January 10, 2014

Hon. Kathleen H. Burgess
Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223-1350

Re: 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 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

Dear Secretary Burgess,

Pursuant to the December 12, 2013 Ruling Extending Schedule for Party Comments on the Con Edison Storm Hardening and Resiliency Collaborative Report issued by Hon. Eleanor Stein, A.L.J. the NGO Parties, consisting of the Columbia Center for Climate Change Law, Environmental Defense Fund (EDF), Natural Resources Defense Council (NRDC) and the Pace Energy and Climate Center (Pace), submit the following comments in response to the Storm Hardening and Resiliency Issues Collaborative Report ("Collaborative Report") filed to the New York State Public Service Commission (the Commission) by Consolidated Edison of New York, Inc. (Con Ed or the Company) December 4, 2013. Attached to this letter is also the "NGO Group Letter" which outlines the nature of our association and areas of particular interest in this rate case.

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

COMMENTS OF COLUMBIA CENTER FOR CLIMATE CHANGE LAW, ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, AND PACE ENERGY AND CLIMATE CENTER, ON CON EDISON'S STORM HARDENING AND RESILIENCY COLLABORATIVE REPORT

DATED: January 10, 2014

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BEFORE THE
NEW YORK PUBLIC SERVICE COMMISSION

COMMENTS OF COMMENTS OF COLUMBIA CENTER FOR CLIMATE CHANGE LAW, ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, AND PACE ENERGY AND CLIMATE CENTER ON CON EDISON'S STORM HARDENING AND RESILIENCY COLLABORATIVE REPORT

I. The Collaborative should be directed to think broadly about "resiliency", and to work toward a portfolio of resiliency strategies that address all facets of climate change.

The Company's Storm Hardening and Resiliency Collaborative Report (the "Con Edison Report") includes a great deal of specifics about what storm hardening entails, but scant information about resiliency – not even a definition. Since storm hardening is in fact one resiliency strategy among many, it is critical that, going forward, a clear understanding of what "resiliency" entails be shared by Collaborative participants. This definition should be broad enough to encompass the full range of climate change realities facing the Con Edison service territory, and should provide the basis for rigorous, varied efforts to build a more flexible, diversified energy system.

A. The Collaborative should be directed to adopt the definition of "resiliency" used by the NYS 2100 Commission.

In the absence of any other suggestions that we are aware of, we recommend the definition adopted in the Report of the NYS 2100 Commission (the "NYS 2100 Report"), which was one of the "other processes" whose "input" the Collaborative was expected to incorporate from the outset. The NYS 2100 Report defines resiliency as "[t]he ability of a system to withstand shocks and stresses while still maintaining its essential functions".

The Collaborative would further benefit from clarification of certain elements of this definition. "System" should be understood to be the entire electric system, including equipment on both sides of the meter. For example, if, hypothetically, *all* customers had on-site storage at their disposal during grid outages, a shock that shut down the entire utility-owned system would not necessarily lead immediately to a loss of all essential functions. As for "shocks": these may be natural or anthropogenic (or both). Weather/climate-related shocks include storms as well as heat waves, although the challenge posed by heat waves also have a human/behavioral component, insofar as the shock to the system comes from the direct effects of heat on grid equipment coupled with the surge in demand as a result of customers' use of air conditioning, resulting in peak system load occurring consistently at times when equipment is somewhat compromised.

B. The Collaborative should be directed to fully recognize the management of heat events as a facet of resiliency, and plan accordingly.

Much of the early work in the Collaborative has focused exclusively on storm hardening – i.e., measures that enable particular system components to withstand flooding and/or wind. This is understandable in light of the role of Superstorm Sandy in focusing public and policymakers' attention on the urgent need for greater system resiliency, and in light of the substantial work pertaining to such events

that has been done by the Company since Hurricane Katrina.[1] It is also perhaps inevitable in the context of a regulatory paradigm that has accorded especially favorable treatment to improvements made to the utility's own system compared with customer-side measures rigidly separate from customer-based equipment. Storm hardening is a vital part of resiliency for a utility company, but it is not the whole picture – it is limited to a particular subset of "shocks" and a narrow perspective of the "system" and its "essential functions".

Most of the work of Working Group 1 has focused on storm hardening, although the 2014 Climate Change Vulnerability Study that is being recommended by that working group should ultimately yield recommendations that are relevant for planning for heat events. As further discussed below, Working Group 4's focus has been even narrower; it has designed a tool which may be extremely useful for ranking the urgency of storm hardening measures, which may be able to be expanded into a cost-benefit tool for such measures, but which currently has no applicability to measures that could improve how heat events are managed. We understand that tools that are suited to evaluating such measures may be fundamentally different in character from tools suited to evaluating the costs and benefits of "hardening" a single system component, so developing such tools based on the work that has been done thus far in Working Group 4 may be impracticable (as further discussed below).

Finally, we note that as climate change is intensifying the need for system resiliency, and as energy usage is a key driver of climate change, measures to minimize climate change (rather than simply manage its effects), by reducing the utility system's contribution to climate change, should not be overlooked by the Collaborative. We recommend that the Commission's directive to the Collaborative include an express acknowledgment of the importance to the climate of reducing greenhouse gas pollution, including methane emissions, from Con Edison's natural system. This position is consistent with statements made in state executive branch reports such as the NYS 2100 Commission Report[2] and the New York State Energy Highway Blueprint.[3]

C. The Collaborative, and especially Working Group 2, should be directed to think in terms of a portfolio of strategies.

A complex system is most resilient if it employs a diversity of strategies. Diversity is essential to "flexibility", which is one of the goals for the electric system that the Staff Policy Panel articulated in its testimony calling for the creation of the Collaborative.[4] The numerous storm hardening strategies explored by Working Group 1 provide an example of diversity within a narrow portion of resiliency planning. As discussed above, "resiliency" is broader than just storm hardening. Complementary measures to storm hardening should be at least as diverse. Whereas storm hardening measures are simply expected to allow particular system components to continue to operate (or at least not be destroyed) in specified adverse conditions (i.e., a particular level of flooding or wind speed), measures that are relate to load, including those that improve load flexibility, may yield unexpected dividends in the face of unanticipated shocks. For example, this week (on January 7), thanks to the "polar vortex" bringing

[1] *See, e.g.*, Con Edison, *Post-Sandy Enhancement Plan* (June 20, 2013) (http://www.coned.com/publicissues/PDF/post_sandy_enhancement_plan.pdf).
[2] NYS 2100 Commission, RECOMMENDATIONS TO IMPROVE THE STRENGTH AND RESILIENCE OF THE EMPIRE STATE'S INFRASTRUCTURE, pp. 89-90.
[3] The New York Energy Highway Blueprint, pp. 57-58.
[4] Department of Public Service Staff Policy Panel, Direct Testimony, at 50 (May 31, 2013**)**.

abnormally low temperatures to much of the United States, NYISO and PJM both experienced new winter peaks – in PJM, high use corresponded with widespread generation failures – at a time when gas/electric coordination was especially sensitive; demand response programs, which are more often associated with managing heat emergencies, proved invaluable to managing the crisis in both regions. Having a portfolio of strategies means more options for dealing with whatever nature or humanity throws at us.

