STATE OF NEW YORK

PUBLIC SERVICE COMMISSION

CASE 13-E-0030 – Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service

CASE 13-G-0031 – Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Natural Gas Service

CASE 13-S-0032 – Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Steam Service

Pre-filed Direct Testimony of

Thomas G. Bourgeois

On Behalf of

Pace Energy and Climate Center

MAY 31, 2013

PRE-FILED DIRECT TESTIMONY OF
THOMAS G. BOURGEOIS

I. IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Thomas G. Bourgeois. My business address is 78 North Broadway, E-House Room 2076, White Plains, New York 10603.

Q. By whom are you employed and in what capacity?

A. I am the Deputy Director of the Pace Energy and Climate Center (Pace), which is affiliated with Pace University.

Q. Please describe your background, including relevant employment experience, education, and other professional qualifications.

A. I have worked for the Energy and Climate Center and its predecessor organization, the Pace Energy Project, for over nineteen years. In my various capacities with Pace, I have provided economic, financial analysis and database services, with the primary focus of my work in the area of combined heat and power (CHP). Before being appointed Deputy Director in October 2007, I was the Director of Research at Pace.

As part of my responsibilities at Pace, I am Co-Managing Director of the Northeast Clean Energy Application Center NECEAC), a project of the U.S. Department of Energy, the New York State Energy Research and Development Authority (NYSERDA) and the Massachusetts Department of Energy Resources (MA DOER) . I have served as the principal investigator or major contributor on more than a dozen research contracts sponsored by New York State Energy Research and Development Authority (NYSERDA), U.S. Department of Energy, Oak Ridge National Labs, Argonne National

Labs, ASERTTI/NASEO, and other research foundations and government agencies. I have conducted research on topics including:

- Economic & Technical Potential for CHP in New York State: A Market Analysis CHP's role in Critical Infrastructure Resiliency, Business Continuity and Emergency Planning.
- Brownfields Redevelopment Incorporating Combined Heat & Power .
- Web Based Codes, Siting and Permitting Guidebook for Distributed Generation.
- Market Based Mechanisms for Air Emissions Control: Incorporating Distributed Generation.
- Transmission and Distribution Planning and Distributed Generation: Non Wires Alternatives to Distribution System Capital Investment.
- Energy Efficiency & CHP in the Hospitals and Health Care Sector.
- Community Energy Planning: Microgrids and District Energy Systems with CHP.

I have been contributing author on numerous briefs and other submissions to the New York Public Service Commission and the New Jersey Department of Public Utilities, and have provided testimony as an expert witness on behalf of Pace in proceedings before these respective agencies, including the last two Con Edison electric general rate proceedings.[1]

Prior to joining Pace, I was the Director of the Economic Information Unit of the New York State Data Center, housed within the former New York State Department of Economic Development (now the Empire State Development Corporation). I also served as Principal Economist of the New York State Assembly Ways and Means Committee, where I was responsible for econometric modeling and preparing state and national economic forecasts for use by the tax policy and budget staff of the Assembly.

[1] Case 08-E-539, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Order Setting Electric Rates,* effective Apr. 24, 2009; Case 09-E-0428, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Order Setting Electric Rates,* effective May 26, 2010.

I have a master's degree from the University of North Carolina at Chapel Hill from the School of Regional Planning (with a concentration in Economic Development), and successfully completed all coursework and passed all four comprehensive exams leading to the completion of a Ph.D. in managerial economics at Rensselaer Polytechnic Institute (RPI) in Troy, New York. The managerial economics Ph.D. program is a joint degree program offered by the Economics program and the School of Management at RPI.

Q. What topics are you testifying about today?

A. My testimony addresses the following points:

- In Section II, I will testify about the benefits of Distributed Generation (DG), and combined heat and power (CHP) to both the utility and the ratepayer during the rate years at issue, and those in the future. I will also testify as to how Con Edison can use DG, CHP, and Targeted Demand Side Management (DSM), to make the system more resilient in the face of extreme weather events, and create load relief during normal operations.

- In Section III, I will testify about the benefits of using DG, CHP, microgrids and DSM to avoid or defer traditional transmission and distribution (T&D) capital investments in the electrical infrastructure. I will discuss previous efforts to motivate Con Edison to include these alternatives when designing their systems. I will also make recommendations on how to add value to the deployment of these technologies for both the utility and the customer.

- Section IV, I will provide examples of how Con Edison discourages certain efforts by its customers to develop DG, CHP, and microgrids. I will also describe how Con

Edison has, once again, failed to use the opportunities provided by the rate case to move towards the goal of a system that is far better prepared for the deployment of these DG/CHP technologies. I will also recommend why and how the PSC should require Con Edison to create non-wires alternative principals, identify and create substantial projects that replace traditional T&D with DG and CHP alternatives, improve the interconnection process, and revisit the standby rates for CHP.

- Section V, will contain my concluding thoughts and recommendations for the utility and PSC.

II. SYSTEM RESILIENCY BENEFITS OF DISTRIBUTED GENERATION

Q. Briefly state how DG and CHP can provide system resiliency.

A. One of the important lessons learned from our experience with Superstorm Sandy is DG and CHP make the system more resilient, as on-site resources survived the disaster fairly well and were able to "keep the lights on." Notwithstanding this compelling evidence, Con Edison is devoting very little attention in this case to promoting DG as a system resiliency tool.

