing language in our gas tariff that allows multiple customers seeking to connect to the Company's gas distribution system to pool their main installation footage and avoid additional connection costs. Eliminating the "concurrent connections" tariff language will preclude sharing of benefits between customers who otherwise would exceed their individual allotment of main footage but for the fact that other customers connected at the same time and did not use their full allotment.
- Seeking a waiver of Commission regulations to permit us to eliminate the "revenue test" in the gas tariff. This would effectively eliminate an incentive to connect a new natural gas service by requiring new customers to pay the costs associated

with serving them beyond the 100 feet the Company must provide at no cost under Public Service Law. Rather than applying a “revenue test” that would potentially result in all customers initially absorbing this extra cost because it would be “paid for” through revenues shortly after the Company placed it into service, the new customer would now pay the extra costs up front.

- Seeking a waiver of Commission regulations to permit us to eliminate from the gas tariff full or partial reimbursement for customers who have paid for a main extension when other subsequent customers connect to the extension within five years.
- Seeking a waiver of Commission regulations to permit us to modify the gas tariff to provide the same main/service allotment to all new customers, regardless of customer type and usage.

Q. Please describe the Company’s proposal to increase its clean energy outreach and education.

A. The Company will educate customers on non-fossil energy options before accepting their work request for gas

service. The Company intends to require that all customers affirm that they have been provided information on environmental regulations and non-fossil alternatives at the initiation of an application for gas service.

Q. Please describe the Company’s changes to its gas system design philosophy.

A. In the recent past, the Company was converting many oil heating customers to natural gas. This customer growth often required the Company to upgrade the capacity of its distribution mains. With the transition to electrification, the company will maintain safe and reliable gas service for its existing customers but does not expect to be adding significant numbers of new customers. In recognition of increasing electrification, Con Edison has modified its design philosophy to generally end the upsizing of replaced mains for future growth. The Company has also begun the process of including NPA in its gas planning process and proposes a standardized process to facilitate effective implementation. The Company is also requesting funding for a forecasting tool to identify more opportunities, as described in the Gas Forecasting Panel testimony.

Q. Does Con Edison have any existing gas system investments or programs that mitigate emissions and facilitate the State achieving its CLCPA goals?

A. Yes. As mentioned earlier in Section II, in December 2021, the Company filed a petition with the Commission asking for approval of accounting and incentive treatment and authorization to proceed with a set of four NPA projects. The four projects include the Main Replacement Program ("MRP") to potentially retire certain segments of main by electrifying customers currently receiving gas service from those mains, and three area projects, one each in Westchester, the Bronx, and Queens. The Customer Energy Solutions Panel proposes to facilitate the growth of this program by adopting a long-term framework that would cover future NPA projects.

C. Clean Energy Investments and Programs

Q. What clean energy investments or programs is Con Edison proposing to mitigate emissions and facilitate the State achieving its CLCPA goals?

A. As described more fully by the Customer Energy Solutions Panel, over a three-year term, the Company is proposing the following investments and programs:

DER Integration and Management

The Company proposes to invest $72 million in a DER Integration and Management Program to facilitate increasing amounts of DER in the Company's service territory to help achieve CLCPA targets. This program includes investments in three areas; a)information system and operational software upgrades to better integrate DER into operations and planning processes, b)a Grid Edge technology environment to safely deploy and test nascent technologies, through partnerships with third party providers and research firms, in order to find grid edge solutions for the monitoring, control and optimization needs in higher DER penetration scenarios, and c) a smart inverter program that will leverage these capabilities and learnings to incentivize DER operations and performance at the grid edge. These investments will help streamline the process for customers to install distributed generation furthering adoption as called for by CLCPA by providing tools to allow DERs to connect to the grid and operate safely and efficiently.

Energy Storage

The Company proposes to invest $121.1 million in four Company owned energy storage equipment facilities at Company substations, adding 34MW/136MWh of capability to our system with 200 kW of clean energy generation. The energy storage systems augment traditional substation equipment and increase station capabilities by providing system support and rapid response to evening increases in energy drawn from the grid as distributed solar output declines. Project specific benefits include demonstrating new configuration to integrate EV chargers, solar, and storage more seamlessly, reducing the need for mobile stand-by diesel generators, and integrating with a 200kW PV array.

