STATE OF MAINE PUBLIC UTILITIES COMMISSION

DOCKET NO. 2022-00152

CENTRAL MAINE POWER COMPANY

2022 DISTRIBUTION RATE CASE

GRID MODERNIZATION AND CLEAN ENERGY TRANSFORMATION

August 11, 2022

Testimony and Exhibits of

Rita King
Miguel Alonso
Scott Bochenek
James Mader
Robert Manning
Sean Sullivan

On behalf of
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336

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I. INTRODUCTION

A. Witness Panel and Qualifications

Q. Please state the names of the members on this Grid Modernization and Clean Energy Transformation Panel (the "Panel").

A. We are Rita King, Miguel Alonso, Scott Bochenek, James Mader, Robert Manning, and Sean Sullivan.

Q. Ms. King, please state your title and business address.

A. I am the Senior Director of Smart Grids Innovation and Planning at Avangrid Networks, Inc. ("Avangrid Networks"). My business address is 180 Marsh Hill Road, Orange, Connecticut 06477.

Q. Please summarize your work experience and educational background.

A. My curriculum vitae ("CV") is set forth in Exhibit GM-1.

Q. Mr. Alonso, please state your title and business address.

A. I am the Senior Technical Project Manager for the Grid Model Enhancement Project at Avangrid Networks. My business address is 180 South Clinton Avenue, Rochester, New York 14604.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit GM-1.

Q. Mr. Bochenek, please state your title and business address.

A. I am the Program Director, Smart Grids Innovation Programs at Avangrid Networks. My business address is 18 Link Drive, Binghamton, New York 13904.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit GM-1.

Q. Mr. Mader, please state your title and business address.

A. I am the Senior Manager of Programs and Projects, Smart Grids Innovation Programs at Avangrid Networks. My business address is 180 Marsh Hill Road, Orange, Connecticut 06477.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit GM-1.

Q. Mr. Manning, please state your title and business address.

A. I am the Program Director, Smart Grids Innovation Programs at Avangrid Networks. My business address is 180 Marsh Hill Road, Orange, Connecticut 06477.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit GM-1.

Q. Mr. Sullivan, please state your title and business address.

A. I am the Program Director, Smart Grids Innovation Programs at Avangrid Networks. My business address is 180 South Clinton Avenue, Rochester, New York 14604.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit GM-1.

B. Purpose of Testimony

Q. Please summarize your testimony.

A. We describe CMP's grid modernization and clean energy transformation initiatives, designed to support Maine's clean energy goals and to support other stakeholders in doing so as well. These initiatives include the support and promotion of electric vehicles ("EVs"), energy storage, and continued evolution of the grid into a two-way platform that enables the interconnection, and optimizes the value for customers, of distributed energy resources ("DERs"), including solar photovoltaic ("PV") generation. We also describe

CMP's Grid Model Enhancement Project ("GMEP"), which is the Company's response to the urgent and critical need for accurate and readily accessible data pertaining to its electric distribution infrastructure and a foundational, clean energy-enabling requirement.

Q. What initiatives are the Company specifically requesting that the Commission approve in this case?

A. Specifically, CMP requests Commission approval of the following:

1) Our proposed EV Programs, designed with support from other stakeholders, to support Maine's goal of over 41,000 light-duty EVs in the State by 2025, including:
   - 2,000 additional charging ports for light-duty EVs;
   - 400 higher capacity charging ports for medium- and heavy-duty EVs, including school and transit buses (especially impactful given that 39% of transportation emissions are created by the transportation sector);
   - Graduated incentive structures for charging ports linked to socio-demographics to ensure participation by all Mainers, irrespective of economic condition;
   - EV planning and analysis support;
   - An EV fleet assessment tool; and
   - Expanded outreach and education to encourage EV charging.
2) Two new pilot projects consisting of 3.4 megawatts ("MWs") of new, competitively procured energy storage capacity resulting in an approximate 2% increase[1] to installed energy storage capacity in the CMP's service territory that will serve

[1] As measured by the increase over current executed Level 4 battery interconnection applications in CMP's queue as of June 7, 2022.

customers by addressing multiple distribution system needs via direct integration into the Company's operations and processes and create value to customers by:

a. Shifting solar output from midday to evening (aligning with peaks);

b. Leveraging solar and DERs to develop green microgrids; and

c. Increasing the ability to interconnect more distributed resources.

3) Development and implementation of the Company's GMEP; and

4) Innovative Collaborations, Partnerships, and Pilot Projects,[2] including a strategic partnership with the University of Maine ("UMaine") for the purpose of facilitating essential research and development ("R&D") that will support and accelerate the achievement of the State's clean energy strategy, while improving the Company's ability to continue to operate a safe, reliable, resilient and increasingly decarbonized power grid for its customers and communities.

Q. How are the CMP initiatives proposed in this testimony aligned to stakeholder collaboration efforts?

A. The initiatives proposed within this testimony are closely aligned with the "*Maine Won't Wait*" Climate Action Plan ("Maine Climate Action Plan"),[3] and other stakeholder collaboration efforts such as Maine Utility/Regulatory Reform and Decarbonization

[2] As discussed in Section II below, these programs include scaling of in process pilots for L2 Make-Ready Pilot, and direct current fast charger ("DCFC") Rate Pilot, as well as new proposed pilots including an Active Network Management ("ANM") Pilot, and collaboration proposals with University of Maine.

[3] The Maine Climate Council, established 2019, developed a roadmap for climate action across the state by bringing in diverse perspectives with the release of the Maine Climate Action Plan in 2020 a four-year climate action plan, a copy of which provided is provided as Exhibit GM-2. The Maine Climate Action Plan helps chart a path to build adaptation to climate change, reduce GHGs and includes actionable strategies and goals to emit less carbon, produce energy from renewable sources and protect against worst case scenarios. For an electronic copy of the Maine Climate Action Plan, please see the following link: https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020.pdf

Initiative ("MURRDI"),[4] and the Electric Power Engineers' ("EPE") Gap Analysis and Distribution System Roadmap.[5] The Company seeks to build upon the stakeholder feedback received in these and other efforts.