Q. What do you mean by "system resiliency"?

A. The NYS 2100 Commission, in its Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure, defined resilience as "the ability of a system to withstand shocks and stresses while still maintaining its essential functions."[2] The report identified several features that are common to most resilient systems,

[2] NYS 2100 COMMISSION REPORT: RECOMMENDATIONS TO IMPROVE THE STRENGTH AND RESILIENCE OF THE EMPIRE STATE'S INFRASTRUCTURE 24 (2013). [hereinafter NYS 2100 COMMISSION REPORT].

including "ensuring flexibility and responsiveness" and "having the capacity to recover quickly and evolve over time."[3]

Q. What are the system resiliency benefits provided by DG?

A. Appropriately designed, configured, and strategically located DG resources can bolster the resiliency and reliability of the distribution system. DG can reduce dependence on centralized generation and the associated vulnerable elements of the utility's distribution system. DG resources can be designed and operated in a manner that offers a source of power to a site that allows continued operations through natural disasters, extreme weather events, and system-wide blackouts. Properly designed DG resources, and CHP facilities in particular, can permit essential facilities to operate as "centers/facilities of refuge." These centers of refuge, typically high schools, university campus, community or senior centers are places where local residents go in the event of an outage. These locations help mitigate the serious health and safety consequences that an extended power outage can cause.

Q. What did the experience of Superstorm Sandy demonstrate with respect to the system resiliency benefits of DG?

A. I was co-author of a recent report by ICF International, Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities, attached as Exhibit A, which documented the ability of several commercial and industrial facilities throughout the northeast to "power through" Superstorm Sandy due to onsite CHP. During Sandy, many of the examples below became centers of refuge and/or continued to provide critical services and continuity of service as described above. Below, is a sampling of the case studies included in the report:

[3] *Id.*

- Co-op City - The Bronx, NY. Co-op City, one of the largest cooperative housing developments in the country, is spread out over 330 acres in the Bronx. The development includes 14,000 apartments, 35 high-rises, seven clusters of townhouses, eight parking garages, three shopping centers, one high school, two middle schools and three grade schools. The residents of Co-op City are served by a 40 MW natural gas-fired combined cycle CHP plant, installed in 2011. The system provides about 95% of the electric and thermal needs of the community. During Superstorm Sandy the area surrounding Co-op City was heavily impacted with trees blown over and power outages. However, the CHP plant provided the 60,000-plus residents of the development with power and heating throughout the storm and its aftermath.

- New York University – New York, NY. The NYU Washington Square Campus facilities are served by a 14.4 MW combined cycle CHP system, which was installed in 2010. The CHP system includes two combustion turbines, two heat recovery steam generators, and a steam turbine and generates up to 90,000 pounds of steam per hour. The electricity generated supplies 22 campus buildings. The steam is used to produce hot water for 37 campus buildings and meets 100% of their space heating, space cooling, and hot water needs. When campus electrical demand is low, the excess electricity is sold to Con Edison. The CHP has a total operating efficiency of almost 75%. NYU's core campus maintained both power and heat during Superstorm Sandy because of its CHP system. The CHP system went into island mode when the local grid went down, isolating itself from Con Edison's network. The system provided uninterrupted electricity, heating, and cooling to the campus, and also enabled NYU and New York City officials to set up a command post on the campus as well as serve area residents forced to evacuate their homes in the wake of the storm.

- Princeton University - Princeton, NJ. Princeton University has a district energy facility consisting of a 15 MW gas-turbine CHP system that produces electricity, steam, and chilled water for the campus. During Superstorm Sandy, the University was able to continue running normally due to the CHP plant. Princeton disconnected from the grid and used its district energy CHP system to power the campus. Non-critical loads around campus such as administration buildings and some classrooms were shut off so that the CHP plant could stay well within its generating capability. The plant produced 100% of campus energy needs from Monday evening to Wednesday evening when the University was able to receive power from the grid again.

- South Oaks Hospital - Amityville, NY, 1.25 MW reciprocating engine. South Oaks isolated itself from the Long Island Power Authority (LIPA) grid on the evening of October 28 and remained disconnected from the grid for approximately fifteen days. South Oaks was able to provide critical services for two weeks relying solely on its CHP system.

- Greenwich Hospital - Greenwich, CT, 2.5 MW reciprocating engine. The area surrounding Greenwich Hospital lost power due to Superstorm Sandy for approximately 7 days. Due to its CHP system, Greenwich Hospital was able to continue normal operations throughout the storm.

- Christian Health Care Center - Wyckoff, NJ, 260 kW microturbine. During Superstorm Sandy, the CHCC ran smoothly, with only a momentary loss of power, thanks to its microturbine CHP system and its three emergency backup generators. The CHCC ran independently of the grid for 97 hours, meeting all of its residents' power, heat and hot water needs.

- The College of New Jersey - Ewing, NJ, 5.2 MW gas turbine. During the storm, the TCNJ campus went into "island mode," severing the connection between the campus and the electric grid so that the campus could continue to operate despite grid disruptions. The campus stayed in island mode for about a week because of severe utility infrastructure problems.

- Salem Community College - Carney's Point, NJ, 300 kW microturbine. To avoid any switchover issues, the CHP system was disconnected from the grid on Sunday morning, October 28, 2012. The American Red Cross opened a disaster relief shelter in the DuPont Field House in Davidow Hall at 6:00 pm Sunday evening in preparation for the storm. The CHP system was the only source of power for Davidow Hall during the storm, and shelter operations ran flawlessly. The CHP system operated continuously from 9:00 am on October 28th until 8:30 am on November 1 for a total of 47.5 hours.

- Public Interest Data Center - New York, NY, 65 kW microturbine. During Superstorm Sandy the power to the building and surrounding area was out for over two days; however, the data center was able to remain fully operational.

- Nassau Energy Corporation – Garden City, NY, 57 MW combined cycle. During Superstorm Sandy, the CHP system was able to continue supplying power to LIPA, and also maintained the supply of thermal energy to the Nassau University Medical Center, Nassau Community College, and all other end-use customers. The CHP system ran through the entire storm and had no operational issues of any kind.