Clean Energy Credits for Low-Income Customers

The Company proposes to invest $200 million in a Clean Energy Credits for Low-Income Customers Program to create a source of revenues to fund incremental bill credits for customers who participate in our Energy Affordability Program. The revenue will be generated by Company-owned and operated solar generation in New York State outside Con Edison’s and Orange and

Rockland's service territories. In addition to the benefits provided to participants in the Energy Affordability Program, the new solar generation will contribute to the CLCPA's objective of renewable resources providing 70% of all power to the grid by 2030.

DER Make-Ready in Disadvantaged Communities

The Company proposes to invest $25.7 million in a DER Make-Ready Program to incentivize the installation of solar projects in disadvantaged communities or projects that benefit low- income customers by covering the customer's utility upgrade costs. The DER Make-Ready program will support the distributed solar targets outlined in the CLCPA as well as encourage development of these resources in disadvantaged communities.

Heating Electrification Make Ready

The Company proposes to invest $76.6 million in a Heating Electrification Make Ready Program to enable greater adoption of space and water heating electrification technologies by providing incentives to customers facing the barrier of high cost of

behind-the-meter electrical upgrades required to electrify.

Customer Recommendation and Analysis Tools

The Company proposes to invest $35 million in Customer Recommendation and Analysis Tools that will deliver an improved online experience by offering a suite of tools, refined by customer sector, to facilitate decision making and adoption of clean energy programs. This program will provide customers with a personalized and interactive experience that helps them better engage in the clean energy transition, and support contractors and third parties facilitate customer adoption of clean energy technologies.

Continuation of Clean Energy Earnings Adjustment Mechanisms

The Company proposes to continue earnings adjustment mechanisms for both electric and gas to encourage it to over-achieve on its targets to help customers reduce energy use, encourage the adoption of heat pumps, electric vehicles, and distributed energy resources, and reduce greenhouse gas emissions, in furtherance of the CLCPA’s goals.

Q. What clean energy investments or programs does Con Edison already have that are addressed in proceedings outside of this rate case?

A. As described by the Customer Energy Solutions Panel, the Company has the following existing programs that are addressed by proceedings outside of this rate case: the New Efficiency New York Energy Efficiency and Clean Heat (heating electrification) programs and the Electric Vehicle Charging Make-Ready program. The Company intends to seek authorization for incremental targets and budgets for its energy efficiency and heating electrification programs within the New Efficiency New York proceeding to accelerate achievement of the State's clean energy goals. Further, the Company will work with Staff and stakeholders on any enhancements and changes to the EV make-ready program as well as those related to the Company's managed charging program as part of the EV proceeding.

Q. Does the Company propose any changes to these programs within this rate case proceeding?

A. Yes. As discussed further by the Customer Energy Solutions Panel, the Company proposes to expand eligibility for its electric energy efficiency and heating electrification

programs to customers served by the New York Power Authority who are currently excluded from participation.

D. Investments in Con Edison Facilities

Q. What clean energy investments is Con Edison proposing to its own facilities to mitigate emissions and facilitate the State achieving its CLCPA goals?

A. As described more fully by the Shared Services Panel, over a three-year term, the Company is proposing the following investments:

EV Charging Expansion

The Company proposes to invest $7.5 million to design and construct 75 Dual-Level 2 EV charging stations and 30 direct current fast charging vehicle charging stations to support fleets at Con Edison's workout locations. This will support the Company's addition of almost 500 electric vehicles by 2025 and further the Company's vision of 80% light duty vehicle fleet by 2030 and 100% by 2035.

Facilities Energy Efficiency Program

The Company proposes to invest $49 million in various EE measures for its Irving Place Corporate Headquarters; Flatbush Avenue, Rye, and Davis Avenue

Regional Headquarters; and The Learning Center. These investments will reduce energy usage at Company-owned facilities and thereby eliminate GHG emissions directly attributable to Company operations.