For these reasons, Working Group 2 should be expressly directed to think in terms of advancing the state of the system toward a workable portfolio of strategies, including developing a better understanding of promising opportunities that are relatively novel in this service territory through multiple studies and/or pilots.

II. The Collaborative should work to incorporate insight from other relevant policy processes, notably the post-Sandy Commissions.

In the initial testimony of DPS Staff's Policy Panel, which was the impetus for the creation of the Collaborative, the Policy Panel anticipated that continuing beyond the end of the litigation would afford the Collaborative an opportunity to develop "long-term initiatives for 2015" and to "incorporate input from other processes" – including, for example, "the Governor's NYS 2100 Commission, NYS Respond Commission, NYS Ready Commission, and the Moreland Commission on Utility Storm Preparations and Response", as well as "experts hired by the Department or other stakeholders."[5]

We applaud the Company for convening the collaborative as urged by Staff's Policy Panel, and the progress that has been made there. However, we recognize that the process of running a Collaborative during an intense litigation schedule may have led to some areas not being explored as deeply as we would have liked. For example, there has never been an express effort to obtain or integrate the "input from other processes" that was contemplated in the Policy Panel testimony, although EDF gave a very short presentation that highlighted some key takeaways from the NYS 2100 Report at a meeting of Working Group 2. The lack of systematic consideration of the recommendations from these processes recommends a real missed opportunity, because the NYS 2100 Commission worked hard to incorporate state of the art resiliency opportunities from around the world. We look forward to more systematic approach being possible in the Collaborative after the rate cases wind down.

III. The Workplan for Working Group 2 Should Set the Stage for Uniform and Fair Evaluation of Proposals, Tailored to their Respective Stages of Development.

Con Edison's report divides the workplan for Working Group 2 into two categories: one for most customer-sited strategies, and another for time-differentiated pricing. We assume that the Company took this approach in its report in recognition of the fact that its own efforts with respect to time-differentiated pricing are less developed than its efforts with respect to, e.g., DG and EVs. Although we agree that relatively novel proposals will need to be explored in a somewhat different manner than proposals that are nearly ripe for full-scale implementation, we propose that this should be accomplished through a uniform

[5] *Id.* At 51.

workplan that is sufficiently flexible to allow appropriate evaluation and opportunities for progress for projects at all stages of development. To that end, in lieu of the two separate workplans proposed by the Company in its report, we propose the following unified framework as appropriate for all proposals vetted in this working group:

(1) Identify technologies/solutions/opportunities;[6]
(2) Review prior costs and studies, if any (including from other jurisdictions);
(3) Assess benefits and costs, including gaps in information available about benefits or costs;
(4) Design and implement strategy to fill gaps in information about benefits or costs, whether through pilots, research, or otherwise (strategic siting should be considered in any pilot design or full-scale implementation)[7];
(5) Evaluate pilot/research/other findings from step 4;[8]
(6) Where likely cost-beneficial opportunities have been identified:
    a. Recommend further implementation of such opportunities and/or inclusion in ordinary-course reliability planning, and/or
    b. Identify regulatory barriers to such further implementation and/or inclusion in ordinary-course reliability planning in a report to the Commission.[9]

With respect to the idea that the Company's report proposed as step 2 of its proposed workplan for time-differentiated pricing strategies ("seek to leverage existing technologies and resources, including the potential to extract AMI functionality from existing ARM meters on a pilot scale in Westchester County and/or the Bronx, consider the feasibility of mandatory Time of Use meters for EVs, and of enhancing the effectiveness of existing programs for direct utility control of room air conditioners"): We agree that the list of resources Con Edison has identified is a good one.[10] Indeed, we specifically recommend that Working Group 2 should promptly consider ways to combing time-differentiated pricing (preferably pricing capable of signaling particular sensitive periods, i.e., critical peaks) with the residential air conditioning control technology that Con Edison already considers successful. Another existing technology/resource that should be leveraged, if possible, would be on-site storage, such as the Eon units that Con Edison is currently piloting; with access to energy storage, customers' ability to respond to price signals to curtail or even increase load in the most helpful manner might be greatly

[6] We recommend a healthy combination of leveraging existing technologies/solutions and novel technologies/solutions – such as combining more sophisticated metering (perhaps leveraging the AMR/AMI pilot committed to in the JP) and pricing with existing load-management efforts that are ripe for scaling up, such as the residential smart appliance program (RSAP) which allows for sophisticated control of residential air conditioning and/or residential-level storage (such as that the Eon technology that Con Edison is already piloting).

[7] We anticipate that the Commission will be willing to make funds available for promising resiliency proposals, which will allow the Collaborative's efforts to vet opportunities to supplement the Company's paltry R&D budget, which we discussed in our testimony and briefs.

[8] This is the point at which cost-benefit analysis can be performed, to the extent a satisfactory methodology has been identified.

[9] Where regulatory barriers prevent even the research/piloting necessary to vet particular proposals, such barriers can and should be brought to the attention of the Commission when they present themselves.

[10] We appreciate Con Edison's agreement in the JP to propose in Working Group 2 a pilot of time-differentiated pricing that, unlike the VTOU it has implemented in this rate case, has broader application than the mitigation of EV load. In Con Edison's unique service territory, where relatively few customers park vehicles in their own garages or driveways, a pricing program designed for managing EV load is unlikely ever to transform load at the level of the mass market, and we applaud Con Edison for accepting the difficult challenge of identifying a strategy that is workable in this challenging context.

enhanced. However, we also urge the working group to consider ways to harness the value that is currently out of reach. For example, wholesale energy markets may be critically important to ensuring that consumers can be rewarded fairly for time-differentiated energy decisions, but are beyond the reach of today's mass market customers even if they opt for time-differentiated pricing for their delivery charges.

The unified approach that we are recommending retains the opportunity to consider the factors that the Company's initial proposal would have included in step (1) of the time-differentiated pricing work plan. Customer acceptance and interest should be considered through existing literature and, where the literature is incomplete on the subject of Con Edison customers, through pilots; cost would be a factor throughout (with robust cost-benefit analysis occupying a central place in the working group's thinking, as further discussed below); and, where otherwise promising opportunities are subject to regulatory barriers, such barriers would be brought to the Commission's attention.

