ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

Table of Contents

I. Int	roduction
Α.	Introduction and Qualifications of Panel Members 2
в.	Purpose of Testimony 5
C.	Testimony Format 8
II.	Major Storm Restoration Staffing Enhancements 8
III.	Major Storm Cost Reserve 13
Α.	Pre-staging and Mobilization Costs
в.	Major Storm Deductible 16
C.	Surcharge Recovery of the Major Storm Reserve 19
IV.	Reliability Performance Mechanism 19
V.	Outage Notification Incentive Mechanism
VI.	Isaias Settlement Storm Truck O&M Implementation 25
VII.	Resilience
VIII.	Climate Risk and Resilience Group 33

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

1 I. Introduction

2 A. Introduction and Qualifications of Panel Members 3 Ο. Would the members of the panel please state their names 4 and business addresses? 5 Patrick McHugh, Matthew Sniffen, and Gurudatta Nadkarni. Α. б The business address for all panelists is 4 Irving Place, 7 New York, NY 10003. 8 By whom are you employed, in what capacity, and what are Ο. 9 your backgrounds and qualifications? 10 Α. (McHugh) 11 I am Patrick G. McHugh, Senior Vice President of 12 Electric Operations for Con Edison. I assumed this position 13 in July 2021, after serving as Vice President of 14 Engineering and Planning for Con Edison. I currently have 15 overall responsibility for Con Edison's Electric 16 Distribution Operations, Engineering and Planning, and Con 17 Edison's Energy Services organization, which coordinates 18 all aspects of the delivery of electric service to 19 customers. 20 I have been with the Company for over 30 years after

joining in 1991 as a Management Intern and have held various positions with increasing responsibility including Vice President of Engineering and Planning, Vice President of Brooklyn/Queens Electric Operations, Chief Engineer of

- 2 -

1 Distribution Engineering, General Manager Protective 2 Systems Testing, Senior System Operator, and Chief District 3 Operator. I hold a Bachelor of Science degree in electrical 4 engineering from Clarkson University, a Bachelor of Arts 5 degree in physics from Plattsburgh State University, and a 6 master's degree in electrical engineering from Clarkson 7 University. I have also completed the Siemens PTI Transmission course. 8

9 (Sniffen)

10I am Matthew Sniffen and I am currently the Vice11President of Emergency Preparedness for Con Edison. I12joined Con Edison in 1982 as a Management Intern and13subsequently served in various supervisory roles in14Electric Distribution, including Department Manager of the15Manhattan Electric Control Center.

My current responsibilities include, but are not 16 17 limited to, the development of emergency response plans inclusive of drills and exercises designed to ensure 18 19 readiness for corporate emergencies for all commodities. I 20 currently share Incident Commander role for the Company's 21 Pandemic Team. Prior to my current role, I held the 22 position of Chief Engineer of Regional Engineering. In that 23 role, I was responsible for developing Electric 24 Distribution's asset investment strategy and justifying its

- 3 -

capital projects and programs in support of the Company's
 budget and general rate case processes. I was also a
 central figure in Electric Distribution's post-Sandy storm
 hardening program. I hold a Bachelor of Science in
 Mechanical Engineering from Manhattan College.

6 (Nadkarni)

7 I am Gurudatta Nadkarni. I am employed by Con Edison and currently hold the position of Vice President, Strategic 8 9 Planning. I am responsible for the Company's long-range 10 planning, climate risk and resilience, strategic 11 initiatives, and mergers and acquisitions efforts. The most 12 recent Long-Range Plans were completed January 2022. Before 13 joining Con Edison, I held a number of positions in 14 corporate strategy and development including Managing 15 Director of growth at Duke Energy and a management 16 consultant at McKinsey & Company. I was also a Senior 17 Research Scientist at International Paper. I graduated from 18 Vassar College with a Bachelor of Arts degree in Physics 19 and Mathematics-Computer Science. I earned Master of 20 Science degrees in Physics and Colloid, Polymer and Surface 21 Science, and a Ph.D in Physics from Carnegie Mellon 22 University. I also earned a Master of Business 23 Administration degree in Finance and Marketing from the

- 4 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

1		University of Chicago. I joined Con Edison as Vice
2		President, Strategic Planning in 2008.
3		B. Purpose of Testimony
4	Q.	What is the purpose of the Panel's testimony?
5	Α.	Our purpose is to present the Company's proposals to align
б		its Major Storm Cost Reserve and Reliability Performance
7		Mechanism with its proactive approach to storm restoration
8		and to provide the Company with appropriate cost recovery
9		for its storm restoration efforts. We also propose to
10		eliminate the Outage Notification Information Mechanism,
11		which has been superseded by new communication
12		requirements. We explain how the Company will implement
13		the requirement in the Tropical Storm Isaias Settlement in
14		Case 20-E-0422 et al. to absorb 12 months of operations and
15		maintenance ("O&M") expenses, up to $$2$ million, for up to
16		100 additional bucket trucks for out-of-State storm crews
17		that arrive by plane to assist in storm restoration.
18		Finally, we will summarize the Company's electric
19		resilience investments, which are discussed by the Electric
20		Infrastructure and Operations Panel.
21	Q.	Has the Company enhanced its major storm response
22		activities in recent years?
23	Α.	Yes. Most notably, the Company has entered into new
24		contracts for storm response crews and created a program to

- 5 -

1 fly crews in from outside New York State and equip them 2 with bucket trucks when they arrive, removing driving 3 distance as an impediment to obtaining assistance on a 4 timely basis. Also, the Company has begun a pilot and has 5 proposed in this rate case a selective undergrounding 6 program to reduce the number of overhead customers that 7 lose electric service during severe weather. In addition, 8 the Company's current rate plan includes a program to 9 remove hazardous trees from private property, at no expense 10 to the customer, when such trees pose a risk to the 11 Company's distribution equipment. From 2020 to date, the 12 Company has removed nearly 2,600 hazard trees and spent 13 \$4.8 million on this program.