E. Emissions Calculations

Q. Have you calculated the estimated emissions savings due to the Company's current and proposed clean energy investments and programs?

A. Yes. We estimate that these investments will result in emissions savings of 2,379,453 metric tons of carbon dioxide equivalent ("CO2e") over a three-year rate plan. The following table includes emissions savings by category and source.

Category	Source of CO_2e Reduction	Tons of CO2e Reduction (useful life varies by source)
Vehicles	Electric Vehicle Adoption	261,550
Heating	Heat Pump Adoption	65,395
Electric Consumption	Reduced Electricity Consumption (EE)	1,110,477
	Cleaner Sourced Electricity	290,287
	Conservation Voltage Optimization	163,765
Gas Consumption	Reduced Gas Consumption (EE)	487,981
Total		**2,379,453**

Q. How did you calculate these estimated emissions savings?

A. Con Edison calculated CO_2e reductions for electricity using the total output emission rate for NYC/ Westchester from

EPA's 2019 eGRID Subregion Output Emissions Rates table. The emissions rate for electricity used is 555 lbs of CO_2e per MWh avoided. The electricity emissions rate the Company used in its analysis does not take into account the expected decarbonization of the electric grid. It nevertheless illustrates that Con Edison's clean energy investments and programs are directionally consistent with CLCPA goals.

For avoided combustion of natural gas, Con Edison used 117 lbs of CO_2e per MMBTU of avoided combustion, based on data from EPA's GHG Emission Factors Hub. To calculate the CO_2e factor for natural gas, the Company first converted the nitrous oxide ("N_20") and methane ("CH_4") emission factors to units of CO2e by multiplying emission factors by each gas' respective global warming potential, and then summed the CO_2e factors for CO_2, N_20 and CH_4.

Q. Have other utilities used a similar approach?

A. Yes. Central Hudson and Orange and Rockland in their latest electric and gas rate cases, Cases 20-E-0428 and 20-G-0429 and Cases 21-E-0074 and 21-G-0073, respectively.

Q. Central Hudson and Orange and Rockland also estimated emissions associated with their electric and gas load

forecasts. Did Con Edison do the same for informational purposes?

A. Yes. We applied the same aforementioned emissions rates above to the forecasted electric and gas delivery volume forecasts.

Q. Would you please summarize your estimated emissions associated with electric and gas delivery volume forecasts?

A. Con Edison estimated 14,113,095, 14,006,535, and 13,794,525 tons of CO2e emissions associated with its electric delivery volume forecast and 10,044,157, 10,131,820, and 10,039,648 tons of CO2e emissions associated with its gas delivery volume forecast for RY1, RY2, and RY3 respectively.

Q. Can you please elaborate on the emissions over the rate plan associated with the electric and gas delivery volume forecasts as shown in Exhibit_CLCPA-01?

A. This Exhibit generally shows that CO2e emissions are decreasing for delivered electric and are relatively flat for delivered gas over the 3-year rate plan. The primary reason for CO2e emissions reduction contained in electric forecast is energy efficiency. We note that the forecast

includes the impact of the Company's energy efficiency programs, as well as organic energy efficiency.

Q. Are you sponsoring an exhibit that further explains the Company's emissions savings and load forecast emissions calculations?

A. Yes. Please see the exhibit entitled "CLCPA - 1."

MARK FOR IDENTIFICATION AS EXHIBIT ___ (CLCPA - 1)

Q. Was this exhibit prepared by you or under your direct supervision?

A. Yes

F. Other Con Edison Actions to Address Climate Change

Q. Earlier you mentioned that the Company has taken steps to adapt its' infrastructure to climate change. Please explain.

A. In 2019, Con Edison completed a Climate Change Vulnerability Study to determine how climate change might affect its operations and to recommend steps the Company can take to respond. In 2020, the Company filed a Climate Change Implementation Plan explaining how it would implement the Vulnerability Study's recommendations.

Q. Please explain how the Climate Change Implementation Plan is reflected in this rate case.

A. As part of the Climate Change Implementation Plan, Con Edison issued a new planning and design guideline. The design thresholds in the guideline incorporate climate variables that can be projected through currently available climate science.