In addition, although cost benefit analysis has a critical role to play in making decisions about full-scale implementation of alternative resiliency strategies (or in any well-considered decision on the spending of ratepayer funds), we do not think that Working Group should "rank" all Working Group 2 proposals against one another in the near term based on cost-effectiveness. For proposals to be perceived as competing against one another would be damaging to the dynamic of this Collaborative working group as it is tasked with developing a portfolio of innovative strategies. Moreover, such a ranking is not practicable in the near term due to the uneven development of various strategies under consideration (with planning for distributed generation being far more advanced than pricing strategies, for example) and the current lack of any cost-benefit methodology readily applicable to the types of efforts being considered (as further set forth below).

Because different proposals are at different stages of maturity and will require more or less protracted exploration under this workplan, Working Group 2 should be required to report to the Commission at least in June and December 2014, and June and December 2015, or in accordance with any more frequent or more lengthy reporting schedule as determined by the Commission. Such a reporting schedule will ensure that parties remain fully engaged for enough time that proposals on a slower timeline continue to move forward for sufficient time that pilots can be performed and evaluated, to the extent appropriate.

IV. Load Management is a Critical Aspect of Resiliency

As noted above, the "system" that needs to be able to withstand shocks while maintaining some functionality is not just Con Edison's grid: it is the entire electric system, including equipment on both sides of the meter. Working Group 1 has made enormous progress with respect to measures that protect Con Edison's grid. However, the role of load in resiliency has not been addressed there. Working Group 2, the Alternative Resiliency Strategies Working Group, has emerged as the place where such load-side strategies are being moved forward.

A. The inclusion of Distributed Generation and microgrids within the Con Edison system will create a more resilient and reliable system.

Distributed Generation and microgrids provide several pathways to resiliency and create system efficiencies. They can create a more future-ready grid, become centers of refuge during acute events, provide load relief during extreme weather events, and relieve load congestion and mitigate load growth allowing for reduced need for heavy investments in traditional transmission and distribution assets.

DG and microgrids are essential elements of future utility design. The 2100 Commission report stated that the State needs to become a more resilient and "future-ready energy system."[11] To this end, DG and microgrids create decentralized power sources, a central element of future utility design. As utilities shift from centralized power sources DG and microgrids will provide the localized assets needed to provide support a future-ready grid.

The ability to island and supply localized power can be extremely beneficial in the case of acute weather events or emergencies. These facilities become centers of refuge for the surrounding community and command posts for first responders. During the crisis of Sandy several locations were able to "island" from the grid and provide their own electricity, creating centers of refuge and allowing City officials locations to establish command response centers.[12]

Strategically sited DG and microgrids can provide load relief in extreme temperature events, and help provide demand response during critical peak events. During extreme temperature variations such, as a heat event, DG resources can island relieving stress on the system, or supply energy feeding "downstream" utility customers relieving stress on transformers and other utility assets. During Working Group 2 meetings it has been agreed to that resiliency should include events beyond major storms, DG and microgrids can provide system benefits and provide efficiencies beyond major storm response.

DG and microgrids are sound alternatives to re-investing in our aging and out dated electric infrastructure. The 2014 State Energy Plan notes the aging electric infrastructure cannot meet the demand and calls for the integration of clean distributed resources.[13] As Governor Cuomo recently stated in his State of the State address "[d]espite the importance of our energy grid, we are operating under an outdated

[11] NYS 2100 Commission, RECOMMENDATIONS TO IMPROVE THE STRENGTH AND RESILIENCE OF THE EMPIRE STATE'S INFRASTRUCTURE, p. 80.

[12] In the testimony of Tom Bourgeois he cited a report he co-authored for the ICF which cited many success stories of how locations utilized their ability to island and keep the lights on. One example was "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." PACE ENERGY AND CLIMATE CENTER, Dir. Test. of Thomas G. Bourgeois, at 6 (filed May 31, 2013).

[13] "Unless we change our approach to provide greater emphasis on energy efficiency and clean, localized power sources, it is estimated that over the next 10 years more than $30 billion will need to be invested in New York's electric system to replace aging infrastructure and central generation resources just to meet currently projected energy demand." NEW YORK STATE ENERGY BOARD, Shaping the Future of Energy, 2014 Draft Vol. 1 at 12 (2014).

system that is hampering our growth and increasing costs to consumers." DG and microgrids can serve to upgrade this aging infrastructure through clean and localized services.

While the storm hardening efforts are designed to build the castle walls higher, the inclusion of DG and microgrids into the grid will allow the inside of the castle to run more efficiently and independently. We applaud the Company's inclusion of DG (including CHP) and microgrids as response mechanisms to be deployed in an emergency, and as critical measures of system efficiency. The NGO Group supports the scope of work proposed by the Company in their report with respect to DG and microgrids and looks forward to working productively with the Company through the Collaborative to include these measures. We ask that the Commission take note of this general agreement and include DG and microgrids as demand-side measures to be explored through Working Group 2 an alternative resiliency measures.

B. Distributed Generation and microgrids should be considered assets rather than impediments.

The Governor in his 2014 State of the State address called for 10 new microgrids to be deployed across the State and called for regulatory and financial impediments to be removed.[14] The call for increased deployment of DG through the Governor's Sun Initiative and his recent comments regarding microgrids should stand as a testament to the shifting nature of how utilities should view these demand-side assets.[15] Long seen as a losing proposition for utilities DG should be re-imagined as an asset on parallel with their own distribution resources. It is time that we as stakeholders re-examine the nature of the relationship between DG and the utilities in way that creates incentives for utilities not impediments. We must think of these resources as deployable assets and target them where the need is greatest for both the utility, the environment, and the community.

We ask that the Commission allow Working Group 2 the opportunity to create innovative pathways to deploy DG and utilize microgrids both as an asset to the Company, the environment, and the communities the utilities serve.

C. Price signals can improve resiliency in multiple ways, including by improving the management of peak load.

Pricing is not a resiliency strategy in itself. Rather, it is a gateway to engaging customers in behaviors that improve resiliency – such as procuring and making wise use of on-site generation and storage, reducing consumption when the system is stressed, and improving the carbon footprint of the system by encouraging the deployment of variable renewable resources.