How are major storm restoration and resilience related? 14 Ο. 15 Major storm restoration refers to the Company's preparation Α. 16 for a potential major storm and its efforts to restore 17 service in the storm's aftermath if a major storm 18 materializes. Resilience refers to changing the design of 19 the electric system to increase its ability to withstand 20 more frequent and severe weather and, when adversely 21 affected, recover quickly and safely. Increasing the 22 resilience of the electric system will facilitate major 23 storm restoration by preventing some customers from losing

- б -

1 service, allowing us to focus more resources on those that 2 do, and thereby, restoring those customers more quickly. 3 Q. What is the Company's approach to Climate Change and the 4 potential for increased extreme weather events or major 5 storms?

6 Α. Con Edison worked with stakeholders on a Climate Change 7 Vulnerability Study for over three years, holding numerous 8 stakeholder and working group meetings. The Company's study 9 and its subsequent implementation plan have been referred 10 to as the "gold standard." (Climate Crisis Catches Power Companies Unprepared, " N.Y. Times, Aug. 6, 2021). The study 11 12 found that "a growing body of evidence suggests that many 13 extreme events will increase in frequency and intensity as 14 a result of climate warming." In addition, that report 15 states it "is neither efficient nor cost-effective for Con 16 Edison to harden its systems to withstand every type of 17 extreme event. Instead, Con Edison must use a broader suite 18 of adaptation strategies to absorb and recover from the 19 inevitable disruptions caused by extreme events exceeding 20 their design." This testimony summarizes the Company's 21 suite of strategies that it is proposing for this rate 22 filing. In addition, the Company proposes the appropriate 23 regulatory framework for these strategies.

- 7 -

1 C. Testimony Format

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

4 Α. Section II describes the Company's major storm restoration 5 staffing enhancements. Section III describes the Company's proposals regarding the Major Storm Reserve. Section IV 6 7 describes the Company's proposal to revise the Reliability 8 Performance Mechanism. Section V discusses the Company's 9 proposal to eliminate the ONIM. Section VI discusses the Company's plan to implement the storm truck O&M requirement 10 11 from the Isaias settlement. Section VII discusses how the 12 Company is incorporating climate change resiliency into the 13 planning and operation of its electric system and 14 summarizes its resilience investments, as sponsored by and 15 described in the Electric Infrastructure and Operations 16 Panel. Finally, Section VIII discusses the Company's plans 17 for staffing for its Climate Risk and Resilience Group and 18 funding for additional climate change studies.

19 II. Major Storm Restoration Staffing Enhancements

20 Q. How does the Company build up its staffing for a major 21 storm?

A. The Company uses three categories of workers for majorstorm restoration: (1) its employees and on-site

- 8 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

1 contractors; (2) storm response contractors; and (3) mutual
2 aid crews released from other utilities.

3 Q. How does the Company obtain storm response contractors?
4 A. The Company has two different types of contracts with storm
5 response contractors.

6 1. Retainer Agreements

7 The Company maintains retainer contracts with local storm 8 response contractors who are committed to respond for the 9 Company whenever adverse weather is predicted to impact the 10 service territory. The Company executed its first retainer 11 contracts in 2018 for 70 storm response workers which 12 increased to 120 storm response workers in 2020. After 13 Tropical Storm Isaias, the Company signed additional 14 retainer contracts to secure 430 storm response workers from four different contractors. Currently the Company has 15 16 retainer agreements with four contractors for 510 storm 17 response workers.

18 2. Right of First Refusal

19 The Company also has contracts with six contractors that 20 obligate the contractors to offer their services to the 21 Company first when adverse weather is predicted to impact 22 the service territory. Currently, these right of first 23 refusal contracts give the Company access to an additional 24 530 storm response workers.

- 9 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- Q. What other recent efforts has the Company made to increase
 the number of storms crews available to assist in major
 storm restoration?
 A. In 2019, the Company created a pilot program to fly in
 storm restoration workers from across the country and equip
- 6 them with overhead bucket trucks when they arrive. In 2020, 7 the Company purchased 90 bucket trucks reserved for use by 8 storm restoration workers flown in for storm response. This 9 program increases available storm crews by removing driving 10 distance as an impediment to assisting in timely
- 11 restoration.

12 Q. Has the Company used this program?

13 Α. Yes. The Company used this program to obtain over 100 14 storm restoration workers for Tropical Storm Isaias in 15 August 2020, approximately 120 workers for Tropical Storm 16 Henri in August 2021, and approximately 120 workers for 17 Hurricane Ida in September 2021. For these mobilizations, 18 the Company flew in storm restoration workers from Alabama, 19 Arizona, Arkansas, California, Florida, Minnesota, 20 Missouri, Nevada, Oklahoma, Oregon, Pennsylvania, 21 Tennessee, Texas, Utah, and Washington. 22 Does the Company pre-mobilize for storms? Ο.

23 A. Yes. Pre-mobilization has long been a part of the24 Company's storm preparation.

- 10 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- Q. How has pre-mobilization changed after Tropical Storm
 Isaias?
- A. Consistent with customer and stakeholder expectations,
 including expectations that the Company will Staff up even
 for potential major storms that do not materialize, the
 Company has increased its pre-mobilization for those
 storms.
- 8 Q. Are other panels discussing storm response investments?
 9 A. Yes. As sponsored and discussed more fully by the
 10 Information Technology Panel, the Company is proposing over
 11 the next three years the following investments to aid storm
 12 restoration:
- 13 Outage Management System Project - Phase Four - Con Edison 14 is proposing to invest \$20.0 million to further 15 enhance the operational performance and resiliency of 16 the Company's Outage Management System ("OMS"). Among 17 other things, the enhancements include operator ease 18 of use and additional automation capabilities. This 19 upgrade will also introduce a new OMS mobile platform, 20 with damage assessment, crew management and Estimated 21 Time of Restoration field update capabilities.
- 22 <u>Enterprise Geographical Information System</u> Con Edison is
 23 proposing to invest \$140.0 million to implement an
 24 enterprise Geographical Information System, of which