- Bergen County Utilities Wastewater Plant – Little Ferry, NJ, 2.8 MW reciprocating engine. The CHP system was able to remain up and running during Superstorm Sandy. There was a momentary controlled blackout when PSE&G service went down, but the CHP system operated seamlessly for 24 hours without PSE&G and was able to provide treated cooling water throughout the storm event to the adjacent power plant.

- Sikorsky Aircraft Corporation – Stratford, CT, 10.7 MW gas turbine. The system supplies 84% of the two million square foot facility's power needs. Additionally, the CHP system provides 85% of the facility's steam heating needs. The system uses the recovered thermal energy to operate absorption chillers, provide space heating in winter, and power a steam-turbine air-compressor system. The facility's CHP system did not experience any disruptions during Superstorm Sandy. Due to its operation, 9,000 people were able to come to work the day following the storm. Critical and lifesaving products were continued to be produced. More than 35,000 people were beneficially affected as the company opened up its facilities to provide showers, cell phone charging, the cafeteria offered meals that could be taken home and clean water for those in need.

Q. Have public officials recognized the contribution of DG and CHP during Superstorm Sandy?

A. Yes. In his December 6, 2012 post-Sandy press release, Mayor Bloomberg stated:

> "We'll also work to modernize our energy infrastructure by incentivizing large buildings and hospitals to invest in cogeneration systems—which allow them to generate their own heat and power. That has worked to a great extent. We will work with Governor Cuomo to explore how we can accelerate investments in distributed energy, microgrids, energy storage, and smart grid technologies."[4]

In his 2013 State of the State address, Governor Cuomo concluded that DG resources reduce the dependence on storm-susceptible utility infrastructure and called for expanded programs to incentivize the installation of DG systems.[5]

Q. How does the experience from Superstorm Sandy inform the issues in this proceeding?

A. It is clear from Con Edison's filing that its focus in this proceeding is "on the need for investments and preventive measures to further strengthen critical infrastructure designed to reduce the impact of future major storms on [Con Edison's] customers."[6] Con Edison is looking for input from major stakeholders on "the appropriate investments to prepare our energy delivery system for future major weather events like Superstorm Sandy."[7] Based on the critical role that DG and CHP facilities played in continuing to provide service to essential facilities during Superstorm Sandy, DG should play a prominent role in Con Edison's strategy for improving the resiliency of its delivery system in the face of anticipated future extreme weather events. Yet Con Edison devotes very little attention in its filing to the deployment of DG or CHP, and devotes most of its attention to

[4] Press Release, Mayor Michael Bloomberg, Mayor Bloomberg Delivers Address on Shaping New York City's Future After Hurricane Sandy, 8 (Dec. 6, 2012).
[5] Governor Andrew Cuomo, *2013 State of the State Address: NY Rising*, at 221 (Jan. 9 2013) *available at* http://www.governor.ny.gov/sites/default/themes/governor/sos2013/2013SOSBook.pdf.
[6] Letter from Craig S. Ivey, President, Consol. Edison Inc., to Jeffrey C. Cohen, Acting Sec'y, N.Y. State Pub. Serv. Comm'n (Jan. 25, 2013) (on file with author), at 1.
[7] *Id* at 2.

conventional and established measures geared toward system "hardening" and strengthening critical infrastructure. As stated in Jackson Morris's testimony, the path charted by Con Edison in this filing should be significantly augmented by a more progressive, forward-looking approach that will "help the State achieve its goal of a more resilient and future-ready energy system."[8] The State has identified DG, CHP and micro-grids as critical parts of that forward-looking utility system. In addition to providing system resiliency benefits, DG can serve as a substitute for certain utility capital expenditures by avoiding or deferring T&D infrastructure costs,[9] which is the subject of the next section of my testimony.

III. THE BENEFITS OF DG IN AVOIDING OR DEFERRING T&D INFRASTRUCTURE INVESTMENTS

Q. Please describe how DG and CHP can reduce the need to invest in T&D infrastructure.

A. Con Edison is proposing substantial new investment in T&D infrastructure in this proceeding. Con Edison could and should be doing more to consider, accommodate, and promote clean DG as a means of avoiding (or at least delaying) investment in T&D infrastructure, improving infrastructure and asset utilization, thereby bolstering resiliency and saving ratepayer money.

In Con Edison's service territory, there are many areas with significant grid constraints. These areas require upgrades to maintain sufficient reliability standards for the region that they serve. Upgrades are costly, disruptive to business, homeowners and traffic flow and

[8] NYS 2100 COMMISSION REPORT, *supra* note 2, at 80.
[9] Case 13-E-0030, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Response to Pace Interrogatories – Set Pace – 1, Question No. 006,* date of response (May 23, 2013).

are time consuming.[10] In general, more on-site power, in the right places and with the right characteristics, should bring significant benefits to the T&D system. Con Edison has already recognized this potential with its Targeted DSM program, which provides greater incentives if the energy efficiency measures installed are located within the areas that produce the greater reductions in deferred T&D investment. Con Edison has reported a savings of $250 million in deferred or delayed T&D investments through its Targeted DSM program. [11] Similar savings can and should be achieved through DG-friendly investments.

Q. Has Pace examined this issue in previous Con Edison proceedings?

A. Yes, in Con Edison's previous electric rate proceeding, Case No. 09-E-0428, Pace filed testimony that focused on the issue of Con Edison's failure to consider DG as a means of avoiding (or a least delaying) investment in T&D infrastructure. We urged Con Edison to aggressively explore clean DG as an alternative to continued costly investment in T&D infrastructure. We requested that the Commission make a finding that in future proceedings, Con Edison would be required to demonstrate its evaluation of DG as an alternative to T&D investment as an element of its prima facie case for recovery of T&D costs. We also asked the Commission to consider requiring Con Edison to undertake a pilot program that rigorously evaluates DG as an effective means of avoiding or delaying T&D investment.