As noted above, some extreme weather events result in high use of electricity. This phenomenon is most associated with heat waves in summer but, as we have recently seen, can also be a factor during cold snaps. It can even be play a role in the context of storms. The City's post-Sandy report, *A Stronger, More Resilient Report*, observed that in the immediate aftermath of the Superstorm, we dodged a bullet; had normal summer temperatures existed in the immediate aftermath of the storm, when the generation,

[14] Governor Andrew Cuomo, 2014 State of the State, Building on Success, at 65 (Jan. 8, 2014).
[15] New York Sun Initiative, NY-Sun *available at* http://ny-sun.ny.gov/ (last visited Jan. 10, 2014).

transmission and distribution resources were terribly compromised (summer conditions after a hurricane would not be unusual), demand could have overwhelmed the system, resulting in outages on a far larger scale than those that resulted directly from the storm.[16]

Increases in peak usage can be managed by supplying more grid infrastructure or through "non-wires alternatives" of all types. Utilities are naturally inclined toward more infrastructure, but there are circumstances where non-wires alternatives such as storage, distributed and demand response (alone or in combination) can provide the same value to customers (increasing peak usage is successfully managed) at lower cost. Price signals have the potential to involve customers directly in the management of peaks; they give customers an opportunity to benefit by managing their own energy use. Since peak demand stimulates the deployment of highly-polluting peak generation resources, peak mitigation has environmental as well as reliability and cost benefits.

Price signals can also enhance the viability of variable renewable resources, which gives rise to environmental benefits. For example, producers of remotely located wind energy, which in some regions may be most productive at night, can benefit from improved marketability of their energy if price signals encourage users to buy when that power is available. Conversely, rooftop solar, which may be most productive at peak times, may be more valuable to customers if it spares them the need to buy energy at retail prices during those peaks.

Although Con Edison is working with a limited number of residential customers to manage their air conditioning load through direct load control, and is experimenting with utility-controlled storage on the grid, those programs are of limited reach. Most Con Edison residential customers have no reasonable opportunity to reap benefits from managing their own electric costs to contribute less to the peak periods, particularly those that are of the greatest concern for system costs and in weather catastrophes, due to the absence of meaningful price signals. The voluntary time-of-use price in the current tariff, although available to residential customers in general, is set in a manner that is designed to motivate EV owners to modify their charging habits as a general matter, not to respond to system strain; it is not clear that non-EV owners, who comprise the vast majority of Con Edison's residential customers (and always will irrespective of the success of EVs, due to our unique urban form), can benefit from this rate. There is no such thing as a critical peak price or critical peak rebate for Con Edison's residential customers, so whether they own EVs or not, customers have no way to be compensated for reducing their consumption during system emergencies (other than the benefit that they share with their free-riding neighbors, the fact of the avoided outage). Moreover, residential customers have no access to the reduced energy prices that exist in the wholesale market at off-peak versus on-peak times, so any price signal that is built into the delivery charges for the few who have opted for time-differentiated pricing, dampening the price signal that they do receive. As a consequence, opportunities for customers themselves to take steps that improve resiliency – such as engaging in demand response, or deploying distributed generation or and storage – cannot be optimized.

D. Increasing Time-of-Use Rate Adoption by Plug-in Electric Vehicle Customers

Con Edison should develop a comprehensive plan to increase adoption of time-of-use rates by plug-in electric vehicle (PEV) customers, a key step to ensure customers realize the fuel savings they

[16] City of New York, *A Stronger, More Resilient New York* (June 11, 2013), at 114.

expect and charge in a manner that minimizes adverse impacts to the electrical grid. The status-quo bias is not easily overcome. In California, the nation's largest PEV market where the utilities are actively educating customers and where a shift from standard rates can provide substantial savings, the vast majority of PEV customers remain on standard rates that provide no incentive to charge to off-peak hours. Con Edison should encourage PEV customers to adopt TOU rates by implementing a plan that considers at least the following four elements:

1. *A Means to Identify Potential and Current Plug-in Electric Vehicle Customers*

Experience demonstrates that customers will generally not self-identify without intervention. California's utilities still only know where exactly a small fraction of the 60,000 PEVs in the state reside. You cannot conduct targeted customer education and outreach without knowing who to target. Address-level information is also needed to prevent service disruptions and facilitate strategic service planning. Con Edison should work with the Department of Motor Vehicles and automakers to identify which customers are PEV customers.

2. *Providing Incentives to Facilitate System Planning and Maximize Grid Benefits*

Con Edison should consider providing up-front incentives contingent upon enrollment in time-of-use rates to both increase rate adoption and encourage customers to self-identify as PEV drivers. Modest incentives can avoid costly service disruptions; emergency repairs cost twice as much as planned maintenance.[17] In the future, larger incentives could be provided to customers who also enroll in smart charging programs, such as the pilot proposed by NSTAR in Massachusetts that rewards customers who allow their utility to manage the level and time of charging.[18] Such incentives should be based on the value the behavior they reward provides to the grid, including avoiding distribution system investments and facilitating the integration of variable renewable generation. The full range of potential grid support services PEVs could provide is described in a whitepaper published by the California Public Utilities Commission, which recently initiated a comprehensive proceeding to unlock the value of intelligent vehicle-grid-integration.[19]

3. *Customer Education and Outreach*

A general lack of consumer awareness must be overcome and common misperceptions about PEVs, often fueled by misleading press coverage, must be corrected. Consumers have basic questions about the environmental benefits of fuel switching, where they might charge, the difference between pure battery electric vehicles and plug-in hybrid electric vehicles, range, battery life, how much their electric bills might go up, etc. They will look to Con Edison to answer many such questions, especially those related to charging, rates, bill impacts, renewable energy options, and infrastructure. Having accurate and ready information is needed to remove barriers to adoption that stem from uncertainty and unfamiliarity. Con Edison's role should not, however, be limited to responding to customer inquiries. Proactive outreach to answer many of these questions and educate customers as to the benefits of vehicle electrification, including potential fuel savings, could help accelerate the market and inform customer decisions that will impact their costs and the grid.