- 11 -

-	one benefit will be improved visibility and
2	coordination during outages.
3	In addition, and as sponsored and discussed more fully by
4	the Customer Operations Panel, the Company is proposing to
5	invest over the next three years in the:
6	Outage Communication Program - As part of its Strategic
7	Customer Experience Portfolio of projects, Con Edison
8	is proposing to invest \$4.7 million to build new
9	technology platforms to provide more detailed
10	information to targeted groups of customers before,
11	during, and after outage events to meet safety and
12	customer satisfaction goals.
13	<u>Site Safety Program</u> - During an electric emergency, Con
13 14	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire
13 14 15	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the
13 14 15 16	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who
13 14 15 16 17	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is
13 14 15 16 17 18	Site Safety Program - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all
13 14 15 16 17 18 19	Site Safety Program - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all Site Safety program training material (e.g.,
13 14 15 16 17 18 19 20	Site Safety Program - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all Site Safety program training material (e.g., eLearning, training videos, customer materials) and
13 14 15 16 17 18 19 20 21	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all Site Safety program training material (e.g., eLearning, training videos, customer materials) and system applications (i.e., Site Safety Management
13 14 15 16 17 18 19 20 21 22	Site Safety Program - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all Site Safety program training material (e.g., eLearning, training videos, customer materials) and system applications (i.e., Site Safety Management System and mobile app). The enhanced Site Safety
13 14 15 16 17 18 19 20 21 22 22 23	<u>Site Safety Program</u> - During an electric emergency, Con Edison dispatches Site Safety resources to downed wire locations to make the area safe and stay at the location until additional Company personnel arrive who can fix or de-energize the downed wire. Con Edison is proposing to invest \$1.1 million for updates to all Site Safety program training material (e.g., eLearning, training videos, customer materials) and system applications (i.e., Site Safety Management System and mobile app). The enhanced Site Safety Management System and mobile app will enable the

- 12 -

1		resources, account for Site Safety personnel's time in
2		the field, and enhance communication between Site
3		Safety management teams and wire guards in the field.
4		These systems will also allow for automatic
5		distribution of work/tickets to wire guards,
6		eliminating manual distribution. In addition,
7		contractors will have access to the new systems,
8		giving them more complete information and the ability
9		to communicate with the management team.
10		In addition, Con Edison is planning to hire at least 200
11		additional employees to support programs that increase the
12		reliability and resiliency of the electric distribution
13		system as well as storm and outage response. These
14		additional personnel and their associated vehicles are
15		discussed further by the Company's Electric Infrastructure
16		and Operations Panel and Shared Services Panel. The Company
17		will update the additional employee headcount at
18		preliminary update.
19	III.	Major Storm Cost Reserve
20	Q.	Is the Company proposing any changes to how it charges the

A. Yes. As we explain further, the Company is subject to
deductibles both for O&M costs for major storms that do not
materialize and for major storms that do materialize.

major storm reserve?

21

- 13 -

1 Whether or not a storm materializes, all mobilization costs 2 are O&M costs that are charged to the storm reserve or 3 absorbed by the Company because of the deductibles. The 4 inability to charge a material portion of these O&M costs 5 to the storm reserve because of the deductibles creates a 6 significant O&M impact on the Company that we believe is 7 contrary to the State's policy, and customer and 8 stakeholder expectations, for a more robust storm response. 9 A. Pre-staging and Mobilization Costs 10 Ο. How does the Company's current electric rate plan treat cost recovery for pre-staging and mobilization costs? 11 12 The Company is currently able to defer a portion of the Α. 13 costs it incurs to obtain contractors and/or utility mutual 14 assistance in anticipation of a major storm that will 15 affect its electric operations, but which ultimately does 16 not materialize. There are currently two "deductibles" per 17 event associated with this cost recovery. First, the 18 Company has a deductible of \$500,000 per event for pre-19 mobilization and staging costs. Costs between \$500,000 and 20 \$2.5 million per event may be charged to the major storm 21 reserve. Second, for costs above \$2.5 million per event, 22 the Company charges 85 percent to the major storm reserve 23 and is required to absorb the remaining 15 percent.

- 14 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- Q. Does the Company propose to modify treatment of pre-staging
 and mobilization costs?
- 3 A. Yes. The Company proposes that all pre-staging and
 4 mobilization costs be chargeable to the major storm
 5 reserve.
- 6 Q. Why does the Company seek this change?

7 As discussed, the inability to charge all pre-staging and Α. 8 mobilization costs to the major storm reserve negatively 9 impacts the Company's O&M, which is designed and funded for 10 required repairs and programs, not major storm response. 11 This impact is inconsistent with customer and stakeholder 12 expectations that the Company will mobilize early if a 13 major storm may affect the Company's service territory and 14 with the Company's enhanced mobilizations in response to 15 these expectations. This negative impact is becoming more 16 acute as storms become more frequent, severe, and 17 unpredictable, requiring the Company to mobilize more 18 often. In addition, because other utilities in our region 19 are now under similar pressure, the Company has been and 20 will be competing for resources with utilities who are also 21 under increased scrutiny for their storm response. The 22 Company may therefore need to bring in more expensive 23 contractors and/or mutual aid crews from farther away to

- 15 -

mobilize appropriately. This can exacerbate the negative
 impact to the Company's O&M, which, as stated above, is
 contrary to State policy and customer and stakeholder
 expectations.

5 Q. Please provide an example a recent event where the Company 6 implemented a significant mobilization effort where a major 7 storm did not materialize for the Company's service 8 territory.

9 For Tropical Storm Henri, portions of the Con Edison Α 10 service territory remained inside the National Hurricane 11 Center's forecast cone until 24 hours prior to actual 12 landfall. In preparation, the Company responded to 13 stakeholder expectations and secured 2122 mutual assistance 14 storm workers and spent \$34 million to mobilize for the 15 storm. Of the \$34 million the Company spent, its O&M budget 16 absorbed \$5.1 million for the deductible which was the 17 \$500k per event deductible plus \$4.6M of the cost sharing 18 deductible (e.g. 15% above \$2.5M). In other words, for 19 Henri, the Company mobilized for a potential major storm to 20 meet customer and stakeholder expectations and had to 21 absorb a significant cost due to the deductibles.

22 B. Major Storm Deductible and Cost Recovery

23 Q. Are there any other modifications to the major storm cost 24 reserve that the Company is proposing?

- 16 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- A. Yes, the Company is proposing to eliminate the two percent
 deductible for major storms that do materialize.
- 3 Q. Please describe the two percent deductible that you propose4 to eliminate.
- 5 A. The current rate plan requires the Company to exclude from
 6 costs chargeable to the major storm reserve an amount equal
 7 to two percent of the costs incurred (net of insurance and
 8 other recoveries) due to the occurrence of a major storm.
 9 Q. What is your understanding of the reason for this
- 10 deductible?