C. Identification and Summary of Exhibits

Q. Is this Panel sponsoring any exhibits?

A. Yes. This Panel sponsors the following exhibits:

- Exhibit GM-1 – Grid Modernization and Clean Energy Transformation Panel Witness CVs
- Exhibit GM-2 – *Maine Won't Wait* Climate Action Plan
- Exhibit GM-3 – MURRDI Stakeholder Process Summary Report
- Exhibit GM-4 – EPE Distribution System Gap Analysis
- Exhibit GM-5 – EV Make-Ready and DCFC Pilots Lessons Learned

II. SPECIFIC PANEL INITIATIVES

A. EV Programs

Q. What are the new EV programs CMP is proposing in this case?

A. The Company is proposing 1) a Light-Duty EV Make-Ready Program; and 2) a Medium- and Heavy-Duty EV Make-Ready Program.

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[4] Maine Utility/Regulatory Reform and Decarbonization Initiative Report (April 2021) ("MURRDI Report"). MURRDI is a comprehensive Nature Conservancy sponsored stakeholder engagement process managed by the Great Plains Institute to better understand the challenges and opportunities associated with electric grid transformational changes occurring within and outside of the electric sector and to develop solutions for adapting utility business models and regulation to a decarbonized and technologically modern economy. The MURRDI effort sought to develop broad consensus around what is needed, in terms of electric grid planning and modernization, to achieve established climate and energy requirements. This process culminated in a set of stakeholder recommendations. The MURRDI Report may be found at the following link: https://www.nature.org/en-us/newsroom/maine-modernizing-electric-grid/, a copy of which is provided as Exhibit GM-3.

[5] The Commission hired EPE to complete a gap analysis and distribution system roadmap to help the State of Maine prepare their distribution systems for the future. The gap analysis, distribution system roadmap, and the distribution system roadmap presentation, "Investigation of the Design and Operation of Maine's Electric Distribution System," which was presented by EPE on June 3, 2022, are provided in Exhibit GM-4.

Q. How do these proposed programs align with State clean energy and climate goals?

A. The Company's proposed EV programs are intended to support the following State of Maine and stakeholder initiatives:

- Maine Climate Action Plan, Strategy A – Embrace the Future of Transportation in Maine;[6] and
- MURRDI recommendation #5 – EV Fast Charger Deployment.[7]

Advancing EV charging infrastructure aligns with the extensive stakeholder process the State started via MURRDI recommendation # 5, which calls for the implementation as soon as effectively possible of measures to advance new EV fast charger deployment (including direct current fast charging and clustered Level 2 ("L2") charging) in the near term, as Maine makes a shift in both peoples' driving habits and their purchases of EVs.

The Maine Climate Action Plan, Strategy A sets targets for Mainers to adopt 41,000 light-duty EVs as quickly as 2025 and 219,000 by 2030, as well as increasing the share of zero-emission vehicles in the medium- and heavy-duty sector to 12% in 2025 and 55% by 2030. One of the most cited barriers to EV adoption is associated with a lack of a robust EV charging infrastructure network which creates driver "range anxiety." Hence, utility make-ready programs that reduce upfront EV infrastructure costs for EV charger site hosts are becoming more common across the country and are being considered as one of the ways for utilities to stimulate the EV charging market.[8]

[6] Maine Climate Action Plan at 38.

[7] MURRDI Report at 22.

[8] See the Joint Utilities of New York's EV Make-Ready program located at the following link: https://jointutilitiesofny.org/ev/make-ready. See also the Edison Electric Institute ("EEI") EV Program Database located at the following link: https://www.eei.org/issues-and-policy/electric-transportation/EVPrograms.

As such, CMP is proposing a comprehensive EV make-ready program that would help Maine achieve its long-term clean energy goals. The program is consistent with Maine's Clean Transportation Roadmap[9] and builds off the success of CMP's L2 Make-Ready Pilot, which is described in more detail below. The program follows a model that has proved successful in other jurisdictions by garnering support from a broad set of stakeholders. To provide continued support for charging station installation, CMP's proposed program include two elements: 1) support for light-duty vehicle chargers, which would include L2 chargers and Level 3 direct current fast chargers ("DCFC" or "L3"); and 2) support for medium- and heavy-duty EV chargers, which would include chargers for school buses, transit buses, and other medium- and heavy-duty EV fleets.

a. Light-Duty EV Make-Ready Program

Q. Please describe the Light-Duty EV Make-Ready Program.

A. CMP proposes to expand the EV charging infrastructure in its service area to support the light-duty vehicle sector. CMP's proposed Light-Duty EV Make-Ready Program targets rely on the goals set-forth in Maine's Climate Action Plan which identified a goal of 41,000 light-duty EVs by 2025 and 219,000 EVs by 2030.[10] Using the U.S. Department of Energy ("DOE") EVI-Pro Lite tool,[11] in order to support a target of 41,000 light-duty EVs by 2025, Maine would need to install 1,676 L2 charging ports at workplaces, 1,236 publicly accessible L2 charging ports, and 303 L3 charging ports. According to the

[9] The Maine Clean Transportation Roadmap—a specific action of Maine Climate Action Plan—was released December 2021 and it identifies the policies, programs, and regulatory changes needed to continue decarbonizing Maine's transportation sector in coming years. The work was conducted in 2021 by researchers at Cadmus and the Environmental & Energy Technology Council of Maine ("E2Tech"), with oversight from a steering committee composed of State agency staff. An external advisory group provided technical input for the modeling, analysis, and recommendations.

[10] Maine Climate Action Plan at 41.

[11] The DOE EVI-Pro Lite tool is available at the following link: https://afdc.energy.gov/evi-pro-lite.