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[17] Pacific Gas & Electric, San Diego Gas & Electric, Southern California Edison, *Joint-IOU Assessment Report for PEV Notification*, December 23, 2011, p. 27.
[18] http://www.env.state.ma.us/DPU_FileRoom/frmDocketListSP.aspx
[19] http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M080/K775/80775679.pdf

In conducting such active education and outreach, Con Edison should take advantage of the overlapping customer interest in PEVs, renewable energy, and energy efficiency to accelerate the markets for all three. Customers are already making the connection. Nearly 40 percent of the first wave of PEV drivers in California own rooftop solar systems, and an additional 17 percent report an intention to install solar within a year.[20] Once people plug in, they begin to think beyond the socket. Sixty-seven percent of participants in a yearlong study conducted by the University of California at Davis and BMW reported that driving an electric version of the MINI Cooper, the "MINI E," changed the way they think about energy.[21] Con Edison should leverage the energy awareness that accompanies transportation electrification to increase participation in energy efficiency and renewable energy programs. Likewise, such programs should be leveraged to educate customers as to the benefits of the use of electricity as a transportation fuel.[22]

4. <u>Submetering Pilot</u>

Con Edison could play a key role in developing a low-cost dedicated metering solution to facilitate PEV-only time-of-use rates that maximize savings relative to gasoline and provide price transparency. Almost everyone knows what the price of gallon of gasoline costs and roughly how far can be driven on a gallon; in contrast almost no one knows what a kilowatt-hour is, let alone how much one costs and what it means it terms of useful services. The price of electricity as a transportation fuel should be as plain as the price of gasoline at the pump, but without PEV-only rates, it will be very difficult to tell customers exactly how much they might save relative to gasoline. Con Edison's proposed "Gateway" solution could prove a low-cost dedicated metering solution needed to provide such transparency and increase the number of PEV customers taking service on time-variant rates.

5. Resiliency and Transportation Electrification

Optimizing the charging of PEVs has the potential to improve resiliency and promote decarbonization while reducing the strain electric vehicles can place on the electric system in those sections of the grid where they come online. Intelligent management of this otherwise challenging new drive of peak load can help ensures the reliability of integrity of the electric grid; avoid unnecessary investments in the distribution, transmission, and generation systems; and facilitate the integration of variable renewable resources

The fundamental responsibility of utilities and their regulators is to ensure customers receive reliable energy services in the most cost-effective manner. Programs and incentives such as those described above are needed to meet this obligation. As noted immediately below, some PEVs can charge at very high power levels, straining the electrical grid if not properly managed.

Utility programs and incentives are needed to minimize investments in distribution, transmission, and generation assets by ensuring: 1) charging is done during off-peak hours; and 2) at power levels that do not strain the grid where and when it lacks sufficient capacity. In service territories that lack utility programs such as those described in the previous section, customers generally charge immediately upon

[20] California Center for Sustainable Energy, <u>*California PEV Owner Survey*</u>, August, 2012, p. 9.
[21] Tom Turrentine, Dahlia Garas, Andy Lentz, and Justin Woodjack, <u>*The UC Davis MINI E Consumer Study*</u>, May, 2011, p. 71.
[22] *See* Max Baumhefner, Ed Pike, and Andreas Klugescheid, *Plugging Vehicles into Clean Energy*, Electricity Journal, April, 2013.

returning home from work, often during hours that coincide with peak demand.[23] In contrast, over 80 percent of vehicle charging in SDG&E territory occurs between the hours of midnight and 5:00 am, the "super off-peak" period on the utility's PEV tariff.[24] Likewise, without appropriate utility programs and incentives, automakers will continue to push higher power charging that could strain the grid; Tesla Motors offers customers a 19.2kW charger, equivalent to power demand from five moderately sized homes.[25] Utilities can integrate lower-powered charging that is sufficient for the vast majority of daily driving needs during off-peak hours with minimal expense, but accommodating higher-power or on-peak charging could require extensive system upgrades. Smart charging programs could encourage lower-power charging and ensure higher-power charging only occurs when and where there is sufficient capacity.

As noted above, shifting consumption to off-peak hours helps integrate wind generation, which often peaks during the night. More active smart charging programs could help integrate increasing levels of variable renewable generation of various types and help manage anticipated over-generation from distributed solar. In 2009, BMW demonstrated the potential for such smart charging in a partnership with the European utility, Vattenfall, matching charging to near real-time variation in wind energy generation, while drivers remain largely oblivious, waking up to fully charged vehicles.[26] Incentives that reward customers who enroll in such programs can reduce the cost of reaching increasingly ambitious renewable energy procurement mandates.

V. Cost-Benefit Analysis as Contemplated and Used by Working Group 2 should be Properly Calibrated to the Types of Project Under Consideration There, Not on the Methodology being developed in Working Group 4.

The Con Edison Report recommends that, for evaluating cost-effectiveness, Working Group 2 coordinate its effort with the methodology being developed in Working Group 4. If there were a relevant methodology being developed in Working Group 4, we would have no objection to such coordination. Certainly there may be parties participating in Working Group 4 who possess expertise that would be useful for developing an appropriate methodology for use in evaluating the costs and benefits of flexibility measures, and their participation in Working Group 2 should be welcomed. However, Con Edison's own description of how fundamentally different such measures are from storm hardening measures reinforces our perception that Working Group 4's actual work products and thinking to date are not well suited to flexibility measures that would add resiliency in a heat wave by making load more flexible. At the last full Collaborative meeting, Con Edison used a medical analogy that illustrated well the distinction between these methods. In its analogy Con Ed compared storm damage to localized blunt trauma and heat to a more systemic poison. The remedies for these distinct harms are necessarily different. Similarly, even though storm conditions and heat waves can both lead to service interruptions

[23] *See* Ecotality, *PEV Project Quarterly Report, Fourth Quarter*, 2012.
[24] *Ibid.*
[25] Note: the "chargers" are actually on-board the vehicle. What is commonly referred to as an "PEV charger," the box used to plug the car in, is actually "Electric Vehicle Supply Equipment" or "EVSE."
[26] Vattenfall AG, *Klimaentlastung durch den Einsatz erneuerbarer Energien im Zusammenwirken mit emissionsfreien Elektrofahrzeugen* (Climate Change Mitigation Through Usage of Renewable Energy Sources in Combination with Emission Free Electric Vehicles), March, 2011.

for customers, they stress the system in fundamentally different ways, and their remedies are fundamentally different.

Moreover, the approach being taken by Working Group 4 thus far does not appear to be especially applicable even to alternative resiliency strategies that are suitable to managing storm-induced outages, such as microgrids coupled with distributed generation. As noted above, whereas the benefits of storm hardening strategies presumably relate primarily to the actual resiliency value (avoided equipment damage and avoided outages), the benefits of alternative resiliency strategies may include avoided loss of electric service as well as multiple other benefits – including customer savings on energy and grid infrastructure, other customer benefits, and environmental benefits, for example.[27] The study that EDF introduced as Exhibit 2 represents a first cut at quantifying benefits of reduced system and energy costs from moderating system peaks. We would welcome the opportunity to work within the Collaborative to refine this approach and/or work on other approaches to valuing benefits from alternative resiliency approaches, as well as appropriately calibrated approaches to evaluating costs and benefits of alternative resiliency projects overall. At this time, however, given developments to date, we see no reason why Working Group 4 is the correct forum for such analysis to be developed, and suspect that Working Group 2 may be a more productive home for that work.