Q. How were these issues resolved in the case?

[10] In my previous work at Pace, we performed joint research with Synapse Energy Economics; PACE ENERGY AND CLIMATE CENTER AND SYNAPSE ENERGY ECONOMICS, INC DEPLOYMENT OF DISTRIBUTED GENERATION FOR GRID SUPPORT AND DISTRIBUTION SYSTEM INFRASTRUCTURE: A SUMMARY ANALYSIS OF DG BENEFITS AND CASE STUDIES, NYSERDA final report (2011) No. 11-23.

[11] Case 13-E-0030, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Response to Pace Interrogatories – Set Pace – 1, Question No. 006,* date of response (May 23, 2013).

A. As part of a settlement agreement, Con Edison agreed to convene a DG Collaborative Group to address various DG issues within Con Edison's service territory, including the role of DG in the Company's long range electric plan (ELRP) and the value of the use of DG to defer infrastructure investment. Pace participated in the DG Collaborative process over a six-month period from April through October 2010, which culminated in the filing of the 2010 DISTRIBUTED GENERATION COLLABORATIVE REPORT with the Commission on November 10, 2010, attached as Exhibit B to this testimony.

Q. What were the results achieved through the DG Collaborative process?

A. One of the issues addressed in the DG Collaborative was the "physical assurance" requirement under which the Targeted DSM program effectively imposed a 100% physical assurance requirement. This requirement meant that either the customer load must be isolated from the utility system and served only by the DG resource, or the customer must be willing to shed load if the generator is out of service. There was some movement by Con Edison that would "relax" the physical assurance requirement in some very limited circumstances. While the DG Collaborative Report reflects Con Edison's acknowledgement that "[i]n some cases, demand-side solutions may be more effective [to address capacity and reliability constraints on the system] and will also help meet Company objectives to reduce the impact of energy distribution and use on the environment,"[12] based on the filings in this rate case and my personal experience on the ground, I conclude that the DG Collaborative was unsuccessful in getting Con Edison to think any differently about integrating DG into its long-term planning process. Its "DG

[12] Case 09-E-0428 – Proceeding on Motion of the Commission as to the Rates, Charges, Rules, and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *2010 Distributed Generation Collaborative Report*, filed with Commission, at 8 (Nov. 2, 2010).

Strategy," as enunciated in the DG Collaborative Report, is passive rather than proactive. During Phase I (3 to 5 years), Con Edison planned to engage in interconnection and load flow studies "to better understand the benefits, costs, and risks associated with incorporating DG as an operating and planning tool."[13] During Phase II, or years 6 through 10, Con Edison would actually develop an implementation strategy and perhaps "be in a position to facilitate adoption of DG in areas or network segments targeted due to cost, reliability, or environmental implications."[14] Under its DG Strategy, it would be 10 years before Con Edison would, in Phase III, "focus on more transformational opportunities through new policy and infrastructure enablers."[15] As part of its Phase III strategy, "starting in approximately 10 years," Con Edison stated that:

> "[E]merging technology standards ***may*** allow for developments such as simplified interconnection and management of disparate devices in the network as well as at utility- and customer-sited DG locations, and two-way communications between the DG equipment and the utility control room. Also, customers in close proximity to one another may, with utility coordination, opt to link their DG units together to form a microgrid, a structure in which DG assets with excess capacity can serve as emergency back-up generation for generation assets of other customers in the same grid in the event of an outage."[16]

In other words, the results of the DG Collaborative are that Con Edison will continue to "study" the issue for the next few years, take another five years to develop an "implementation strategy," and maybe after 10 years customers will see streamlined interconnections, two-way communications, and the possibility of microgrids. The result of the last rate case and the DG Collaborative is that Con Edison has not been motivated to consider DG and microgrids as solutions. The Commission must step in to protect ratepayers and require swifter action.

[13] *Id* at 10.
[14] *Id*.
[15] *Id* at 11.
[16] *Id* at 9 (emphasis added).

Q. How can Con Edison be motivated to move more aggressively with respect to DG and microgrid solutions?

A. In our testimony in Case 08-E-0539, Pace proposed a program that would provide incentives for Con Edison to encourage CHP installations within its service territory. Given the numerous benefits that CHP could provide to Con Edison and its customers, we advocated measures that would provide a financial incentive for Con Edison to facilitate the installation of CHP within its service territory. In particular, we cited the results Connecticut was able to achieve under Senate Bill 7501,[17] which provided incentive payments to a utility to "educate, assist and promote investments in customer-side distributed resources developed in such company's service territory."[18] When implemented in 2006, the size of the incentive payment for the utility was $200 per kilowatt (kW), in addition to the $500/kW incentive provided to the developer. The size of the incentive payments, which would be made at the time the resource became operational, would decrease in succeeding years. At the time we filed our testimony in September 2008, the incentive program had stimulated applications for 79 CHP projects totaling about 280 MW, of which 230 MW had been approved, which would have resulted in incentive payments of about $68 million to the utilities in Connecticut. We pointed out that these impressive results demonstrated that providing a utility with incentives to facilitate CHP installation is effective in achieving greater penetration of CHP technology. The incentive payments stimulated a proactive role by the utility in helping with the approval process, facilitating the interconnection arrangements, and keeping the projects advancing forward.