DOE's Alternative Fuels Data Center,[12] as of October 2021, Maine had 415 L2 charging ports, and 131 L3 charging ports, leaving a need for at least another 2,499 L2 charging ports and 172 L3 charging ports.[13] Assuming approximately 80% of the EV charger need will be within CMP service area that means there should be 2,000 L2 charging ports and 138 L3 charging ports in CMP's service area. As new studies and analyses are released, there is continuing variation in the light-duty EV market need for L2 versus L3 charging ports. In the recently released Maine Clean Transportation Roadmap, Cadmus assesses a greater need for L3 charging ports and a lower number of L2 charging ports than were projected using the DOE EVi-ProLite calculator. However, the proposed CMP investment towards overall make-ready investment is generally aligned with those set-forth in the straw proposal that CMP submitted to the Commission.[14] Additionally, as discussed below, the Company proposes to recover the costs for this program on an incremental basis, using a tracker of actual investments made annually during the years of the proposed rate plan.

The make-ready incentives would target publicly accessible charging infrastructure to support light-duty vehicles, with additional opportunities for non-public sites for specific use-cases around residential multi-unit dwellings ("MuD") and workplaces generally covered under commercial rate classes. The eligible costs incentivized under the program would cover utility-side electrical infrastructure cost. Eligible destination chargers would be those located at office buildings and other

[12] The website for the Alternative Fuels Data Center is located at the following link: EERE: Alternative Fuels Data Center Home Page (energy.gov).

[13] https://afdc.energy.gov/fuels/electricity_infrastructure.html

[14] Maine Public Utilities Commission, *Inquiry into Rate Design Issues Associated with 2021 Legislation*, Docket No. 2021-00198, EV Tariff Filing of Central Maine Power Company (Nov. 1, 2021).

workplaces, fleet depots, retail establishments, parking lots, restaurants and lodging and other public spaces, and multi-dwelling units (4 or more units). Eligibility for qualified chargers will promote a standardized, non-proprietary SAE J1772 plug for L2 chargers and will follow standards as they develop for CCS/SAE Combo plug and may include CHAdeMO plugs. Chargers that serve single-family residential homes are excluded from the program.

Aligned with prioritizations across the country for a focus on equity elements in utility EV program design, CMP's program would have a graduated incentive structure linked to socio-demographics differentiated by either zip code or census tract. The bottom 50% of areas in terms of average or median income (for the zip code of the census tract where the property is located) would be eligible to receive an incentive up to 100% of the make-ready cost, and the top 50% of areas in terms of average or median income would be eligible to receive an incentive up to 80% of the make-ready cost.

b. Medium- and Heavy-Duty EV Make-Ready Program

Q. Please describe the Medium- and Heavy-Duty EV Make-Ready Program.

A. CMP proposes to expand the EV infrastructure to support medium- and heavy-duty vehicles sectors that support school buses, transit buses, municipal vehicles, and delivery vehicles. Thirty-nine percent of transportation greenhouse gas ("GHG") emissions are created by the trucking sector, and therefore transitioning medium- and heavy-duty fleets to zero-emission EV technologies will have the largest impact on reducing emissions from the transportation sector.[15] While reducing GHG emissions is the primary focus of policies supporting zero-emission vehicles, converting diesel vehicles to electric also has

[15] Electric Trucks 2020-2030: IDTechEx.

significant immediate health benefits for some of our most vulnerable by reducing particulate matter and nitrogen oxide ("NOx") emissions, factors that affect air quality in communities. Furthermore, diesel powered school buses emit dangerous levels of pollutants, including particulate matter which are especially dangerous to children.[16] A 2001 study by the Natural Resources Defense Council found that children in the back of diesel-powered school buses could be exposed to toxic pollutants at four times the rate of people in the cars behind those buses, and that riding in school buses powered by diesel could pose 46 times the rate of "significant" risk for cancer.[17] A more recent 2015 study for the California Air Resources Board found that air pollution in diesel-powered school buses continues to put children in danger.[18] The negative effects range from heightened absenteeism to persistent heart and lung conditions, such as emphysema and asthma.[19] CMP's Medium- and Heavy-Duty EV Make Ready Program will support Maine school districts and its school bus operators to leverage the Clean School Bus Program by providing make-ready charging infrastructure funding. The Company recognizes a need beyond just school buses and proposes a Medium- and Heavy-Duty EV Make-Ready Program that not only supports school buses, but also targets other medium- and heavy-duty vehicle sectors including transit, municipal vehicles, and other private sector vehicle fleets that may include delivery vehicles.

[16] https://www.maine.gov/dep/air/mobile/schoolbus.html

[17] Solomon, Gina M., M.D., M.P.H., Campbell, Todd R., M.E.S., M.P.P., et al., *No Breathing in the Aisles: Diesel Exhaust Inside School Buses*, National Resource Defense Council (Jan. 2001), located at the following link: https://www.nrdc.org/sites/default/files/schoolbus.pdf.

[18] Zhu, Yifang, *Reducing air pollution exposure in passenger vehicles and school buses*, UC Los Angeles for California Air Resource Board (April 2015), located at the following link: https://ww3.arb.ca.gov/research/single-project.php?row_id=6506.

[19] Best in Class: Back to school on an electric bus — Center for Climate and Energy Solutions (c2es.org).

The make-ready incentives would cover utility-side electrical infrastructure costs. The program will specifically target electrification of school buses and transit buses with a target of supporting up to 300 new electric school bus chargers and 15 electric transit bus chargers through 2025. The program will additionally support up to 100 chargers for electrification of other medium- and heavy-duty vehicles such as refuse vehicles and delivery vehicles. Make-ready incentives for school and transit buses will cover 100% of the make-ready cost. Make-ready incentives for other medium- and heavy-duty vehicles will cover 80% of the make-ready cost.

c. Other Proposed EV Programs

Q. Please describe the other components of CMP's proposed EV program.

A. Beyond the proposed EV make-ready programs, CMP proposes to implement and expand on existing efforts that specifically support customer adoption of EVs through the following three initiatives: 1) EV planning and analysis; 2) an EV fleet assessment tool; and 3) expanded outreach and education related to EVs and charging.