Finally, we note that the ability to actually do effective, credible cost-benefit analysis in the Collaborative setting will be more or less successful depending on the availability of complete and accurate cost information as to various alternatives. The Company has effectively complete control over information concerning the cost of various load-management strategies. For example, the detailed cost findings from the 2007 AMI study, as well as the cost of the AMI pilots that were approved by the Commission but not pursued due to the lack of ARRA funding, are confidential. This has frustrated any third-party effort to perform cost-benefit analysis with respect to any strategy requiring AMI, or evaluate the Company's analysis with respect to same. For these reasons, we would ask the Commission to direct the Company to be forthright in revealing enough information to allow the Collaborative to make informed determinations. Just as it will do for JP parties with respect to capital projects in Brooklyn, the Company should periodically, when relevant, share with the Collaborative detailed cost information and analytics.

VI. The Collaborative should be required to submit a proposal and funding request to implement the Working Group 3 project as described in Con Edison Report, and to continue to pursue ways to reduce the greenhouse gas footprint of Con Edison's distribution system.

[27] We applaud the Company's agreement, in the JP, to "utilize non-traditional programs that facilitate use of distributed resources to reduce the identified investment needs" in areas of Brooklyn, which represents a real-world example of combining strategic siting with load management to add flexibility and improve reliability and, accordingly, reduce system costs while improving climate resiliency. This is locally-tailored experimentation with new ways of planning and managing the system is consistent with the direction that Chair Zibelman gave to the Collaborative in October and with the way forward that the Commission has recommended in the recent EEPS order. This real-world project exemplifies what Working Group 2 should be working toward, and we anticipate Working Group 2 and its initiatives could provide valuable insights here and wherever the Company is thinking systematically about system upgrades needed to manage load increase. This is particularly true of Working Group 2 initiatives that are ripe for full implementation.

Starting in early September 2013, Working Group 3, focused on natural gas system resiliency, began meeting to discuss ways to improve the resiliency and climate responsiveness of Con Edison's natural gas distribution system. Substantive meetings over several months, attended primarily by Con Edison, the NY OAG, DPS staff, the City of New York, and EDF (representing a coalition of environmental groups that are parties to the case), were productive and led to the proposed project that appears in Appendix E of Con Edison's report, starting on p. 116. The project would develop a cost-effective methodology for quantifying "Type III" leaks throughout the system and prioritizing them for repair, with the goal of dramatically and permanently reducing the backlog of these leaks in Con Edison's distribution network. EDF fully endorses the proposed project and asks the Commission to order the project's immediate development.

Methane is a highly potent greenhouse gas known among climate scientists as a "short-term forcer" – the new 2013 IPCC report has increased its estimate of methane's global warming potential, now 83 times higher than carbon dioxide per unit volume on a 20 year time horizon. While we must reduce our carbon dioxide output as part of efforts to reduce the impacts of climate change, one of the most cost-efficient and effective ways to reduce our greenhouse gas footprint is to mitigate short-term forcers like methane. While Con Edison's distribution system methane emissions have not been quantified to date, it is clear that the thousands of leaks that appear on the system annually are contributing to climate change. These leaks are also a potential safety hazard, and they impact the system's resiliency and reliability. In evaluating the climate impact of natural gas, including potential advantages over other fuels, it is imperative to analyze system-wide methane emissions, including those at the distribution level.

Over the course of Fall 2013, parties to the discussions within Working Group 3 participated in productive discussions that shed considerable light on current efforts to quantify and map methane leakage, as well as how Con Edison and other gas utilities find and repair leaks, and newly emerging technology to map and quantify leaks in order to prioritize repair. During this time, EDF identified an immediate Con Edison need that could be met by emerging quantification technologies used by EDF and its partners. Con Edison has a backlog of approximately one thousand Type III leaks on its system that are not required to be repaired in any particular timeframe. These leaks do not represent an immediate safety hazard, but may be of any size. Con Edison currently has no way of quantifying those leaks. If those leaks could be quantified, then a business case could be developed to accelerate their repair – after all, the cost of leaked gas is passed along to ratepayers. By quantifying these leaks, Con Edison can prioritize their repair and minimize costs while maximizing methane leakage reduction.

The project contained two modules. The first module involves scientific research on direct quantification of leaks, using laser measurement technology and algorithms developed by Dr. Joe von Fischer at Colorado State University and elsewhere. EDF and its partners have been using this technology with promising results around the country. We have discussed these results with the Company, and believe the methodology will provide real value to the Company and to New York State more broadly, with potential application to utilities statewide. We are investigating promising partnership opportunities with several New York State research institutions.

Once a methodology for quantifying leaks has been developed to the satisfaction of the study participants, Con Edison, EDF and others will work to develop a proposal to permanently reduce the Type

III leak backlog by prioritizing leaks to be repaired by size. We are very enthusiastic about moving forward with both modules of this project.

This project is an excellent first step toward systematically reducing methane emissions from the natural gas distribution system. EDF hopes to ultimately extend the research conducted here on known Type III leaks to the entire network, allowing regular and comprehensive mapping and quantifying of leaks system-wide, and using that information to inform leak detection and repair as well as pipeline replacement programs. We urge the Commission to support the development of this project by calling for the Collaborative to submit a formal proposal and funding the project to its conclusion. This should be part and parcel of a more general direction to the Company and to the Collaborative to continue to seek opportunities to reduce the greenhouse gas footprint of Con Edison's operations as part of the evolution toward a more resilient, less vulnerable system.

VII. Climate Change Vulnerability Study

The NGO parties applaud Con Edison's commitment to undertake a Climate Change Vulnerability Study in 2014, in order to better understand how climate change may affect Con Edison's infrastructure and to fill in data gaps hindering resiliency planning. The NGO parties support the scope of Con Edison's proposed Climate Change Vulnerability Study, as set forth in the study's outline in Appendix C. The NGO parties look forward to participating actively in the preparation and review of the Vulnerability Study, and will cooperate with Con Edison to provide needed expertise.

A. Design Standard

We generally support Con Edison's establishment of a minimum design standard that includes building to an elevation with three feet of "freeboard" over the 100 year floodplain, as established in the most recent applicable flood map prepared by the Federal Emergency Management Agency (FEMA).

In the short-term, Con Edison has agreed to build to a minimum of three feet over the base flood level set forth in the June 10, 2013 Preliminary Work Maps issued by FEMA, and in the long-term, to use updated FEMA floodplain levels and to monitor changes to base flood elevations and sea level rise projections. *See* Collaborative Report at 32. While this "FEMA plus 3" standard seems prudent and practical under the circumstances, we nevertheless believe that Con Ed has overstated the benefits of and justification for this standard in its Collaborative Report. Additionally, we note that other infrastructure agencies have begun requiring even more stringent flood standards.