[17] H.B. 7501, 2005 Gen. Assemb., June Sess. (CT 2005); 2005 Conn. Acts 06-1 (Spec. Sess.).
[18] *Id.*

Q. What is Pace proposing in this proceeding?

A. We recommend that the Commission adopt an incentive program that would provide monetary payments to Con Edison for facilitating the installation of clean DG, CHP or microgrid projects within its service territory. This would be in addition to the existing State incentive programs, for example, NYSERDA PON 2701(CHP Performance Program) and NYSERDA PON 2568 (CHP Acceleration Program). As we proposed in the 2009 rate case, we also recommend that the Commission require Con Edison to undertake a program that would investigate and implement the use of a combination of utility-owned and customer-owned DG as an effective means of avoiding or delaying T&D investment.

Q. Please describe the incentive program Pace is recommending.

A. We recommend that the Commission adopt an incentive program that would provide monetary payments to Con Edison for facilitating the installation of DG projects within its service territory. Our recommended program has the following elements:

- Incentive payments would be made after the facility commences commercial operation.
- Con Edison would be required to demonstrate that it played a material role in facilitating the installation of the project.
- Payments would be "tiered" to allow markedly greater incentives for targeted areas where the project would enable T&D investment to be deferred, thereby saving ratepayers money.
- The program would have a lifetime cap of $100 million.

Q. What level of payments is Pace proposing?

A. Under the proposed two-tier incentive structure, Con Edison would receive an incentive payment of $250 per kW for projects located in the areas designated under its Targeted DSM Program (or upon a showing that customers would benefit from deferral of T&D investment). The incentive payment for all other eligible projects would be $125 per kW.

Q. Are there other measures that could be included to stimulate DG projects in Con Edison's service territory?

A. Yes. The Commission could consider other elements to include in an incentive program. These could include:

- For high-efficiency CHP, the price of gas delivered by Con Edison could be reduced to cover only the commodity cost as is the case in Connecticut.
- Standby tariffs could be eliminated for qualifying projects.
- The Commission could develop the parameters of a program under which banks or other financial intermediaries would offer new, alternative or expanded loan programs, loan loss reserves or other products to address the issue of the up-front capital requirements for DG installations.
- To encourage utility-owned DG, the Commission could authorize incentive rates of return on Con Edison's investments in DG (or some similar measure in recognition that the utility has a financial disincentive to promote DG as an alternative to T&D investments). Require Con Edison to work collaboratively with affected and interested parties to develop a set of "Non-Wires Alternatives Principles" and require a non-wires alternative program that actively asses these alternative and documents the results for PSC and stakeholder review.

Q. Please describe the recommended program.

A. Con Edison previously investigated the use of DG as an alternative to T&D investments through a Commission-ordered DG pilot program over a three-year period from 2001 through 2003. Under this program, the Company issued Requests for Proposals (RFPs) in 2002 and 2003 to purchase DG capacity in the areas with the highest technical and economic potential for DG projects. Only one bid was received and that bid was not accepted because the cost of the proposed DG project was greater than the T&D alternative. Con Edison recommended that the DG pilot be discontinued in favor of an alternative proposal that purportedly would continue to integrate DG into T&D planning through either utility- or customer-sited programs. Based on our experience in the DG Collaborative Process, the documents filed in this proceeding, and the answers to Pace discovery requests, it does not appear that DG is actually systematically integrated into T&D planning. The Commission should consider requiring a more rigorous test of the capability of DG to avoid or delay T&D infrastructure investment. Con Edison has still not identified a single DG project that would defer or avoid distribution system capital investment. A "project" could consist of a suite of measures including Demand Response (DR), energy efficiency, PV, CHP and other distributed energy resources.

Q. How would such a program be different from Con Edison's earlier DG pilot program?

A. In the 2001-2003 DG pilot program, bidders were responsible for developing the DG strategy for the particular areas designated by the Company, which resulted in the bidders incurring high costs and significant effort to gather the necessary information to prepare sufficiently detailed technical and financial proposals. A better model is the Congestion Relief Pilot Program tested by the Massachusetts Technology Collaborative (MTC) and

Massachusetts utilities, where the utility identifies the particular capacity-constrained area and is required to develop a proposal to address it using all available resources, including utility-owned DG, customer-owned DG, energy efficiency and demand response programs.

Q. How would this recommendation be implemented?

A. Templates include certain "non-wires alternatives" programs including the Everett, MA congestion relief pilot once pursued by National Grid and the recent Tiverton/Little Compton pilot proposed by National Grid in Rhode Island. As part of the MTC Congestion Relief Pilot program, National Grid explored whether sufficient customer-side resources could be developed to mitigate the installation of an additional 23 kV cable in the Everett area served by the Thorndike substation. National Grid developed an integrated solution involving 3.6 MW of demand response, a 350 kW waste to energy generator, 70 kW of solar photovoltaic at one site and 40 kW of solar at four other sites, and four micro-CHP installations at residential homes. A similar approach could be implemented on a pilot basis for Con Edison. Whereby Con Edison would identify one or more capacity-constrained areas, and develop an action plan for an integrated solution involving utility- and customer-owned DG, energy efficiency, and demand response measures. This would provide a true test of integrating DG into the T&D planning process, and would also incorporate the related measures of energy efficiency and demand response. Con Edison's ratepayers have waited too long for action on non-wires alternatives.