11 As we understand from prior proceedings, Staff's position Α. 12 is that the deductible is necessary to recognize that some 13 portion of the storm restoration activities for which the 14 Company will be compensated pursuant to the reserve 15 mechanism will reduce the Company's future O&M costs. 16 Ο. Why is the Company proposing to eliminate the deductible? 17 This deductible results in the same negative impacts to the Α. 18 Company's O&M budget as the pre-staging and mobilization 19 deductibles. In addition, the rationale for the deductible 20 rests on an incomplete picture. Although the Company 21 acknowledges that some portion of the repairs made during 22 storm restoration may reduce future O&M expense, the two 23 percent deductible fails to consider other factors 24 associated with the Company's response to storms that

- 17 -

1 result in the Company having higher, unreimbursed O&M costs 2 over the course of the year. Specifically, the application 3 of the deductible does not account for higher costs the 4 Company will incur to: 1) complete planned O&M work not 5 completed because resources are diverted during storm 6 restoration; 2) make permanent repairs to equipment on 7 which temporary repairs were made during restoration. In addition, there will be additional unreimbursed O&M expense 8 9 to effectuate storm restoration.

10 Q. Please explain why the Company incurs higher costs to 11 complete planned O&M work not completed during the storm 12 restoration period.

13 Α. During storm restoration, the Company defers planned O&M 14 work because crews are reassigned to storm restoration 15 work. Some uncompleted work (for example, specification 16 driven compliance work such as transformer inspections or 17 scheduled equipment repairs) must subsequently be 18 accomplished using overtime, resulting in the Company 19 incurring higher costs than would otherwise have been 20 incurred had storm restoration not been necessary. 21 Please explain the incremental costs incurred to make Q. 22 permanent repairs to equipment on which temporary repairs 23 were made during restoration.

- 18 -

1 During restoration, the Company often makes temporary Α. 2 repairs to expedite service restoration to customers. 3 Following restoration to all customers, the Company must 4 make permanent repairs to the equipment on which temporary 5 repairs were effectuated. Examples of this type of work 6 include removing bridges that were installed on customers' 7 services, returning to service transformers that were cut 8 clear, or returning a primary circuit to normal operation 9 following a wire down, which results in the Company making 10 an emergency tie to fix a feeder gap.

C. Surcharge Recovery of the Major Storm Reserve
 Q. Does the Company propose to change recovery of the major

13 storm reserve?

14 Yes. For the reasons discussed by the Company's Accounting Α. 15 Panel, the Company proposes to surcharge actual major storm 16 costs that vary from the rate allowance by more than \$7 17 million in a given year. Once the \$7 million variance is 18 triggered, the Company would be allowed to recover the 19 entire variance up to 2.5% of delivery revenues each year 20 through surcharge. Surcharge recovery is further detailed 21 in the Direct Testimony of the Company's Electric Rate 2.2 Panel.

23 IV. Reliability Performance Mechanism

24 Q. Does the Company propose to modify the RPM?

- 19 -

1 Yes. The Company proposes to align the RPM with its current Α. 2 increased pre-storm mobilization practice by updating the 3 list of exclusions. Specifically, the Company proposes an 4 exclusion for the aboveground radial CAIDI and SAIFI RPMs 5 for storms where the Company pre-mobilizes more than 100 6 contractor or utility mutual aid storm restoration workers, 7 even if the storm ultimately does not constitute a major 8 storm.

9 Q. Why is the Company making this proposal?

10 A. The current RPM is inconsistent with Company's proactive 11 approach, which is consistent with customer and stakeholder 12 expectations that the Company should significantly increase 13 staffing for potential major storms even if they do not 14 ultimately materialize.

15 Q. Please explain.

16 Α. The current RPM excludes a major storm, which is defined in 17 part as an adverse weather event that results in customers 18 being without electric service for at least 24 hours. 19 Because the Company's proactive pre-mobilization policy may 20 result in the Company restoring service after a severe 21 weather event before the 24-hour mark, that severe weather 22 event would not qualify as an excludable major storm, even 23 though it likely would have resulted in outages of at least 24 24 hours but for the Company's increased mobilization.

- 20 -

1 While returning customers to service faster is the 2 Company's desired outcome and what customers and 3 stakeholders expect, the current RPM would potentially 4 penalize the Company for restoring service faster by 5 counting the storm against the Company's annual performance 6 metrics if all of the outages are restored within 24 hours. 7 This anomaly could contribute to the Company receiving a 8 negative revenue adjustment for its annual reliability 9 outage metrics. This result would be manifestly contrary to 10 the goal of reducing the duration of customer outages, 11 which the Company, customers, the Commission, and other 12 stakeholders all share.

13 Q. Please explain the RPM impacts.

14 Α. The primary impact to the Company would be an unjustified 15 increased potential for a negative revenue adjustment for 16 not meeting the radial CAIDI metric. Storms that had caused 17 customer outages of up to 24 hours, but which are now 18 restored faster through increased mobilization, would now 19 count against the Company's annual average customer outage 20 duration measure. But these outages also impact the radial 21 SAIFI measure because storm caused outages are also counted 22 against the annual average frequency measurement. Outages 23 that do not meet the major storm definition due to the 24 Company's increased mobilization efforts should not impact

- 21 -

either SAIFI or CAIDI. Our proposal corrects these
 inconsistencies. The Company's overhead SAIFI and CAIDI
 annual average scores should not be measured using outages
 caused by these storms, because those metrics are intended
 to measure day-to-day operations.

6 Is Con Edison proposing any other changes to the RPM? Ο. 7 Α. Yes. Under the RPM, the Company is subject to a program 8 standard for the Non-Network Reliability program in 9 Westchester County. Under this RPM, the Company was 10 required to spend approximately \$25 million annually, and 11 \$75 million in total, over the current three-year rate 12 plan. By its terms, the RPM was limited to the spending 13 authorized in the current rate plan. The Company met the 14 RPM spending requirements in 2020 and 2021 and is on track 15 to complete the spending requirements for 2022. As a 16 result, the RPM will be complete by year end 2022 and 17 should be discontinued because these investments will be 18 subsumed within the Company's general resilience programs 19 described later in this testimony.