"Freeboard" is an incremental elevation above the floodplain level, or base flood elevation. According to FEMA, freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management, and compensates for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions. Unknown factors include things like wave action, bridge openings, and urbanization.[28] In other words, freeboard accounts for uncertainty, not for a specific, projected rise in sea levels.

Freeboard is required by the New York City Building Code for new or substantially improved buildings, and the amount of freeboard depends on the use classification of the building. Specifically, Appendix G of the Building Code references the flood proofing standards of the 2005 publication 24-05

[28] www.fema.gov/floodplain-management/freeboard.

of the American Society of Civil Engineers, entitled *Flood Resistant Design and Construction* (ASCE 24-05).

In the Collaborative Report, Con Ed states:

> Con Edison's current design standard for flood protection consists of the 1% annual flood hazard elevation (100 year) established by FEMA June 2013 Preliminary Work Maps plus an additional three feet. The additional three feet of freeboard over the FEMA level is a combination of two feet freeboard prescribed by the New York City Building Code to account for potential uncertainties related to storm surge elevations and an additional one foot such that the total of three feet (36 inches) freeboard accounts for potential sea level rise up to 31 inches projected in the June 2013 NPCC report (90th percentile, high-end projection).

Collaborative Report at 31. Con Ed similarly states that by adopting a standard of three feet of freeboard, its "design standard exceeds the NYC Building Code's minimum standard and simultaneously accounts for impacts from sea level rise of up to 31 inches projected by the NPCC at the High Range (90th percentile) for the 2050s." *Id*. at 24.[29]

While three feet of freeboard undoubtedly gives some margin of safety against flooding from future storms, we believe that stating that three feet will protect against the high range of sea level rise projected through the 2050s is not correct for several reasons.

First, the flood resistant design standards in ASCE 24-05—which was published in 2005, well before the most current sea level rise projections—do not reference sea level rise, so assuming a specific protection for projected sea level rise is incorrect. As noted above, freeboard is designed to account for uncertainty, not for projected sea level rise. This point is underscored by FEMA guidance for its Hazard Mitigation Assistance Program. In a December 23, 2013 staff memorandum, FEMA indicated that, when performing structural elevation projects in jurisdictions with building code freeboard requirements, "[sea level rise] estimates should be added to the freeboard requirements...."[30] Thus, it is not correct to say that three feet of freeboard "accounts for impacts from sea level rise." Freeboard offers protection *above* projected sea level rise.

Second, the 31 inches of sea level rise is one projected estimate from the New York City Panel on Climate Change (NPCC). Although called the "high-estimate," it does not refer to the highest possible sea level rise, and does not purport to be a design standard. Instead, the NPCC high-estimate refers to the 90th percentile projection, meaning that it is the "value at which 10 percent of the projections are higher." New York City Panel on Climate Change, *Climate Risk Information 2013: Observations, Climate Change Projections, and Maps,* June 2013 (NPCC 2013) at n. 2. Thus, providing 31 inches of freeboard does not necessarily protect Con Edison's infrastructure from floods due to future sea level rise, since even the "high-estimate," by definition, is not the highest projected sea level rise. Nor does building to that standard provide any margin of safety if sea level rise is higher than 31 inches.

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[29] Con Ed also indicates that it considers its facilities to be Class III structures, requiring one foot of freeboard. However, an argument could be made that Con Edison's critical infrastructure could be classified as Class IV structures, which include structures "designated as essental facilities including but not limited to…. Power generating stations and other public utility facilities required in an emergency." ASCE 24-05 Table 1-1.

[30] *See* Roy E. Wright, Deputy Associate Administrator for Mitigation, Memorandum: "Sea Level Rise and Hazard Mitigation Assistance Programs," December 23, 2013, *available at* http://www.fema.gov/media-library/assets/documents/89659.

Moreover, apart from the fact that even the NPCC high-estimate explicitly indicates that ten percent of sea level rise projections are higher than 31 inches, other sea level rise projections are even higher. For instance, as set forth in the May 31, 2013 Direct Testimony of Dr. Radley Horton on behalf of the Columbia Center for Climate Change Law,[31] sea level rise greater than 31 inches is possible, and a NOAA technical report indicates that a worst-case scenario could result in approximately a 6-foot (72-inch) sea level rise by 2100. Dr. Horton stated that, while this is an upper bound, "it cannot be ruled out for major long-term infrastructure investments and risk management issues." Horton Direct Testimony at 10.

Third, building to three feet over the base flood elevation does not necessarily account for the dynamics of particular floods, wave action, or storm surges. In other words, even if structures are built above the projected 31 inch sea level rise, dynamic storm conditions could nevertheless result in flooding that overwhelms defenses built to address that rise. In its 2014 Climate Change Vulnerability Study, Con Edison should attempt to characterize the dynamic risk due to flooding of its infrastructure.

Finally, although three feet of freeboard is greater than what currently is required by the New York City Building Code incorporating the eight-year-old ASCE flood design publication, other infrastructure agencies are requiring more stringent standards. For instance, projects receiving federal Storm Mitigation Loan Program funds under the New York Clean Water State Revolving Fund must build critical equipment to the *highest* of the following elevations: (1) best available 100-year floodplain level + five feet; (2) Sandy high water + 4 feet; or (3) the 500-year floodplain level. Even critical equipment *not* exposed to sea level rise must build to the highest of (1) 100-year floodplain level + 3; (2) Sandy high water + 2; or (3) 500-year floodplain.[32]

Con Edison and the Public Service Commission should not be complacent about the FEMA + 3 standard, overstate its benefits, or read more into its justification than appropriate. Instead, Con Edison and the Commission should continue to review this standard and modify it as necessary based on the best available scientific, engineering, and planning information.

B. Heat

In Appendix B ("Con Edison's Energy Systems: Overview, Superstorm Sandy Impacts, Current Weather Conditions, and Climate Forecasts"), Con Edison states that, while summer temperatures have been rising, "the extremes are not rising as quickly or becoming more frequent," and the number and duration of heat waves has not increased much. Collaborative Report App. B, at 104. The NGO parties maintain that, as set forth in their rate case testimony, increasing heat presents a significant concern to system reliability and resiliency.