IV. CON EDISON'S PERFORMANCE WITH RESPECT TO DG, CHP AND MICRO-GRIDS

Q. Have policymakers recognized the potential for clean DG and CHP installations within Con Edison's service territory?

A. Yes. PlaNYC, for example, adopted a goal of 800 megawatts of new clean distributed generation (DG) by 2030.[20] With respect to CHP in particular, PlaNYC states that:

> "Clean DG can be even more efficient when it utilizes the waste heat from electrical generation to create hot water, heating and cooling for buildings, so it is often called Combined Heat and Power (CHP). CHP can be done on a building level or developed as a 'mini-grid' for multiple buildings within a small area, known as 'district energy."[21]

PlaNYC also mentions the "11-step connection process that can take months to complete" in order to connect CHP within Con Edison's service territory, and commits that the City "will work with Con Edison and relevant agencies to reduce the financial, technical, and procedural barriers related to interconnection in order to achieve, at a minimum, 800 MW of Clean DG by 2030."[22]

Q. What is the progress thus far in achieving the objective of 800 MW of clean DG?

A. At the current pace, the City will fall far short of the DG objective from PlaNYC. According to Con Edison's testimony, there is currently about 150 MW of baseload DG installed in its service territory, with 75 MW of new installations expected by 2017.[23] Con Edison estimates that there will be only 500 MW of installed DG by 2030,[24] which would fall about 40 percent short of the PlaNYC goals.

Q. Can you point to any factor or factors that are impeding deployment of DG by Con Edison?

[20] THE CITY OF NEW YORK, *PlaNYC: Update 2011, A Greener, Greater New York*, 115 (2011).
[21] *Id* at111.
[22] *Id.*
[23] *Id.*
[24] Case 13-E-0030, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Electric Infrastructure and Operations Panel Testimony*, filed (Jan. 1, 2013) at 364. [hereinafter Electric Panel].

A. Yes, in a report prepared for NYSERDA by Pace and Synapse Energy Economics we observed that "[t]he existing distribution planning process in large measure does not contemplate DG solutions. Consequently: a. modeling tools that would identify DG investments as cost-effective solutions are not well developed, b. forecasting methodologies that predict high-value DG deployment opportunities based on network loading, equipment ratings and demand projections are typically not employed, and c. program budgets that would identify DG alternatives are not in place…" The Key Findings of the DG Business Models: Task Number 2 Report are attached as **Exhibit C**.

Q. How do you explain the slow rate of DG penetration in Con Edison's service territory, are there other factors to blame for the slow rate of DG penetration?

A. There are a number of factors, but one of the leading contributors is Con Edison's failure to enthusiastically encourage and to accommodate DG within its service territory. There are economic reasons for utilities' general unwillingness to embrace DG, as discussed in Mr. Morris's testimony. Irrespective of the motivations, the actual results are that DG penetration in Con Edison's service territory is at unacceptably low levels. The Company is missing a huge opportunity to improve distribution system asset utilization, resilience, and capture system and societal benefits by not incorporating appropriately located, configured and operated DG/CHP.

Q. Can you cite a specific example to support your statement about Con Edison's apparent unwillingness to accommodate DG within its service territory?

A. Yes, the experience of the Durst Organization with respect to its skyscraper at One Bryant Park in Manhattan (the Bank of America Tower) is a representative example of the obstacles that CHP developers face in dealing with Con Edison. The Bank of America

Tower is a building "heralded as the most environmentally advanced skyscraper in the country,"[25] as it was the first skyscraper in North America to achieve Leadership in Energy and Environmental Design LEED platinum certification.[26] Through a subsidiary, OBP Cogen LLC, Durst constructed and operates a 4.6 MW CHP facility at One Bryant Park. Con Edison provides both natural gas and electric service to the property. Over a period of twelve months, Durst on two separate occasions was forced to seek relief from the Commission in response to attempts from Con Edison to increase the electricity and natural gas charges related to the CHP facility.[27]

Q. What was the basis of the disputes regarding utility charges for the CHP facility at the Bank of America Tower?

A. The first involved the applicability of Rider H rates for natural gas service. Rider H was developed in response to the Commission's order that utilities develop rate classifications that foster DG powered by natural gas.[28] Con Edison had allowed OBP to take service under Rider H since OBP first began taking natural gas service in 2010. In August 2012, however, Con Edison informed OBP that the portion of OBP's gas service that was not directly used to generate electricity did not qualify for Rider H rates.[29] In response, Durst successfully petitioned the Commission for a declaratory ruling.[30] New York Presbyterian Hospital, having received a similar notice from Con Edison that its on-site CHP unit would no longer be able to receive Rider H rates for its entire system, submitted

[25] Patrick McGeehan, *Midtown Developer Accuses Con Ed of Overcharging*, N.Y. TIMES, October 9, 2012.
[26] Case 12-G-0389, Petition for Declaratory Ruling of OBP Cogen LLC, a Subsidiary of One Bryant Park LLC, Regarding Rider H of Consolidated Edison Company of New York, Inc.'s Schedule, issued (Mar. 18, 2013) at 2.
[27] *Id.*
[28] *Id.*
[29] *Id.*
[30] *Id.*

comments in support of OBP Cogen's petition.[31] According to the comments, without the provision of thermal energy in addition to the electric generation, the hospital would be unable to "achieve the efficiencies necessary to justify . . . investment in the CHP project.

In its March 13, 2013 order, the Commission stated:

> "OBP Cogen is entitled to Rider H gas rates for the entirety of its combined heat and power (CHP) system because (1) Con Edison's Rider H rates are cost-based rates intended to achieve the Commission's goals of in-City electric reliability and gas system efficiency, and OBP Cogen meets the load requirements to receive those rates; and (2) application of Rider H rates to on-site cogenerators with provide both electricity and thermal heat is consistent with the specific language in Con Edison's tariff and the Commission's policy to support distributed generation technologies."[32]

Q. What was the second dispute regarding Con Edison's billing for the CHP unit at Bank of America Tower?

A. The second dispute involved the calculation of Contract Demand for electricity charges. In 2011, Con Edison tried to impose more than $290,000 in improper Contract Demand penalties and charges on Durst.[33] Specifically, Con Edison claimed that One Bryant Park's monthly maximum demand in May 2011 reached 13.76 MW, which was 1.76 MW higher than Durst's 12 MW Contract Demand. Durst filed a complaint against Con Edison with the Commission in November 2011. At the time of the alleged exceedance Con Edison was supplying only 10.539 MW and the OBP CHP was supplying 3.237 MW. Contrary to the terms of its tariff, and contrary to prior representations made by Con Edison to Durst, Con Edison claimed that monthly maximum demand for Special Provision E customers includes the total building load. The Commission had previously