In addition, as the Electric Infrastructure and Operations Panel explains, the Company proposes to replace its SAIFI and CAIDI metrics with SAIDI for both non-network and network systems. We note here that the principle of exclusions for bringing in 100 mutual assistance workers

- 22 -

for storms that do not materialize would apply the same to
 SAIDI as it does for SAIFI and CAIDI.

3 The Company is not proposing other changes. We note,
4 however, that the Company is beginning to use AMI data to
5 more accurately identify the time and duration of customer
6 outages, and that the results may require future changes in
7 RPM targets.

8

V. Outage Notification Incentive Mechanism

9 Ο. What is the Outage Notification Incentive Mechanism (ONIM)? 10 Α. The ONIM, established by the Commission in 2002 in Case 00-11 M-0095, establishes communication requirements applicable 12 to Con Edison after the numbers of electric outages reach a 13 certain threshold. Among other things, the ONIM addresses 14 communications with State and local government 15 representatives, issuing media releases, updating telephone 16 broadcast messages, and notifying life sustaining equipment 17 customers and large/sensitive customer accounts. The timing 18 of the communications depends on the number of customers 19 impacted (i.e., 20K, 40K or 70K), the amount of time the 20 customers have been out of service (i.e., one, two, or 21 three hours) and whether the outages are in one or multiple 22 load areas.

23 Q. What is the Company proposal regarding the ONIM?

- 23 -

1	Α.	As stated by the Company's Customer Operations panel, the
2		Company is proposing to eliminate the ONIM from the
3		Customer Service Performance Mechanism.
4	Q.	Why is the Company proposing to eliminate the ONIM?
5	A.	Since 2002, the Commission has established State-wide
6		communication requirements for New York State utilities.
7		The communication requirements are detailed in the
8		Department's Estimated Time of Restoration (ETR) Protocols
9		and the ETR Protocols are included in utility emergency
10		response plans, including Con Edison's. The ETR protocols
11		essentially supersede the ONIM, as they are comprehensive
12		and many of the ONIM activities are duplicative or conflict
13		with the ETR protocols.

14 Q. Please provide an example.

15 Α. Under the ONIM, the Company is required to begin its 16 communication activities when 20,000 customers are out of 17 service for three consecutive hours when the outage occurs 18 in "a single load area served by a single load area 19 substation." The ETR Protocols are activated when more than 20 5,000 customers are out of service for more than 30 minutes 21 in a utility division. Similarly, under the ONIM, the 22 Company is required to begin communication activities when 23 40,000 customers are out of service at the same time for

- 24 -

1		more than two hours "in more than one load area." The ETR
2		Protocols are activated when more than 20,000 customers are
3		out of service company-wide for more than 30 minutes.
4		Because the ETR Protocols are uniform State requirements
5		and are duplicative of many ONIM requirements, the ONIM
6		should be eliminated to avoid conflicting requirements.
7	Q	Has the Commission recently addressed the applicability of
8		the ONIM to Con Edison?
9	A.	Yes. In its July 15, 2021 Order approving utility electric
10		emergency response plans in Case 20-E-0618, the Commission
11		sought input on whether the ONIM should be eliminated
12		given similar communication requirements in Con Edison's
13		ERP. When Con Edison filed its emergency response plan
14		for 2022, the Company indicated that it would seek
15		elimination of the ONIM in its next rate filing.
16	VI.	Isaias Settlement Storm Truck O&M Implementation
17	Q.	Does the Company plan to obtain additional utility trucks
18		for storm response?
19	A.	Yes. The Company plans to use reasonable business efforts
20		to purchase up to 100 additional trucks.
21	Q.	Why does the Company plan to obtain additional storm
22		response trucks?

- 25 -

1 We plan to purchase up to 100 additional storm response Α. 2 trucks to increase the number of out-of-State workers we 3 can fly in to assist in restoring service after a storm. 4 When a storm travels up the East coast, other utilities are 5 likely to retain their crews for restoration and clean-up 6 in their service territories and only release them for 7 mutual aid later. This may delay their ability to come 8 quickly to New York to assist in storm restoration. 9 Similarly, the Company must compete for storm response 10 contractors with other utilities likely to be affected by 11 the storm, including those likely to be hit first or with a 12 higher probability of severe impact. Increasing the number 13 of trucks available for out-of-State workers increases the 14 Company's options for assistance by increasing the number 15 of restoration workers the Company can fly in from 16 locations where driving distance would impair their ability 17 to render timely aid. In addition, the Company can use the 18 trucks for other customer purposes when necessary and 19 practicable.

20 Q. Has the Company disclosed its plan to purchase these trucks21 before?

A. Yes. As discussed below, the settlement agreement approved
by the Commission in Case 20-E-0422 notes the Company's

- 26 -

1		plan to use reasonable business efforts to purchase up to
2		100 new trucks for out-of-State storm response workers.
3	Q.	What is the Company's plan for purchasing the trucks?
4	A.	As explained by the Shared Services Panel, there is
5		currently a nationwide supply chain shortage for utility
6		trucks. As a result, the Company will attempt to buy 30
7		trucks in 2023, 30 in 2024, and 40 in 2025.
8	Q.	What are the capital expenses associated with the trucks?
9	Α.	The Shared Services panel currently estimates the three-
10		year total cost of purchasing up to 100 trucks to be \$31
11		million. The Shared Services panel explains, however, that
12		the costs of the trucks are not currently included in the
13		revenue requirement because there are nation-wide supply
14		chain shortages for utility construction equipment with no
15		availability in 2022 and that the Company is continuing to
16		refine its estimate and will include its capital request in
17		the revenue requirement at the preliminary update stage of
18		this proceeding.
19	Q.	How will the Company handle the O&M for the trucks
20		considering the Tropical Storm Isaias Settlement Agreement?