Con Edison currently uses a design basis temperature variable (TV) of 86 degrees F, which has remained unaltered since its establishment in the 1960s. Con Edison states in Appendix B that "[d]espite the rise in summer temperatures and increase in 90ºF or greater days, the TV reaching or exceeding 86ºF

[31] Dr. Horton is an Associate Research Scientist at the Center for Climate Systems at the Columbia Earth Institute, and was the Climate Science Lead for the NPCC Technical Group. Dr. Horton's testimony, which is filed with the Public Service Commission in this matter, is incorporated by reference. Dr. Horton's testimony can be found on the Commission's web page at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={0CE5C2BD-3D0E-4FDD-8C4F-C77691D7B709}.

[32] *See* New York State Department of Environmental Conservation and the New York State Environmental Facilities Corporation, Final Intended Use Plan, Clean Water State Revolving Fund for Water Pollution Control, Federal Fiscal Year 2013, Amendment No. 2, December 2013, *available at* http://www.nysefc.org/Default.aspx?tabid=508.

is not occurring more frequently by any significant amount (0.21 days). In fact, even lower thresholds like a TV of 84ºF is not showing an increase over the 17-year observation period." *Id*. at 104-05.

As set forth in Dr. Horton's testimony, however, New York City's mean temperature during a "typical" year in the 2080s would be similar to the climate today in Southern cities like Raleigh, North Carolina or Norfolk, Virginia, and that since "year-to-year temperature variability is larger in winter than in summer, the summer changes may produce relatively larger deviations from what has been experienced historically during individual years." Horton Direct at 6. Dr. Horton testified that New York City and state are more likely to experience more individual days of extreme heat, and an increase in the frequency and duration of heat waves. *Id.* at 7. Dr. Horton concluded that basing a risk management plan on historic temperature increases would be unwise, since by the 2020s, we would expect higher temperatures and more frequent heat events than were observed in the past 30-year period. *Id*. at 9.

In its Climate Change Vulnerability Study, Con Edison should carefully consider the implications of *future* projected temperature increases based on current science on the reliability and resiliency of its infrastructure.

VIII. With the Rate Cases behind us, the Collaborative participation should be opened up to additional parties who would add useful insight going forward.

This Collaborative was born out of an adversarial process, and up until this point, it has co-existed with the adversarial process. While we are pleased that the Collaborative was born at all, this origin has had its drawbacks. It has sometimes been difficult for parties that were simultaneously litigating issues closely related to those being addressed in the Collaborative to, in fact, collaborate. At the same time, on a practical level, rate case parties with a potential interest in the matters being discussed by the Collaborative might not have been able to staff both the Collaborative and the adversarial process adequately, and so may have missed opportunities to work within the Collaborative setting on issues where they might have had an interest. Moreover, parties who had not intervened in the rate case at all may not even aware of the Collaborative, even though they may have brought great expertise to the Collaborative had they had the opportunity; parties that didn't intervene could include local entities with relevant local expertise as well as entities situated in other locales, who would bring perspective from different markets.

Opening up the Collaborative to additional parties will give it a far greater opportunity to realize the vision originally contemplated by the Policy Panel. The Policy Panel testimony envisioned that "[s]tudies could provide information such as utility system storm hardening best practices from other parts of the country and the world", but the starting point for consideration of the Company's storm hardening proposals was always the proposals themselves. With the upcoming rate order marking the end of the adversarial proceeding, we have a new opportunity to draw on the greatest expertise, embracing the world-class thinking that the Policy Panel had originally advocated.

In the case of Working Group 2, the opportunity to take a broader approach by adding additional perspectives is especially pronounced. This Working Group has been on a slower track than other working groups, and its core work is likely to take place in the next year or two. We suspect that even parties to the rate case may not have been aware of the breadth of work taking place in Working Group 2. As Working Group 2's work evolves to include new transactional opportunities, we anticipate that

Working Group 2 will be better able to identify opportunities and challenges, and evaluate technical feasibility, costs, and benefits, of proposed measures, if has access to technology companies and market players (e.g., demand response aggregators, companies and institutions working on storage, ESCOs, and large commercial users of the class that is subject to MHP) with technical expertise germane to measures under consideration.

IX. Conclusion

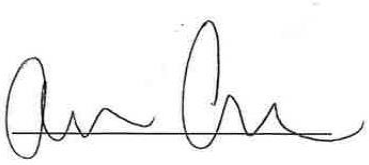
The Storm Hardening and Resiliency Collaborative is a result of tragedy after tragedy striking the grid and our community, weakening both. This Collaborative was born out of a realization that the Company must look to new ways to become resilient and more efficient. As we stand on the precipice of Utility 2.0 in this State, we will be looking forward to changing the way utilities operate, how they are compensated, and how customers interact with their energy usage. We look forward to complementing those goals through this Collaborative. The collaboration shown by all parties in this case thus far make use hopeful that new technologies and strategies will be used to reduce both the impacts of climate change on us and our energy system and the energy system's contribution to climate change. We look forward to finding new ways to add value to the utilities through these strategies while at the same time increasing customer access to information and granting more customer control. All of our efforts will be focused on creating a more resilient and efficient grid, but we stand ready and able to implement the innovative changes that Utility 2.0 will surely bring. We believe this Collaborative to be a shining example of how once disparate stakeholders can come together to solve a common foe and move forward into the 21st Century.

In summary, we recommend that the Collaborative be directed to proceed, subject to the following:

1. The Collaborative should be directed to adopt a broad concept of resiliency, in accordance with the definition of resiliency set forth in the NYS 2100 Report.
2. The Collaborative should be directed to fully recognize the management of heat events as a facet of resiliency, and plan accordingly.
3. To ensure that flexibility is being inculcated as part of resiliency, the Collaborative, and especially Working Group 2, should be directed to think in terms of a portfolio of strategies.
4. The Collaborative should seek input from relevant policy sources, notably the Governor's post-Hurricane Sandy reports.
5. The workplan for Working Group 2 should set the stage for uniform and fair evaluation of proposals, tailored to their respective stages of development.
6. The Collaborative should recognize the importance of load-side measures, including distributed generation, microgrids, and price signals, to resiliency.
7. Cost-Benefit Analysis as contemplated and used by Working Group 2 should be properly calibrated to the types of projects under consideration there, not on the methodology being developed in Working Group 4.
8. The Collaborative should be directed to submit a proposal and funding request to implement the Working Group 3 project as described in Con Edison Report, and to continue to pursue ways to reduce the greenhouse gas footprint of Con Edison's distribution system.

9. Con Edison and the Commission should continue to the FEMA+3 standard and modify it as necessary based on the best available scientific, engineering, and planning information.
10. In its Climate Change Vulnerability Study, Con Edison should carefully consider the implications of *future* projected temperature increases based on current science on the reliability and resiliency of its infrastructure.
11. Participation in the Collaborative should not be limited to rate case parties that have participated thus far.

Respectfully submitted on behalf of the above listed NGO Group,



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