[31] *Id.*
[32] *Id.*
[33] Case 11-E-0299, Tariff filing by Consolidated Edison Company of New York, Inc. to Revise Provisions of Standby Service for Retail Access, *Order Approving Tariff Amendments with Modifications*, issued (November 17, 2011).

rejected Con Edison's interpretation of how Contract Demand exceedances should be measured.[34] Con Edison subsequently withdrew the improper charges and Durst subsequently withdrew its Complaint.[35]

Q. What is the practical effect of such disputes between Con Edison and DG developers?

A. There is no question such disputes have a chilling effect on DG development within Con Edison's service territory. First, they evidence the lengths Con Edison will go to discourage DG on its system. Second they increase market uncertainty by bringing into question the foundational basis for making longer-term projections of economic benefits and costs. Most DG developers simply do not have the financial resources or "staying power" to do battle with Con Edison over questionable tariff interpretations or disputed billing calculations. The Durst Organization, for its part, has the financial resources to hire an experienced utility regulatory attorney and obtain relief from the Commission. Most DG developers, however, do not, and will simply refrain from seeking to develop projects in the service territory of an uncooperative utility. It should be business as usual to promote DG, not to work against it.

Q. Can you provide another example whereby the Company is failing to invest and operate in a manner that better accommodates CHP/DG on its system?

A. Yes. We are troubled by the Electric Infrastructure and Operations Panel testimony where they call for an end to the current performance mechanism related to replacement of a minimum of 60 over-duty circuit breakers.[36] The Company states that "over-duty condition should no longer be viewed as a barrier to DG connection, as new proven

[34] *Id.*
[35] *Id.*
[36] Electric Panel, *supra* note **Error! Bookmark not defined.**4, at 355-61.

technology has provided a better solution than retrofitting breakers."[37] The Company fails to mention cost, performance, efficiency, size (footprint) differences or other attributes that might indicate these new technologies may be less than an optimal solution. The Company's proposal is troubling, insofar as seeking such relief may open the possibility slowing the pace of Company investments that make the system more amenable to CHP/DG penetration. This comes at a time when, for all the reasons stated earlier, DG/CHP's positive role in resiliency, business continuity, emergency preparedness and planning, reduced grid congestion, and so on, and argues strongly for acceleration of the pace of Company investments that would make the Con Ed system more amenable accommodating DG/CHP. A slowdown in the pace of investments by the Company in assets that better accommodate DG/CHP is simply not acceptable, in fact, that pace of investment in assets that further accommodating DG/CHP ought to be markedly accelerated. It is not acceptable to shift more of the cost to customers while at the same time holding Con Edison less accountable for ensuring that its system can accommodate DG/CHP.

Q. What are Pace's recommendations to improve Con Edison's performance with respect to integration of DG resources in its service territory?

A. Pace is participating in a collaborative process convened by New York City's Office of Long Term Planning and Sustainability, the DISTRIBUTED GENERATION INITIATIVE (DG Initiative). An objective of the DG Initiative is to develop a strategy to close the gap between the 150 MW of DG currently in place, and the goal of 800 MW by 2030 called for under PlaNYC. Some of the issues discussed in the DG Initiative include the following:

[37] Electric Panel, *supra* note **Error! Bookmark not defined.**4, at 357.

- Revisiting the standby rates for electric and steam service.
- Streamline the interconnection process to establish formal rules and specific time frames applicable to the interconnection of DG projects between 2 and 20 MW.
- Pursue tariff revisions to reduce the O&M charge on capital costs of interconnection for a DG project. DG developers bear the capital costs and in addition face an annual charge equal to 12.1% of the total capital costs of interconnection for a DG project. The Company is proposing to increase annual carrying charges to 12.8%. We urge rejection of that proposal.
- Reduce the barriers preventing the sale of excess generation on the secondary voltage system.
- Ensure that the costs of new natural gas infrastructure are allocated equitably, and clearly communicated to customers.

We support these ideas and we urge rejection of the proposal in the Electric Infrastructure and Operations Panel testimony to end the end-of-year target of at least 60 circuit breaker replacements in substations and the related performance mechanism of $100,000 per breaker not achieved below the target, as described in that testimony.[39]

The panel states, "[o]ver the past several years, technologies, such as fast-acting fuse devices and inverter interconnections, have become commercially available to DG operators to negate the contribution of DG generation to fault currents."[40] This is far from an ideal solution, however, as inverter-based technology, the CLIP and other customer side mitigation cost more, bear a penalty in reduced efficiencies and can take considerable space which is of significant value in New York. We propose that the end of

[39] Electric Panel, *supra* note **Error! Bookmark not defined.**4, at 356-8.
[40] *Id* at 357.

year target be increased to better accommodate DG/CHP, from a minimum of 60 per year to a minimum of 90 per year. The status of the Con Ed Fault Current Map as of 2013 indicates that the mitigation investments will not be fully in place until dates as late as 2026, whereas the similar map prepared November 2005 had set a timetable that ended 2014. The result of these shifts will be higher costs for project developers.