For example, one climate variable is the increase in temperature due to climate change. The Company uses a metric to capture the impact of heat and humidity on our system. This measure is known as the temperature variable (“TV”) and the current design criteria is 86 degrees Fahrenheit TV. The projected rise in heat and humidity is expected to result in a 1-degree TV rise each decade. As such, we have incorporated the projected TV in our plan.

Q. What are the consequences of incorporating the projected TV variable in the plan?

A. As discussed further by the Electric Infrastructure and Operations Panel, incorporating the projected TV has affected the Company’s load forecast and network reliability model, resulting in a higher load forecast and the increased likelihood for cascading network outages. As that Panel explains, we are proposing investments in our

electric infrastructure to maintain the level of service customers require.

Q. Can you give an example?

A. Yes, our Primary Feeder Reliability program. The Company uses the Network Reliability Index (“NRI”) to gauge the reliability and resiliency of all 84 networks on its distribution system. The lower the index, the less likely the network is to experience cascading feeder outages. In accordance with its Climate Change Implementation Plan, Con Edison raised the TV in its NRI analysis to account for projected climate change. Raising the TV has a direct impact on NRI, particularly as it relates to heat stress, and results in the need for significant investment to maintain current NRI levels on all networks. As a result, and as discussed by the Electric Infrastructure and Operations Panel, we are proposing to invest $231M in our Primary Feeder Reliability program.

V. Required CLCPA Reviews

Q. What CLCPA requirements are applicable to utility rate cases?

A. We have been advised by counsel that CLCPA sections 7(2) and 7(3) apply to utility rate cases.

Q. What do those sections of the CLCPA require?

A. As we understand from counsel, CLCPA section 7(2) requires the Commission to consider whether its decisions are "inconsistent with or will interfere with" attaining Statewide greenhouse gas emissions limits and that section 7(3) requires the Commission to find that its decisions will not disproportionately burden disadvantaged communities.

A. Emissions Review

Q. Are Con Edison's rate filings consistent with the CLCPA's emissions goals?

A. Yes. The Commission approved the rate settlement in *Central Hudson* (pp. 43-44) as consistent with the CLCPA because it was a "significant and necessary step in reaching the CLCPA and other climate related requirements" and it approved the rate settlement in *Niagara Mohawk* (p.83) because it "appropriately balance[d] the interests in reliability, public safety, and reasonable rates with emission reductions and clean energy objectives" and was "an important step in the ongoing process of achieving the CLCPA's greenhouse gas limits, one that will be built upon in future rate cases and other Commission proceedings."

Our proposed rate plans contain investments, programs, and commitments, which we have summarized in this testimony, similar to those the Commission found to be consistent with the CLCPA in *Central Hudson* and *Niagara Mohawk*. Moreover, our proposals are important steps in the ongoing process of implementing the CLCPA because they enable electrification of heating, promote energy efficiency and electric vehicles, reduce methane emissions, and maintain safety and reliability, which are all required to meet the CLCPA's goals. As explained earlier in this testimony and more fully by the relevant panels, the clean energy investments and emissions-reducing activities identified in this testimony provide significant emissions savings. In addition, our proposed rate plans create a strong foundation for the Company and the Commission to build on in future rate cases and other Commission proceedings because they further institutionalize the Company's commitment to clean energy and establish benchmark programs and projects for the Commission and the Company to evaluate when considering next steps in the ongoing process of CLCPA implementation. Finally, and as explained more fully by the Electric Infrastructure and Operations Panel and Gas

Infrastructure, Operations, and Supply Panel, the projects and programs funded by Con Edison's rate filing are needed for safe and reliable service. For example, our electric projects address reliability issues arising from increasing electrification and projected climate change and our gas projects address or prevent methane leaks that can create a safety risk and harm the environment. In *National Grid*, the Commission cited safe and reliable service as a reason justifying new infrastructure, even considering the CLCPA, and in *Niagara Mohawk* (p.80) the Commission confirmed that failure to maintain safe and reliable service "would undermine the intent of the CLCPA."