Q. As part of the settlement agreement approved by the
Commission in Case 20-E-0422, et. al., the Company agreed

- 27 -

1 to absorb 12 months of O&M expenses, up to \$2 million, for 2 up to 100 additional bucket trucks for out-of-State storm 3 crews that arrive by plane to assist in storm restoration. 4 The settlement agreement noted that the Company planned to 5 use reasonable commercial efforts to obtain up to 100 6 additional utility trucks but recognized that the Company 7 may not be able to purchase that many. To comply with the 8 settlement, the Company will absorb 12 months of O&M costs, 9 up to \$2 million, in 2026, which will be the first year 10 after the Company completes its reasonable business efforts 11 to purchase up to 100 trucks.

12 Q. What about O&M from 2022 through 2025?

13 O&M prior to 2026 will be funded through rates. Α. The 14 Company included \$2 million in the revenue requirement. 15 Those costs are included in Exhibit EIOP-3. As noted, by 16 the Shared Services panel, however, the Company is 17 continuing to refine its estimate regarding the cost of the 18 trucks and will include its capital request in the revenue 19 requirement at the preliminary update stage of this 20 proceeding. Similarly, we will continue to refine our O&M 21 estimate and will update the revenue requirement, if 22 warranted, at the preliminary update stage of this 23 proceeding.

- 28 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

1 VII. Resilience Programs and Projects

2 Q. What is Con Edison's approach to resilience?

3 Α. Con Edison has a long history of incorporating resilience 4 into its system design and making resilience-related 5 investments. As early as 1882, Thomas Edison built the 6 world's first underground electric grid in lower Manhattan 7 because it would be more resistant to extreme weather. And, 8 within the last decade, Con Edison implemented a \$1 billion 9 storm hardening plan in response to Superstorm Sandy. Now, 10 the Company is investing to make its system more resilient 11 to forecasted climate change impacts. Our resilience 12 investments fit into the following framework:

Prevent: harden energy infrastructure and assets against
 projected climate conditions to prevent outages

15 2. Mitigate: modify system design and flexibility to

16 mitigate disruptions to customer service

17 3. Respond: operational improvements to reduce recovery18 timeframe in response to extreme weather

19 Q. How is the Company making its system more resilient to the 20 effects of projected climate change?

A. Using the Company's Climate Change Vulnerability Study and
Climate Change Implementation Plan, Con Edison has changed
design standards to incorporate climate change's potential

- 29 -

1		impacts into its forecasts. In addition, the Company is
2		incorporating these potential impacts into its coastal
3		flood mapping, flood risk standard, and heavy rainfall
4		considerations. The changes to planning and design criteria
5		are discussed further in the Company's Electric
6		Infrastructure and Operations Panel.
7	Q.	Is Con Edison proposing new electric resilience investments
8		as part of this electric rate filing?
9	Α.	Yes. Below is a summary of the Company's proposed electric
10		resilience investments over the next three years. These
11		investments are sponsored and explained more fully by the
12		Electric Infrastructure and Operations Panel:
13		Primary Feeder Reliability -Con Edison is proposing to
14		invest \$231.0 million to maintain and improve the
14 15		invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks
14 15 16		invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather
14 15 16 17		invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from
14 15 16 17 18		invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification.
14 15 16 17 18 19		<pre>invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification. USS Switchgear Flood Protection Program - Con Edison is</pre>
14 15 16 17 18 19 20		<pre>invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification. USS Switchgear Flood Protection Program - Con Edison is proposing to invest \$25.4 million to provide</pre>
14 15 16 17 18 19 20 21		<pre>invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification. USS Switchgear Flood Protection Program - Con Edison is proposing to invest \$25.4 million to provide mitigation measures to minimize damage from flooding.</pre>
14 15 16 17 18 19 20 21 22		<pre>invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification. USS Switchgear Flood Protection Program - Con Edison is proposing to invest \$25.4 million to provide mitigation measures to minimize damage from flooding. Selective Undergrounding - As discussed more fully by the</pre>
14 15 16 17 18 19 20 21 22 23		<pre>invest \$231.0 million to maintain and improve the reliability and resiliency of the Company's networks to adapt to more frequent and severe extreme weather events and to accommodate future load growth from electrification. USS Switchgear Flood Protection Program - Con Edison is proposing to invest \$25.4 million to provide mitigation measures to minimize damage from flooding. Selective Undergrounding - As discussed more fully by the Electric Infrastructure and Operations Panel, Con</pre>

- 30 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- 1 identify and prioritize the undergrounding of overhead 2 spurs based on historic outage data and disadvantaged 3 community data. 4 Non-Network Reliability Program - Con Edison is proposing to invest \$247.7 million to increase reliability for 5 6 customers by proactively improving circuits with the 7 lowest performance and further storm hardening its 8 overhead system in anticipation of more frequent and 9 severe storms. 10 Protection, Control, and Automation Program - Con Edison is 11 proposing to invest \$92.0 million to upgrade 12 substation protection, control, and energy management 13 system ("EMS") interfaces, and/or operator interfaces 14 providing increased weather-hardening, improved 15 reliability, and greater operational visibility. Overhead Insulator Resiliency Program - Con Edison is 16 17 proposing to invest \$20.1 million to systematically 18 replace insulators on critical overhead transmission 19 lines that can be prone to cracks to lower the risk of 20 load shedding and large-scale outages due to severe 21 weather events. 22 Condition Based Monitoring Program - Con Edison is proposing
- 23 to invest \$31.5 million to install a variety of24 monitoring devices on substation power transformers

- 31 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

1	and other equipment to better understand real-time
2	equipment status and improve planning associated with
3	ratings and replacement cycles.
4	Control Cable Upgrade Program -Con Edison is proposing to
5	invest \$8.0 million to replace copper control cables
6	in order mitigate the risk of dropping customers as
7	the result of a substation event.
8	Erosion Protection and Drainage Upgrade Program -Con Edison
9	is proposing to invest \$10.0 million to install
10	reinforcements and upgrade drainage systems in select
11	substations to provide protection from erosion issues
12	that may occur during extreme rain events.
13	Non-Network Resiliency with FLISR Program -Con Edison is
14	proposing to invest \$6.3 million to replace older
15	sectionalizing equipment with new technology that will
16	further enhance fault location, isolation, and service
17	restoration capabilities to limit the number of
18	customers impacted by equipment damage from extreme
19	weather.
20	Critical Facilities Program - Con Edison is proposing to
21	invest \$27.0 million to further enhance circuit
22	hardening to critical facilities located and fed via
23	non-network distribution circuits to enhance
24	reliability and maintain electric service for

- 32 -

ELECTRIC STORM RESPONSE AND RESILIENCE PANEL

- 1 essential services as much as possible during a severe
 2 weather event.
- <u>Substation Transformer Replacement Program</u> -Con Edison is
 proposing to invest \$372.0 million to proactively
 replace transformers that the Company has determined
 are nearing the end of their useful lives in order to
 reduce the risk of transformer failures.
- 8 Line Clearance/Vegetation Management Program -Con Edison is
 9 proposing to increase O&M spending to further expand
 10 the Company's tree removal efforts.
- 11 VIII. Climate Risk and Resilience Group
- 12 Q. Please describe the Company's Climate Risk and Resilience 13 Group ("CRRG")?