Q. Please describe the proposed EV planning and analysis activity.

A. CMP is proposing dedicated funding to support studies and analysis related to EVs and their potential system impacts. As the EV sector grows across all vehicle markets, increased analysis and studies that forecast both vehicle adoption and load impacts from vehicle charging is necessary. The Company is committed to supporting decarbonization of the transportation sector and ensuring its system has the available capacity in the right locations to support growth which requires robust forecasts.

Q. Please describe the proposed EV fleet assessment tool.

A. CMP is currently implementing a pilot "proof of concept" online fleet assessment tool and pending a successful outcome will scale this tool to be available for all fleet

customers. The online fleet assessment tool allows users to perform a self-service analysis that helps quantify the costs, benefits, and other considerations related to vehicle fleet electrification. The tool will assess potential replacement vehicles, required charging infrastructure, anticipated electrical loads, available capacity, and estimated electricity costs.

Q. Please describe the proposed expanded outreach and education related to EVs and charging.

A. The Company proposes outreach and education that communicates the benefits of electricity as a transportation fuel to the general population and also promotes the EV Make-Ready Program to relevant customers and stakeholders. For the Light-Duty EV Make-Ready Program, outreach and education would include close collaboration with key stakeholders, both in the public and private sectors to maximize success and all available funding streams. The Company would also perform direct outreach, as it has with its L2 Make-Ready Pilot Program, to non-residential customers and key decision-makers to promote the program. For the Medium- and Heavy-Duty EV Make-Ready Program, outreach and education would include direct outreach and close collaboration with school districts and transit agencies.

Q. What are the program capital costs of the proposed EV programs and when are they expected to begin?

A. CMP recommends an initial three-year capital investment program of approximately $9.2 million in total to support the EV Programs, which would cover utility side costs for L2 and L3 infrastructure for light-duty vehicles as well as school buses, transit and other M/HD vehicles. As mentioned earlier in the testimony, CMP believes make-ready programs are an important and necessary early step to facilitate the State of Maine's clean

energy and climate change objectives. However, mindful of the overall rate impacts on customers, the Company proposes that the funding for the proposed EV initiatives be funded, in the Commission's discretion, on an incremental basis, resulting in CMP's rates being adjusted during each rate year based on actual plant additions resulting from these initiatives during the prior calendar year.

The EV programs are expected to begin approximately 6-8 months after a final Commission order approving the programs in this proceeding and are anticipated to be completed after three years of implementation.

Q. What are the operation and maintenance ("O&M") costs to support the proposed EV Programs?

A. The Company proposes a total of $550,000 annually in O&M costs. From this total, $300,000 will support EV related forecasting and load studies, $100,000 will support the fleet assessment tool, and $150,000 will support customer outreach and education.

Q. Has CMP structured the make-ready programs to reflect experience it has gained?

A. Yes, CMP recently completed a L2 Make-Ready Pilot. CMP's affiliates in New York, New York State Electric & Gas, and Rochester Gas and Electric have been successfully implementing make-ready programs for nearly two years and have supported installation of over 160 L2 chargers and 18 L3 chargers. CMP's affiliate in Connecticut, United Illuminating, likewise launched a make-ready program in January of this year.

Q. Please describe the Level 2 Charging Station Make-Ready Pilot.

A. In August of 2020, the Company launched the L2 Make-Ready Pilot Program to install 60 Level 2 charging ports in CMP's service territory. The goal of the program was to determine what incentives are more valued by developers, fleet managers, municipal planners, and others who decide to install chargers. The program was marketed in

conjunction with an alternate L2 rebate program administered by EMT, which included Versant Power's service territory. The Company anticipates all L2 charging ports will be installed in 2022 with the final L2 Make-Ready Pilot Program Report scheduled to be filed in August 2022. Lessons learned from this pilot are set forth in Exhibit GM-5.

B. Energy Storage Projects

Q. Please identify the energy storage programs CMP is proposing.

A. The Company is proposing two energy storage-related pilot projects: 1) the Trap Corner Battery Energy Storage System ("BESS") Microgrid Pilot; and 2) the Woolwich Peak-Shaving Pilot.

Q. Why is CMP proposing these storage related pilot projects?

A. Energy storage offers a unique opportunity to manage the dynamics of the distribution grid by deploying storage to strategic locations. Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. Since storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources like renewable energy to the grid. Looking to future capabilities, the responsiveness of energy storage can allow CMP to implement voltage regulation and similar grid-related functions, which are useful for improving system efficiency and reliability.

Q. Do the energy storage programs CMP is proposing align State and stakeholder initiatives?

A. Yes. The Company's proposed energy storage programs are intended to support the following State of Maine policies and stakeholder initiatives:

- Act to Advance Energy Storage in Maine, State Energy Storage Policy Goals (codified at 35-A M.R.S. § 3145)[20]
- Governor's Energy Office: Energy Storage Market Assessment (P.L. 2021, c. 298, Section 9)[21]
- Maine Climate Action Plan, Strategy C1 - Ensure Adequate Affordable Clean-Energy Supply[22]
- EPE Distribution System Gap Analysis and Roadmap, Docket No. 2021-00039[23]
- MURRDI Recommendation #7 – Fostering Innovation[24]

The Company is proposing energy storage pilot projects as part of this proceeding to help Maine reach its goal of 300 MWs of installed capacity located within the State by December 31, 2025, and 400 MWs by December 31, 2030. In addition to supporting the State's energy storage capacity goals, these pilots help facilitate clean renewable generation, and provide an innovative solution to improve reliability and resiliency. Specifically, the projects will further the identified policies and initiatives for the benefit of the distribution system and customers by shifting solar output from mid-day to early evening to better manage peaks, pairing storage and DERs to develop green microgrids, exploring use of storage to enable more interconnected solar PV, and developing insights

[20] 35-A M.R.S. § 3145 ("The state goal for energy storage system development is 300 megawatts of installed capacity located within the State by December 31,2025 and 400 megawatts of installed capacity located within the State by December 31, 2030.").