B. Disadvantaged Communities

Q. Do Con Edison's rate filings disproportionally burden disadvantaged communities?

A. No. On the contrary, the Company's proposals provide overall benefits to disadvantaged communities, including because they are needed for safe and reliable service at reasonable rates, which the Commission cited in *National Grid* as important to disadvantaged communities.

Q. How might a project benefit a disadvantaged community?

A. Among other ways, a project could benefit a disadvantaged community because: (1) it is necessary to maintain safe and reliable service; (2) it facilitates access to clean energy; (3) it will maintain access to low-cost energy; (4) it will facilitate electrification; or (5) it will help reduce emissions, including by replacing leak-prone gas main, by permitting the retirement of an existing facility with a greater negative impact, or through some other means. As summarized in this testimony and as more fully explained by the Electric Infrastructure and Operations Panel, Gas Infrastructure, Operations, and Supply Panel, and Customer Energy Solutions Panel, Con Edison's proposed projects benefit disadvantaged communities in one or more of these ways.

Q. Please explain why Con Edison's rate filings provide an overall benefit to disadvantaged communities.

A. In this rate case Con Edison continues to maintain a focus on investments and programs required to provide disadvantaged communities with safe and reliable service at just and reasonable rates.

In addition, Con Edison is proposing investments highlighted in this testimony that benefit disadvantaged

communities by reducing emissions in those communities and facilitating the clean energy transition, including:

- DER Make-Ready for Disadvantaged Communities will provide incentives to cover customer’s utility upgrade costs for clean energy projects located in disadvantaged communities.
- Heating Electrification Make Ready proposes higher incentives for LMI-qualifying buildings. These proposed higher incentives cover up to 100% of the expected cost of behind-the-meter electrical upgrades to enable heating electrification, removing a barrier to electrification, and enabling the electrification of LMI-qualifying buildings.
- Gateway Park Area Substation will allow the company to create smaller, more resilient, network areas that will directly benefit the reliability throughout the outer boroughs of Brooklyn and Queens that include disadvantaged communities. Additionally, the capacity created through this investment will allow for a greater portion of offshore wind to be delivered within this area of the Company’s service territory.

- NYPA Eligibility for Energy Efficiency Proposal will expand eligibility for EE and heating electrification programs to NYPA customers, many of which are key institutions serving disadvantaged communities (*e.g.*, schools, housing facilities, community centers, transit depots, and first responder centers).

In addition, as discussed more fully by the Electric Infrastructure and Operations Panel, the Company is proposing a Selective Undergrounding Program. The Selective Undergrounding Program will identify and prioritize sections of Con Edison's overhead distribution system for potential undergrounding. The program will mitigate the scale of outages, minimize long-duration, low customer impacted outages, and make the Con Edison system more resilient. The program will incorporate disadvantaged community data into the prioritization model that will determine locations for undergrounding.

Finally, through the statewide NENY proceeding, Con Edison will continue to offer energy efficiency and heating electrification programs that offer expanded incentives to low-income customers and multi-family buildings that house low-income customers.

Q. Does this end your testimony?

A. Yes.

Clean Energy Investments and Programs: Carbon Emissions Calculations

See "calculations" tab for details

Category	Source of CO2e Reduction	Tons of CO2e Reduction (useful life varies by source)
Vehicles	Electric Vehicle Adoption	261,550
Heating	Heat Pump Adoption	65,395
Electric Consumption	Reduced Electricity Consumption (EE)	1,110,477
	Cleaner Sourced Electricity	290,287
	Conservation Voltage Optimization	163,765
Gas Consumption	Reduced Gas Consumption (EE)	487,981
Total		**2,379,453**

CECONY
ELECTRIC AND GAS DELIVERY VOLUME EMISSIONS IMPACT
Years ending December 31, 2022, December 31, 2023, December 31, 2024, December 31, 2025