Q. What about the development of microgrids within Con Edison's service territory?

A. Mayor Bloomberg has noted the need to accelerate investments in microgrids, and Governor Cuomo said in his 2013 State of the State address that we must "[identify and resolve] barriers that are discouraging microgrid development.[41] Pace was part of the team that authored the comprehensive study of microgrid development published by NYSERDA in September 2010.[42] As observed in that study and noted in discussion with the DG Initiative, the development of microgrids in New York to date has been slow due to a lack of any formal statutory or regulatory guidance and high transactional costs. Thus, affirmative action by New York State lawmakers and/or regulators is critical to the advancement of microgrids. With respect to actions that utilities can take to facilitate microgrid development , however, the DG Initiative has discussed ways that Con Edison could help overcome transactional impediments through standardization of the process for interconnecting microgrids (i.e., requiring Con Edison to develop a standard design template and broaden eligibility for the "campus style" interconnection), expanded interconnection and metering options, and more service offerings by Con Edison.

[41] Governor Andrew Cuomo, *2013 State of the State Address: NY Rising*, at 221 (Jan. 9 2013) *available at* http://www.governor.ny.gov/sites/default/themes/governor/sos2013/2013SOSBook.pdf.

[42] PACE ENERGY AND CLIMATE CENTER AND SYNAPSE ENERGY ECONOMICS, INC DEPLOYMENT OF DISTRIBUTED GENERATION FOR GRID SUPPORT AND DISTRIBUTION SYSTEM INFRASTRUCTURE: A SUMMARY ANALYSIS OF DG BENEFITS AND CASE STUDIES, NYSERDA final report (2011) No. 11-23.

V. CONCLUSIONS

Q. Please summarize your testimony, Mr. Bourgeois.

A. The benefits of increased DG, CHP, and microgrid to avoid or defer T&D capital investments are clear. What is lacking is the proper motivation and accountability to move these technologies forward. Con Edison should reimagine its system, not just rebuild. These technologies can make the system more resilient, save ratepayer funds, increase efficiency, and create load relief without heavy capital expenditures.

Because Con Edison continues to discourage efforts by its customers to develop DG, CHP, and microgrids, the PSC can and should use this rate case to require Con Edison to make way the deployment of these technologies.

The PSC should require or enable Con Edison to do the following:

- Create and implement a comprehensive set of non-wires alternative principles;
- Identify critical areas of need and create projects that replace traditional T&D with DG alternatives within the rate years of this case;
- Streamline and improve the interconnection process, identify and implement best practices by working with developers; and
- Revisit standby rates for CHP fully to recognize the value and efficiency that DG, CHP, and microgrids add to the Con Edison system.
- Establish new Incentive payments to the company for a trial period for CHP in its services areas that: would be made after the facility commences commercial operation. Where Con Edison would be required to demonstrate that it played a material role in facilitating the installation of the project.
- Payments would be "tiered" to allow markedly greater incentives for targeted areas where the project would enable T&D investment to be deferred, thereby saving ratepayers money. Under the proposed two-tier incentive structure, Con Edison would receive an incentive payment of $250 per kW for projects located in the areas designated under its Targeted DSM Program (or upon a showing that customers would benefit from deferral of T&D investment). The incentive payment for all other eligible projects would be $125 per kW.
- The program would have a lifetime cap of $100 million.
- For high-efficiency CHP, the price of gas delivered by Con Edison could be reduced to cover only the commodity cost as is the case in Connecticut.

- Standby tariffs could be eliminated for qualifying projects.
- The Commission could enable the Company to develop the parameters of a program under which banks or other financial intermediaries would offer new, alternative or expanded loan programs, loan loss reserves or other products to address the issue of the up-front capital requirements for DG installations.
- To encourage utility-owned DG, the Commission could authorize incentive rates of return on Con Edison's investments in DG (or some similar measure in recognition that the utility has a financial disincentive to promote DG as an alternative to T&D investments). Require Con Edison to work collaboratively with affected and interested parties to develop a set of "Non-Wires Alternatives Principles" and require a non-wires alternative program that actively asses these alternative and documents the results for PSC and stakeholder review.
- Require the Company to Revisit the standby rates for electric and steam service.
- Streamline the interconnection process to establish formal rules and specific time frames applicable to the interconnection of DG projects between 2 and 20 MW.
- Pursue tariff revisions to reduce the O&M charge on capital costs of interconnection for a DG project. DG developers bear the capital costs and in addition face an annual charge equal to 12.1% of the total capital costs of interconnection for a DG project. The Company is proposing to increase annual carrying charges to 12.8%. We urge rejection of that proposal.
- Reduce the barriers preventing the sale of excess generation on the secondary voltage system.
- Ensure that the costs of new natural gas infrastructure are allocated equitably, and clearly communicated to customers.
- We propose that the end of year target for over-duty circuit breakers be increased to better accommodate DG/CHP, from a minimum of 60 per year to a minimum of 90 per year. The status of the Con Ed Fault Current Map as of 2013 indicates that the mitigation investments will not be fully in place until dates as late as 2026, whereas the similar map prepared November 2005 had set a timetable that ended 2014.
- In the aftermath of Sandy, and with an eye towards the future, Con Edison must align its planning with the objectives stated in the 2100 Commission Report, namely:
- As utilities replace aging parts of the power system, the State should ensure new technologies are deployed… It is important to immediately invest in new construction, replacement, and upgrades to transition the grid to a flexible system that can respond to future technologies, support clean energy integration, and minimize outages during major storms and events… The grid for the 21st century should seamlessly incorporate distributed generation, microgrids, and plug-in electric vehicles (PEVs).

The focus of the Commission should be on prudent utility expenditures that best improve the resiliency of Con Edison's utility networks, prepare the distribution system for the grid for the 21st century which should seamlessly incorporate distributed generation, microgrids, and plug-in electric vehicles. The evidence is overwhelming that Con Edison needs to move quickly and aggressively to include DG, CHP and microgrids as integral components of a successful strategy to improve the resiliency and cost effectiveness of its distribution system.

Q. Does this conclude your testimony, Mr. Bourgeois?

A. Yes, it does