[21] P.L. 2021, c. 298, section 9, available at: https://legislature.maine.gov/LawMakerWeb/summary.asp?ID=280078910.

[22] Maine Climate Action Plan at 58.

[23] *Maine Public Utilities Commission, Investigation of the Design and Operation of Maine's Electric Distribution System*, Docket No. 2021-00039, Procedural Order (Dec. 1, 2021) (attaching EPE's Examination of Current Practices at Central Maine Power).

[24] MURRDI Report at 24-26.

into how to optimally size storage based on existing DERs to provide circuit overload relief in the evening hours.

Q. Please describe the Trap Corner BESS Microgrid Pilot project.

A. The 34.5 - 12 kV Trap Corner Substation is in rural Oxford County in CMP's Farmington division and serves over 1,700 customers in the towns of Woodstock and West Paris from one distribution circuit. The 3.45 MVA substation transformer has an average summer peak load of 90% of its nameplate. The summer peaks currently occur during the hours of 4:00 p.m. – 9:00 p.m. There are currently no ties from neighboring substations to Trap Corner and only one substation transformer. There are two needs at Trap Corner. The first need is to reduce the loading on the 3.45 MVA station transformer below its normal rating during the summer peak periods (*i*.e., the "Overload Need"). The second need is to provide a back-up supply for customers served by the Trap Corner substation following the contingency ("N-1") loss of either the sole 34.5 kV supply or the Trap Corner substation transformer (*i.e.*, the "Back-Up Need") which would otherwise lead to an outage of all 1,700 customers served from the substation.

To meet both the Overload and Back-up Need CMP proposes to install a 3 MW, 18 MWh BESS at Trap Corner substation, upgrade the existing voltage regulators, and install associated microgrid equipment. The BESS has been sized to pick up all the customers during peak times of the year, for up to 6 hours, which reduces the customer outage time until a mobile substation is delivered and energized.

There are currently two solar DER projects proposing to connect to the Trap Corner substation (1 MW and 2.5 MW). The Trap Corner BESS will give CMP the ability to learn how a BESS can help increase DER hosting capacity during normal operating conditions and while addressing the Back-Up Need, demonstrate how the

proposed solar DER can help charge the battery during the peak daylight hours, increasing the duration of the microgrid. The BESS can optimize the use of the existing connected DER and proposed DER by using the peak daylight hours to charge the battery with solar generation. The BESS can also be programmed to charge at night when peak loads are lowest allowing the battery to remain fully charged throughout the day when needed. This pilot will demonstrate how the use of energy storage can be leveraged as more DERs are connected to the system to develop green microgrids to help improve resiliency and addresses a concern identified by stakeholders in the Distribution System Gap Analysis presented in Docket No. 2021-00039.

Q. Please describe the Woolwich Peak-Shaving BESS Pilot Project and proposed use cases for this BESS.

A. The Woolwich substation at CMP is a 34.5 - 12 kV station located in the Brunswick Division that supplies one distribution circuit. The Woolwich substation serves 3,082 customers in the towns of Woolwich, Arrowsic, and Georgetown. The 5.25 MVA substation transformer has an average summer peak load of 94% of its nameplate and peaks in the summer between the hours of 5:00 p.m. – 10:00 p.m.

The primary need at Woolwich is to reduce the loading on the 5.25 MVA station transformer below its normal rating during the summer peak periods. As a secondary use, the battery system will be used to optimize the use of the existing connected DER by using the peak daylight hours to charge the battery with the solar generation and discharge the battery during the evening hours to offset the peak load of the Station. To meet both the primary and secondary need, CMP proposes to install a 0.4 MW, 1.1 MWh BESS at Woolwich substation and upgrade the existing voltage regulators. The BESS has been optimally sized to match the existing and queued generation with consideration

for the existing transformer loading conditions. As recommended in Strategy C1 of the Maine Climate Action Plan, this pilot will provide insights into how BESS installed at a substation can be optimally sized leveraging existing DER to provide overload relief in the evening hours during peak and will also allow learning on the interaction of smaller substation energy storage with installed circuit level DER.

Q. Please explain why CMP believes that utility ownership of these pilot projects would be appropriate.

A. CMP is proposing to competitively procure these projects as "turn-key" opportunities for the storage industry. They will therefore create direct opportunity for competitive markets. Given that they will serve a direct distribution grid function, it is necessary that CMP own and operate them like it would any other distribution grid asset.

Maine's Declaration of Policy on Smart Grid Infrastructure supports utility ownership of storage projects in this context.[25] The Declaration states that it is the policy of the State to promote the development, implementation, availability, and use of smart grid functions and associated infrastructure technology and applications in the State to (1) improve the overall reliability and efficiency of the electric system, (2) reduce customer costs, (3) reduce and better manage energy consumption, and (4) reduce GHGs. 35-A M.R.S. § 3143(3).

[25] Storage is among the "associated infrastructure [and/or] technology" that enables smart grid functions, as contemplated in the guiding policy goals of the State of Maine articulated in 35-A M.R.S. § 3143(3). These policy goals include, among other things the "[d]eployment and integration into the electric system of advanced electric storage and peak-reduction technologies, including plug-in electric and hybrid electric vehicles." 35-A M.R.S. § 3143(3)(E). Storage is not generation under Maine Law. Generation assets are defined as "all real estate, fixtures and personal property owned, controlled, operated or managed in connection with, or to facilitate, the generation of electric power." 35-A M.R.S. § 3201(10). Whereas a battery falls squarely within the definition of an "energy storage system," which means "commercially available technology that uses mechanical, chemical, or thermal processes for absorbing energy and storing it for a period of time for a use at a later time." 35-A M.R.S. § 3481(6) compare with 35-A M.R.S. § 3481(5) (defining "Distributed Generation Resource").