Year	Electric				Gas			
	Volume		CO2e Emissions		Volume*		CO2e Emissions	
	Total	Growth	Total	Growth	Total	Growth	Total	Growth
2022	51,030 GWh	-	14,160,825 tons	-	167,528 MDt	-	9,810,272 tons	-
2023	50,858 GWh	-172 GWh	14,113,095 tons	-47,730 tons	171,522 MDt	3,994 MDt	10,044,157 tons	233,885 tons
2024	50,474 GWh	-384 GWh	14,006,535 tons	-106,560 tons	173,019 MDt	1,497 MDt	10,131,820 tons	87,663 tons
2025	49,710 GWh	-764 GWh	13,794,525 tons	-212,010 tons	171,445 MDt	-1,574 MDt	10,039,648 tons	-92,172 tons
Rate Period (2023-2025)	**-**	**-556 GWh**	**-**	**-154,290 tons**	**-**	**5,491 MDt**	**-**	**321,547 tons**

***** Includes only firm gas customer volume

LEGEND 0.00 *Input* 0.00 *Calculation*

Clean Energy Investments and Programs: Carbon Emissions Calculations

Inputs		Source
Electric CO2e Emissions Factor (lb/ MWh)	555.06	eGRID 2019
Electric CO2e Emissions Factor (ton/ MWh)	0.28	*Calculated field*
Gas CO2 Emissions Factor (lb CO2e/ MMBtu)	117.00	EPA Emissions Factor Hub
Gas CH4 Emissions Factor (lb CO2e/ MMBtu)	0.06	EPA Emissions Factor Hub
Gas N20 Emissions Factor (lb CO2e/ MMBtu)	0.07	EPA Emissions Factor Hub
Total Gas CO2e Emmissions Factor (lb CO2e/ MMBtu)	117.12	*Calculated field*
Total Gas CO2e Emissions Factor (ton CO2e/ MMBtu)	0.06	*Calculated field*
Oil CO2 Emissions Factor (lb CO2e/ MMBtu)	163.08	EPA Emissions Factor Hub
Oil CH4 Emissions Factor (lb CO2e/ MMBtu)	0.17	EPA Emissions Factor Hub
Oil N20 Emissions Factor (lb CO2e/ MMBtu)	0.39	EPA Emissions Factor Hub
Total Oil CO2e Emissions Factor (lb CO2e/ MMBtu)	163.64	*Calculated field*
Total Oil CO2e Emissions Factor (ton CO2e/ MMBtu)	0.08	*Calculated field*

Inputs		
BEV CO2e Emmissions Factor (CO2e/ unit)	2.33	Transportation Electrification EAM Target Methodology (see CES Testimony)
PHEV CO2e Emmissions Factor (CO2e/ unit)	2.04	Transportation Electrification EAM Target Methodology (see CES Testimony)
EV Buses CO2e Emmissions Factor (CO2e/ unit)	96.14	Transportation Electrification EAM Target Methodology (see CES Testimony)
MD EV CO2e Emmissions Factor (CO2e/ unit)	12.03	Transportation Electrification EAM Target Methodology (see CES Testimony)
HD EV CO2e Emmissions Factor (CO2e/ unit)	144.86	Transportation Electrification EAM Target Methodology (see CES Testimony)