14 The Company established the CRRG as part of its Climate Α. 15 Change Implementation Plan, which the Company filed with 16 the Commission in December 2020. In the Climate Change 17 Implementation Plan, the Company explained its governance 18 structure for managing climate change impacts including its 19 new corporate instruction, Climate Change Planning and 20 Design Guideline, executive level oversight committee, and 21 the CRRG.

Q. Please describe the Company's funding request for the CRRG.
A. The Company is seeking a \$4 million increase in O&M, over a
three year plan, for five full time employees for the CRRG

- 33 -

1	and for additional climate change studies. The Company has
2	staffed the CRRG with existing employees that split their
3	time between the CRRG and their other responsibilities. Of
4	the \$4.0 million, the Company proposes to use \$2.2 million
5	to hire a staff of five full time employees, \$1.6 million
6	for climate change studies related to deluge rain and wind,
7	and to perform additional climate change vulnerability
8	studies, and approximately \$200K for consultants to assist
9	with reviews of emerging climate change topics. Additional
10	details are provided in Exhibit ESRR - 1.

11 Q. Does that conclude your testimony?

12 A. Yes.

Strategic Planning 2022

1. Project / Program Summary

Type: 🗆 Project 🛛 Program	Category: 🗆 Capital 🛛 O&M			
Work Plan Category: 🛛 Regulatory Mandated 🛛	Operationally Required 🛛 Strategic			
Project/Program Title: Climate Risk and Resiliency Group and Associated Activities				
Project/Program Manager:	Project/Program Number (Level 1):			
Status: 🛛 Initiation 🗆 Planning 🗆 Execution 🗆	On-going 🛛 🖓 Other:			
Estimated Start Date: 2023	Estimated Date In Service:			
A. Total Funding Request (\$000) Capital: O&M:	B. ☐ 5-Year Gross Cost Savings (\$000) ☐ 5-Year Gross Cost Avoidance (\$000) O&M: Capital:			
C. 5-Year Ongoing Maintenance Expense (\$000) O&M: Capital:	D. Investment Payback Period: (Years/months) (If applicable)			

Work Description:

The Company seeks funding in two areas related to climate change adaptation: dedicated staff for the Climate Risk and Resilience Group ("CRRG"), and various studies to advance our understanding of specific climate variables. The Company established the CRRG as part of its Climate Change Implementation Plan, filed with the Commission in December 2020. Since then, the Company has staffed the CRRG with employees that work on the CRRG part time along with their regular responsibilities. In total, the Company is seeking 5 FTEs for the CRRG beginning in 2023. In addition, the Company expects the preparation of climate studies for the Company's service territory during the rate period to cost \$1,610,000.

The studies would provide the latest data for related decision-making and is in line with the commitment to renew the climate change vulnerability study at a minimum every 5 years.

CRRG

In conjunction with the planning and operational organizations, the Team would advance the implementation of CECONY's climate adaptation plans to take into account the impact of climate change on its utility assets/infrastructure. The CRRG will be comprised of a director supported by a project manager and three analysts (two senior/band 2 and one Band 1) with experience with climate change science and managing adaptation and resilience activities. The director will lead the development of the adaptation and resilience strategy; assurance activities related to the implementation plan; and both internally and externally overall planning and implementation with stakeholders and partners. The project manager will manage the various aspects of enhancing and updating the climate change adaptation and design guideline and its implementation; and project managing the various climate studies and activities. The analysts will provide climate science data validation, analyses and integration into the guideline as well as support the incorporation into specifications and procedures with relevant planning, engineering, and operational groups.

CRRG activities will include the following:

Adopting best-available climate science

• Analyze studies to determine whether assumptions, variables, and constraints are appropriate for Company planning and design;

- Engage external entities to study/review climate risks which are significantly likely to impact the Company's energy systems;
- Establish standards for adoption of climate change projections (Pathways) including spatial and temporal resolution, select appropriate Pathways for review/approval;
- Notify Company employees of governing Pathways;
- Develop a plan with Company meteorologists for the use of weather sensors at various Company locations;

Developing strategy

- Collaborate with Company organizations to develop adaptation and climate resilience projects;
- Balance the benefits to customers of adaptation against the cost of adaptation investments;
- Focus on environmental justice considerations (e.g., review applicable laws, research guidance documents, consult internal experts, attend conferences, socialize information internally, and plan appropriately);

Engaging stakeholders

- Coordinate with governmental agencies on regional adaptation investments;
- Participate in NYSERDA climate assessment groups;
- Align results with sustainability report and disclosures;
- Contextualize the urgency and design of resilience in the larger energy landscape that includes safety, reliability, and clean energy; and
- Benchmark with other utilities concerning climate science adoption, strategy formulation, project execution, policy/legal/regulatory and related activities, and continued stakeholder engagement.

Studies

Vulnerability study (\$600,000)

Con Edison will update its Climate Change Vulnerability Study (Study) by 2025 as part of its commitment to update the study every five years. The significant elements of the work include the following:

- Assess and describe new climate science, and project climate and weather for the utility's service area, including heat, precipitation, sea-level rise, coastal storm surge, and extreme events;
- Review/identify implicated planning criteria, design standards, capital projects, and operating practices; and
- Derive usable inputs for the utility's system planning processes and reliability models.