Q. Please explain the benefits of CMP ownership for these two pilot projects

A. In order to unlock the full potential energy storage offers Maine and to provide optimized value to the distribution system, storage needs to be properly located and matched to the grid need, effectively dispatched in real time to meet system requirements, and incorporated into long-term system-wide planning optimizing the value provided by storage for all customers. These competitively procured pilot projects will enable CMP to identify and develop the processes needed to be effective at all three key areas for successful storage deployment. The learnings from these pilots will be shared with all stakeholders to help advance the energy storage market in Maine.

Q. Is CMP proposing any other initiatives that would support the adoption of distributed storage technology in Maine?

A. Yes. In addition to these storage pilots, the Company has also proposed in Docket No. 2021-00325, opening its DCFC-B rate as an option to all demand-billed customers to help enable distributed storage technology and other smart solutions that may enable commercial and industrial customers to save on their delivery costs while also reducing stress on the grid. CMP has incorporated this rate design proposal in this proceeding and discusses it in more detail in the Revenue Allocation and Rate Design Panel testimony.

Q. What is CMP proposing for estimated costs of the Woolwich and Trap Corner Energy Storage Projects?

A. The Company has estimated a total budget of approximately $11.5 million, with approximately $1.1 million for the Woolwich BESS and $10.4 million for the Trap Corner BESS microgrid, respectively.

Q. How does CMP propose to recover the costs for the storage pilot projects?

A. Similar to the EV make-ready programs, in the event the Commission approves the implementation of the storage pilot projects, CMP proposes to recover the investment for these pilot projects on an incremental basis through an adjustment to rates made as part of the annual price adjustment in the year after which the projects go into service, calculated on the actual investments made up to a Commission determined cap.

C. Grid Model Enhancement Project (GMEP)

Q. What is the GMEP?

A. CMP has recognized the need to improve the quality of its system data to support future integrated system planning and real-time operations, especially with regards to as-builts in the field, phase connectivity and customer transformer mapping, and is proposing a GMEP to resolve these challenges. The GMEP is CMP's response to the urgent and critical need for accurate and readily accessible data pertaining to its electric distribution infrastructure. Specifically, the GMEP requires CMP to:

- Complete a comprehensive field connectivity survey of the Company's entire distribution network from substation to customer and true up historical records against field collected data, in order to address data gaps between the current infrastructure and the appropriate system of record. The inventory is expected to include all physical assets across all CMP distribution circuits;
- Develop and implement streamlined processes covering the entire life cycle of distribution assets and their data to maintain the accuracy of the information collected in the field survey as equipment is replaced or added in the field due to restoration efforts or circuit upgrade initiatives; and

- Enhance current planning and operating processes based on the improved distribution asset descriptions, which also ensures that data quality is maintained going forward.

Q. Please elaborate on the need for the Company's GMEP.

A. CMP understands that data quality is a system-wide problem that needs to be solved across the entire distribution system. These data quality concerns impact Distribution Planning as extensive manual intervention is required to generate accurate models of the distribution system.

These data quality concerns need to be resolved in order to enable the types of advanced planning and operational functions that CMP wants to pursue in the future to manage the system as the distribution grid transforms and evolves with integration of DERs, including EVs, energy storage, and solar installations, and the many projects proposed by the State to advance Maine's clean energy targets, which prompts a need for greater grid visibility and data analytics. As CMP's customers increasingly interconnect DERs, their needs and uses for the distribution grid are evolving from a unidirectional model of generation and subsequent delivery to load to a more dynamic model accommodating bidirectional power flows and alternative ways to manage DERs. The proliferation of DERs and evolving consumer load shapes are also changing the fundamental uses of the distribution grid, causing this two-way power flow. Moving forward, accurate phasing data and customer transformer mapping will be critical to the planning and operation of a modern distribution system.

The Company's GMEP is a critical solution to these needs. It will enable a data-driven improved analysis, monitoring, control, planning and forecasting model of CMP's electric distribution system including network load and DER characteristics. In fact, the

connection between successful DER integration and the fundamental need for the GMEP was identified and repeatedly referenced in the distribution system gap analysis filed by EPE in Docket No. 2021-00039 and provided as part of Exhibit GM-4.[26]

Q. Is the implementation of the GMEP time sensitive?

A. Yes. As discussed above, due to the need for system modeling efficiency improvements, more detailed and accurate distribution system models, the expansion of DER interconnection and the evolving needs of customers, the GMEP is an essential next step in assuring CMP's data is accurate and complete allowing the system to meet existing needs and adapt to future needs. Currently, CMP utilizes multiple software tools to plan and operate the system. These tools include the Company's Geographic Information System ("GIS"), Siemens' Spectrum, Advanced Meter Infrastructure ("AMI"), Eaton's CYME, among others. These tools, which are all crucial features of CMP's system, require more accurate, more granular data of the current infrastructure to operate efficiently and maximize customer value. This will be required to meet the expectations of CMP's customers.

Likewise, the implementation of other necessary projects and initiatives is dependent on the GMEP. A few examples include the automation of CYME model development for system studies and Hosting Capacity Map updates, accurate mapping of AMI data into system models for more accurate static and time-series analysis, and the ability of CMP to leverage the Optimal Power Flow engine in the Spectrum platform.

[26] Exhibit GM-4, EPE Distribution System Gap Analysis - Attachment A" at 96, 98-100. *See also* EPE Distribution System Roadmap – Attachment B at 15, submitted in the Maine Public Utilities Commission, Investigation of the Design and Operation of Maine's Electric Distribution System, Docket No. 2021-00039, Procedural Order (Dec. 1, 2021), and June 3, 2022 Technical Conf. Tr., Docket No. 2021-00039, at 77-78.

Q. What are the primary benefits of the GMEP and how is it foundational to CMP's grid modernization future capabilities and roadmap?