Conversion Factors

lb/ kg	2.205	*Constant*
lbs/ton	0.0005	*Constant*
g/ kg	1000.00	*Constant*

				Annual Energy Reduced (MWh)			Annual Dth Reduced (MMBtu)			Annual Oil Reduced (MMBtu)			CO2e Reduced (Ton)				
Program	**Source of CO2e Reduction**	**Fuel Type**	**Secondary Fuel Type**	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**Total**	**Input Source**
Solar PV	Cleaner Sourced Electricity	Electric		101,923	211,666	338,184							28,286	58,743	93,856	180,885	Maximum DERU EAM targets (CES Testimony)
Clean Energy Credits for Low Income Customers	Cleaner Sourced Electricity	Electric		0	131,400	262,800							0	36,467	72,934	109,402	Clean Energy Credits for Low Income Customers (CES Testimony)
NENY Non-LMI Electric, excluding Heat Pumps	Reduced Electricity Consumption (EE)	Electric		585,856	1,255,945	2,064,467							162,591	348,560	572,947	1,084,099	2021 System Energy Efficiency Plan Filing
NENY LMI Electric, excluding Heat Pumps	Reduced Electricity Consumption (EE)	Electric		16,738	37,099	41,208							4,645	10,296	11,436	26,378	2021 System Energy Efficiency Plan Filing
CVO	Conservation Voltage Optimization	Electric		249,660	144,277	196,147							69,288	40,041	54,436	163,765	Maximum CVO EAM targets (CES Testimony)
NENY Non-LMI Gas	Reduced Gas Consumption (EE)	Gas					1,108,000	2,280,377	3,669,556				64,883	133,537	214,886	413,306	2021 System Energy Efficiency Plan Filing
NENY LMI Gas	Reduced Gas Consumption (EE)	Gas					208,442	462,005	604,756				12,206	27,055	35,414	74,675	2021 System Energy Efficiency Plan Filing
Clean Heat Residential	Heat Pump Adoption	Electric	Gas / Oil	-12,976	-25,952	-38,928	134,326	268,653	402,979	44,775	89,551	134,326	7,928	15,857	23,785	47,570	2021 System Energy Efficiency Plan Filing
Clean Heat Multifamily	Heat Pump Adoption	Electric	Gas / Oil	-2,601	-5,201	-7,802	20,771	41,542	62,313	20,771	41,542	62,313	2,194	4,388	6,582	13,165	2021 System Energy Efficiency Plan Filing
Clean Heat Commercial & Industrial	Heat Pump Adoption	Electric	Gas / Oil	-488	-976	-1,464	3,847	7,695	11,542	3,847	7,695	11,542	405	809	1,214	2,428	2021 System Energy Efficiency Plan Filing
Clean Heat Small Medium Business	Heat Pump Adoption	Electric	Gas / Oil	-428	-855	-1,283	3,496	6,991	10,487	3,496	6,991	10,487	372	744	1,116	2,232	2021 System Energy Efficiency Plan Filing
Transportation Electrification	Electric Vehicle Adoption	Electric	Gasoline/ Diesel										40,906	85,404	135,239	261,550	Maximum Transportation Electrification EAM targets (CES Testimony)