Wind study (\$500,000)

In 2023, the Company would begin a study concerning extreme winds. Specifically, the study would evaluate how to model impacts of future winds and storms on the Company's service area. The significant elements of the study include the following:

- Simulate future winds and storms with a dynamical downscaling study;
- Use the "Weather Research and Forecasting Model" or a regional climate model to simulate high-resolution gridded outputs for a range of variables relevant to utility decision-making, including vectors for sustained winds and gusts for all locations in the utility's service territory; and

• Simulate winds associated with unique storm systems (e.g., coastal storms) and other storm variables such as precipitation, temperature, and storm surge.

Other studies (\$510,000)

The Company requires quantifiable data related to the following climate variables:

- deluge rain, including projections for one hour as well as 24 hours, with a focus on flood-prone areas identified by newly available data sets (\$185,000);
- urban heat island based on data captured by the Company's weather sensors (\$75,000); and
- storms, including hurricane categories, sea surges, and flooding (\$70,000).

In addition, the Company requires a consultant to prepare reviews of emerging climate topics and new industry studies over the rate case period (\$180,000).

Justification Summary:

CRRG

Generally, the latest science shows that the global climate is changing. The impacts of climate change on Company assets and operations have been marked and decisive (e.g., extreme events such as Sandy and Isaias). Best available science projects that these events will continue and increase in both frequency and intensity.

Climate change models are complex. Further, climate projections are uncertain in their magnitude and timeframe. As a result, the optimization of adaptation plans is challenging. In contrast, plans concerning reliability and clean energy are based on clear metrics and statutory goals, respectively. Further, reliability has historically been – and remains – central to the Company's capital planning process. In other words, climate adaptation is abstract and hard to measure with performance indicators. As part of its work, the CRRG would provide climate-related insights, clearly communicate and reinforce adaptation guidance, and promote the appropriate consideration and timely reflection of updated Pathways in capital plans.

Studies

Vulnerability Study

There are two primary purposes for regular updates to the Study. First, the Company has committed to the DPS and external stakeholders that it will review relevant/new industry studies annually and update the Study every five years. Second, the CRRG will review the capabilities of climate science in further quantifying climate change variables and their pathway projections. The Company's prior vulnerability study was limited in the climate variables that could be fully quantified; as a result, some climate variables were highly qualified. CRRG will monitor and review developing science to validate and update the current Climate Change Planning and Design Guideline as needed. As a result, the Study must be periodically updated. Otherwise, the Company will plan and invest based on outdated projections. Thus, the Company requires the resources to meet these commitments.

Wind Study

Generally, the science concerning extreme winds and related impacts on the Company's service area is limited. Current literature focuses on regional changes (e.g., northeastern United States) in extreme events and winds. These areas are overly broad for the Company's

investment decisions. Further, few studies focus on extreme winds alone. As a result, wind projections are today uncertain.

The proposed wind study would be the first to assess wind gusts and speeds in this manner in our service area. Further, the study would focus on the vulnerabilities and constraints of our system as the basis for the wind projections. Without this study, the Company would lack localized information on extreme winds and would need to rely on generalized data for the northeastern United States.

Relationship to Broader Company Plans and Initiatives (e.g. Long-Range Plans, CLCPA Initiatives, Risk Mitigation)

The proposed CRRG and studies are consistent and aligned with the adaptation strategy presented in the Five-Year and Long-Range Plans as well as the Company's Enterprise Risk Management Strategy.

Alternatives

None.

The Company requires the resources to staff this new organization and conduct studies to understand climate change because the science and resulting impacts of climate change are developing and changing. Without the dedicated team proposed by the Company, the Company will need to contract with consultants to perform this work. The Company believes that full time Company employees can more effectively develop, coordinate, communicate, and implement strategies to prepare and adapt to climate change and incorporate climate change projections into Company organizations, policies, and practices.

Risk of No Action

Risks of no action include inconsistencies in approaches to climate change throughout the Company, a reliance on generalized climate change information and increased consultant costs to monitor and plan for future changes.

Non-Financial Benefits

The CRRG promotes change management and continued awareness in the company in its approach to incorporate future operating conditions considering the potential impacts of physical climate change.

Summary of Financial Benefits and Costs (attach backup) 1. Cost-benefit analysis (if required) *N/A*

2. Major financial benefits *N/A*

3. Total cost See below. 4. Basis for estimate

The estimates for the FTEs and proposed studies were prepared by Strategic Planning. These estimates were based on reviews of timeframes and resources required to execute the vulnerability study and implementation plan, which relied heavily on consultants. Th CRRG is required to internalize and perform the following: advance plan execution, advance climate science, develop climate resilience indicators, continue to develop resilience strategy, and continue external and employee engagement.

5. Conclusion

With appropriate and timely adaptation investments, the Company may avoid/reduce costs related to the following: restoration of power; replacement of equipment; deployment of repair crews; vegetation damage; reduction of revenue; and residential, commercial, and non-outage claims.

Project Risks and Mitigation Plan

N/A

Technical Evaluation / Analysis

(Studies described above as part of the request.)

Project Relationships (if applicable)

The CRRG will work with various Company organizations to integrate the Climate Change Planning and Design Guideline into future work impacted by climate change.

3. Funding Detail

Historical Spend

		Actual	Actual	Historic Year	Forecast
	Actual 2017	<u>2018</u>	<u>2019</u>	(O&M only)	<u>2021</u>
Capital					
O&M					
Reg Asset					

Total Request (\$000):

Total Request by Year:

	<u>Request</u> <u>2022</u>	<u>Request</u> <u>2023</u>	<u>Request</u> <u>2024</u>	Request 2025	<u>Request</u> <u>2026</u>
Capital					
O&M*		\$1,720,000	\$1,181,750	\$949,153	
Reg Asset					

Capital Request by Elements of Expense:

EOE	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Labor					
M&S					
Contract Serv					
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

	2022	2023	2024	2025	<u>2026</u>
O&M Savings					
O&M Avoidance					

Capital Savings			
Capital Avoidance			

Total Ongoing Maintenance Expense by Year:

	2022	2023	2024	2025	<u>2026</u>
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation New project, not authorized yet
- Planning Project authorized, not started yet
- Executing Project in-flight
- On-going Annual program