A. At the heart of a safe, reliable, dynamic, secure, modern grid is data, and the Company's ability to access and leverage accurate, reliable, and real-time data in order to make optimized system planning decisions along with increasing system situational awareness for real-time operation of the evolving grid. CMP seeks to move towards centralized operations with benefits that include safety of our employees and ensuring that we maximize the capabilities of the distribution automation in the field. The GMEP helps tie together our people (*i.e.*, ECC operators and line workers), with our processes (planning, real-time situational awareness), and the technology (GMEP, coupled with Spectrum), as an enabler to allow the Company to leverage the automation and reduce the number of customers impacted by outages. Accurate data, coupled with an enhanced GIS grid model also can provide DER and impedance data for planning and operations to enable and enhance interconnections analysis, hosting capacity analysis, circuit optimization, Volt-Var control, and other enhanced functions in the future. These improved capabilities all benefit customers, by allowing the Company to plan for, operate and control the distribution grid in a more efficient, reliable and effective manner.

In addition, the result of the GMEP will be a complete distribution model including network load and DER characteristics. The information gathered from the GMEP will feed the Distribution Planning Tools to support effective planning (including non-wires alternative ("NWA") analysis), to calculate hosting capacity, and to analyze interconnection requests. The data will also feed the Company's Advanced Distribution Management System ("ADMS") as the basis for power flow calculations for optimization

and congestion management. Better data and improved quality processes will reduce operational costs associated with model cleaning and data scrubbing.

Q. How will the GMEP address stakeholder feedback and enable Maine's Climate Action Plan efforts?

A. The GMEP directly responds to comments from EPE and current stakeholder needs to integrate more DERs and enhances CMP's distribution planning processes. Specifically, it will enable improved estimates of DER hosting capacity with more accurate circuit descriptions, so that DER is not discouraged unnecessarily, or approved where the circuit condition cannot support the new DER load. Also, this project aligns with the MURRDI to support effective electric grid planning and modernization by providing accurate data and model quality to advanced system operations and full utilization of the data (*i.e.*, CMP's Spectrum ADMS platform).

Q. How will the GMEP assist with the Company's distribution planning and operations processes?

A. From an Electric Operations perspective, execution of the GMEP will result in the Company being able to manage the real-time power flow to support grid optimization and other advanced functions such as Volt-Var optimization and Fault Locating Isolation and Service Restoration. Also, the DER database supplements the grid model by providing the DER characteristics and location on the grid and automation and AMI provide the temporal load and DER model. As mentioned earlier, the GMEP also provides the benefit of moving towards a centralized controllership of the grid which benefits our employees from a safety perspective and ensuring that the Company maximizes the capabilities of the distribution automation in the field.

In addition, quality and accurate data is necessary for CMP to accurately manage outages, avoiding inaccuracies when trying to manage the outage device prediction process. CMP currently assigns customers to transformers in their model using an algorithm since they are unable to rely on GIS or other records. The algorithm assigns customers to the geographically closest service transformer, which can create inaccuracies. CMP requires accurate awareness of what is occurring in the field down to the distribution transformer level since as DERs, such as EVs, deploy, it is anticipated that the initial impact to the system will occur at the distribution transformer level.

Q. What are the proposed costs associated with the GMEP and how does the Company propose to recover those costs?

A. As set forth in the Capital Investment Plan (Exhibit CIP-2) presented by the Capital Investment Panel testimony, the capital budget for the GMEP is $12.58 million. Planning for the GMEP is already underway in 2022, and the GMEP is expected to be implemented beginning in 2023 and completed by the first quarter of 2026, at which point the Project investments will be added to plant in service. The Company will begin to realize the benefits of the detailed system mapping discussed above as the GMEP is implemented.

D. CMP Innovative Pilots, Partnerships and Collaborations

Q. Is CMP proposing any innovation related initiatives aligned to Maine's energy policies, targets and goals?

A. The Company proposes initiatives to advance other strategies in the Maine Climate Action Plan Strategy C, which seeks to reduce carbon emissions in Maine's energy and

industrial sectors through clean-energy innovation.[27] To further this effort, CMP proposes to establish an innovation collaboration with UMaine to investigate methods for realizing an electric grid that meets various stakeholder needs and continues to move Maine's energy policies forward. To reach the goal of 80% of Maine's energy coming from renewable generation, the Innovation collaboration is a unique opportunity for developing and testing pilot initiatives and technologies necessary to significantly increase the amount of renewable generation including offshore wind, distributed generation, and energy storage.

The Company proposes to work with Maine stakeholders and UMaine to establish an annual Innovation Program that provides a mechanism to quickly test innovative products and services, while ensuring consumer protection and customer benefits.[28] The Company recommends drawing upon best practices and Avangrid's experience from other jurisdictions to outline program design, structure, and governance and create a safe, monitored environment to test creative approaches, pilots and demonstration projects. It is envisioned that these projects will deploy high-value, beneficial solutions that otherwise might not be possible or expedient within the current regulatory environment.

Q. What is the UMaine Collaboration?

A. CMP is working with UMaine to explore and develop new concepts and approaches related to more sustainable generation, distribution, and usage of energy. Informing these

[27] Maine Climate Action Plan at 54.

[28] Such a program squarely aligns with MURRDI recommendation #7, which promotes fostering innovation to help meet the state's climate and energy requirements and would provide a venue for sharing insights from innovative approaches and lessons learned to increase the wisdom of all stakeholders. Additionally, this program is aligned with the recommendation to explore opportunities to:

- Enable using ratepayer dollars to pay for innovation investments in return for Commission oversight; and
- Create a forum for sharing new approaches being tested in the state and elsewhere, both by utilities and other entities, ultimately in service to meeting the State's emissions reduction targets.

concepts and approaches are important as CMP enables transformation of the grid. As appropriate, the Company and academic institutions like UMaine will jointly explore and seek additional financial and institutional support for projects from federal, state, and other sources. The Company will provide research grants (ranging from $75,000 to $150,000) to enable education, research, and development by faculty and graduate level research focused on smart grid research and development and overcoming challenges related to planning and deploying electricity generation, transmission, and distribution technologies.