1. Subregion Output Emission Rates (eGRID2019)

eGRID subregion acronym	eGRID subregion name	Total output emission rates lb/MWh							Non-baseload output emission rates lb/MWh							Grid Gross Loss (%)
		CO_2	CH_4	N_2O	CO_2e	Annual NO_X	Ozone Season NO_X	SO_2	CO_2	CH_4	N_2O	CO_2e	Annual NO_X	Ozone Season NO_X	SO_2	
AKGD	ASCC Alaska Grid	1,114.4	0.098	0.013	1,120.8	6.2	6.1	0.7	1,333.0	0.123	0.017	1,341.0	6.6	6.7	0.8	5.4%
AKMS	ASCC Miscellaneous	549.3	0.026	0.004	551.3	8.1	7.8	0.7	1,520.2	0.067	0.012	1,525.4	22.6	22.8	2.0	5.4%
AZNM	WECC Southwest	952.3	0.068	0.010	956.9	0.6	0.6	0.2	1,445.3	0.100	0.014	1,451.9	0.9	0.9	0.3	5.1%
CAMX	WECC California	453.2	0.033	0.004	455.3	0.4	0.4	0.0	964.0	0.058	0.007	967.6	0.8	0.8	0.1	5.1%
ERCT	ERCOT All	868.6	0.057	0.008	872.4	0.5	0.5	0.6	1,277.2	0.083	0.012	1,282.7	0.9	0.8	0.9	5.1%
FRCC	FRCC All	861.0	0.055	0.007	864.5	0.3	0.3	0.2	1,029.5	0.054	0.007	1,033.0	0.3	0.3	0.2	5.1%
HIMS	HICC Miscellaneous	1,185.6	0.143	0.022	1,195.6	8.1	8.4	4.1	1,549.5	0.107	0.018	1,557.6	12.3	12.8	5.3	5.5%
HIOA	HICC Oahu	1,694.5	0.185	0.028	1,707.6	3.7	4.1	7.0	1,704.1	0.158	0.025	1,715.6	4.5	4.6	8.1	5.5%
MROE	MRO East	1,502.6	0.147	0.022	1,512.6	0.8	0.9	0.4	1,577.7	0.145	0.021	1,587.4	0.8	0.9	0.4	5.1%
MROW	MRO West	1,098.4	0.119	0.017	1,106.4	0.8	0.8	1.1	1,806.8	0.188	0.027	1,819.6	1.4	1.3	1.7	5.1%
NEWE	NPCC New England	488.9	0.077	0.010	493.8	0.3	0.3	0.1	839.9	0.089	0.012	845.5	0.4	0.4	0.1	5.1%
NWPP	WECC Northwest	715.2	0.068	0.010	719.9	0.6	0.6	0.4	1,617.5	0.156	0.022	1,628.1	1.6	1.5	0.9	5.1%
NYCW	NPCC NYC/Westchester	553.8	0.021	0.002	555.1	0.2	0.2	0.0	1,016.2	0.022	0.002	1,017.5	0.4	0.4	0.0	5.1%
NYLI	NPCC Long Island	1,209.0	0.157	0.020	1,218.9	0.9	0.9	0.2	1,300.6	0.044	0.005	1,303.3	0.8	0.8	0.2	5.1%
NYUP	NPCC Upstate NY	232.3	0.017	0.002	233.0	0.1	0.1	0.0	890.2	0.047	0.006	892.6	0.4	0.4	0.2	5.1%
PRMS	Puerto Rico Miscellaneou	1,537.3	0.084	0.013	1,543.3	3.5	3.9	3.2	1,587.9	0.055	0.010	1,592.3	4.5	5.1	5.0	0.0%
RFCE	RFC East	695.0	0.053	0.007	698.5	0.3	0.3	0.3	1,237.9	0.089	0.012	1,243.8	0.7	0.6	0.7	5.1%
RFCM	RFC Michigan	1,189.3	0.114	0.016	1,197.0	0.7	0.7	1.0	1,766.9	0.177	0.025	1,778.8	1.2	1.2	2.1	5.1%
RFCW	RFC West	1,067.7	0.099	0.014	1,074.4	0.8	0.6	0.7	1,831.6	0.178	0.026	1,843.7	1.5	1.1	1.3	5.1%
RMPA	WECC Rockies	1,242.6	0.117	0.017	1,250.6	0.7	0.6	0.4	1,578.8	0.126	0.018	1,587.3	0.8	0.8	0.4	5.1%
SPNO	SPP North	1,070.0	0.112	0.016	1,077.6	0.6	0.6	0.2	1,958.6	0.200	0.029	1,972.2	1.1	1.2	0.4	5.1%
SPSO	SPP South	1,002.0	0.070	0.010	1,006.7	0.7	0.8	0.8	1,543.7	0.108	0.015	1,550.9	1.2	1.2	1.3	5.1%
SRMV	SERC Mississippi Valley	806.8	0.043	0.006	809.6	0.6	0.6	0.7	1,200.1	0.068	0.010	1,204.7	0.9	1.0	1.4	5.1%
SRMW	SERC Midwest	1,584.4	0.169	0.025	1,595.9	1.0	0.8	2.4	1,960.9	0.216	0.031	1,975.6	1.2	1.1	2.8	5.1%
SRSO	SERC South	969.2	0.071	0.010	974.0	0.4	0.4	0.2	1,389.5	0.101	0.015	1,396.4	0.8	0.7	0.4	5.1%
SRTV	SERC Tennessee Valley	949.7	0.087	0.013	955.6	0.5	0.5	0.6	1,565.2	0.139	0.020	1,574.6	0.7	0.8	0.9	5.1%
SRVC	SERC Virginia/Carolina	675.4	0.058	0.008	679.1	0.3	0.4	0.2	1,349.2	0.118	0.017	1,356.9	0.7	0.8	0.4	5.1%
U.S.		**884.2**	**0.075**	**0.011**	**889.2**	**0.6**	**0.6**	**0.5**	**1,420.2**	**0.114**	**0.016**	**1,427.8**	**1.0**	**0.9**	**0.9**	**5.1%**

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