Q. Why is CMP proposing this type of collaboration?

A. The deliverables from this R&D are essential to drive innovative solutions to overcome challenges related to planning and deploying electricity generation, transmission, and distribution technologies. The Company does not have a dedicated utility R&D business area aimed at theoretical development, pre-commercial, or pre-prototyped emerging technologies to solve the future challenges that will arise as the electric grid transitions to a distributed energy system. The Company's innovation team focuses on well-established, commercially-available, emerging technologies, and therefore relies on collaborations with external entities including academic institutions to enhance their research capabilities, ideate, design, and implement pre-development demonstration projects to glean conceptual learnings applicable to the building and operating the clean electric grid of the future.

Q. How does this type of collaboration benefit the Company's grid modernization efforts, and in turn, its customers?

A. Piloted solutions that demonstrate grid and customer value are scaled to the network. This provides improved efficiency, reduced costs, experience with new technologies,

products, and services, and development of best practices to better serve customers. Additionally, implementing innovative demonstration projects with academic institutions focused on real energy related challenges nurture highly skilled utility workforce development, introduce students to careers in the energy sector, and provide a direct relationship with professors, students, and the Company.

Q. Has CMP completed innovative pilots and how have they benefitted customers?

A. Yes. Earlier in the testimony, CMP discussed the L2 Make-Ready and DCFC Rate Pilots Programs which have informed transportation electrification program proposals. CMP has also completed a Voltage Optimization Pilot Project.

Q. Please describe CMP's Voltage Optimization Pilot Project.

A. The CMP Voltage Optimization Pilot was completed with a final report submitted in April 2021 in Docket No. 2016-00162.[29] The scope of the pilot was to demonstrate the feasibility of a closed-loop voltage optimization algorithm and gather data to calculate a Conservation Voltage Reduction ("CVR") factor for this type of voltage optimization that can be used to inform a cost-benefit analysis for voltage optimization across CMP's service territory. Next steps contained in the final report included 1) continuing to collect data from the Voltage Optimization Pilot to refine the CVR factor calculation (currently collecting additional data and have attempted to revise CVR factor); 2) exploring ways to leverage the scheme to enable DER interconnections that are voltage constrained; and 3) assessing opportunities to use voltage optimization as a NWA solution.[30]

[29] *Maine Public Utilities Commission, Efficiency Maine Trust Request for Examination of Voltage Optimization Pilot Program,* Docket No. 2016-00162, Annual Voltage Optimization Project Final Report (Apr. 5, 2021).

[30] The Company plans on leveraging the real-time power flows in the Spectrum System to enable the advanced functions of Spectrum, one which is Volt-Var Optimization. The real-time power flows will be informed once GMEP is complete.

Q. What new pilot projects is CMP proposing in this case?

A. CMP is proposing the Active Network Management ("ANM") Pilot which would benefit customers and the grid.

Q. What is the Active Network Management Pilot?

A. The Company is proposing to pilot ANM in one of its cluster study areas. The cluster area includes several substations and numerous DER facilities. ANM is a platform that consists of a head-end system and grid edge devices. ANM monitors real-time system conditions, and the grid edge device sends curtailment commands to DERs to maintain electric system parameters within defined operational limits. CMP plans to engage with the DER developers in the cluster area to encourage their participation in the pilot.

Q. What are the benefits envisioned from a CMP ANM Pilot?

A. ANM has benefits for numerous stakeholders. From a DER developer perspective, ANM can be a cost-effective alternative compared to some traditional 'wires' modifications. Environmentally, ANM can increase a circuit's DER hosting capacity enabling the cost-effective interconnection of additional clean, renewable resources. ANM can also enable improved asset utilization by enabling the interconnection of additional DER without the need to increase asset capacity. Transmission and distribution capital investment can be avoided with the implementation of ANM as the system continuously monitors real-time power flows and sends signals to one or more DER assets to ensure power flow operating parameters are not exceeded.

III. GRID MODERNIZATION (TECHNOLOGY PLATFORM) ROADMAP

Q. What is the purpose of CMP's Grid Modernization (Technology Platform) Roadmap?

A. CMP recognizes that the electric industry is in the midst of unprecedented change with advances in clean energy with DERs such as solar, information and informational technologies, EVs, and energy storage all transforming how the electric grid operates and how we do business today.

As Maine and our customers' transition to net-zero carbon emissions, CMP is preparing to enable the transition to ensure safe, reliable service while meeting our customer's expectations by making it easier for our customers to view and manage their energy usage, sign up for service options and pricing programs. The Company is also preparing to meet customers' desires to transition to EVs, install solar generation and energy storage that benefit them and our communities. As mentioned earlier, the integration of large numbers of DERs and electrification of loads is fundamentally changing the way we need to plan and operate the distribution system.

To do this, the Company continues to develop its Grid Modernization Roadmap, which sets forth the integrated set of foundational technologies and systems that will help transition the Company's critical functions to be more integrated in real time. CMP's Roadmap is before the Commission in Docket No. 2021-00039, and the Company stands ready to continue the important dialogue on how our Roadmap should continue to evolve to align with and support Maine's clean energy and climate policy objectives.[31] In the

[31] Specifically, the Roadmap supports the Maine Climate Action Plan to reduce GHGs by enabling transportation and other electrification and integrating clean DERs. Additionally, the Roadmap supports the recommendations of MURRDI which was charged to develop strategies to plan, build, and operate the electric grid that is needed to meet the State's climate and energy requirements, while maintaining a safe, reliable, resilient, secure and affordable grid. Further the Roadmap supports enacted laws such as: An Act to Promote Clean Energy Jobs and

meantime, through the EV, energy storage, the GMEP and other initiatives proposed in this testimony and the increased automation investments discussed in the Capital Investment Panel testimony, CMP is taking important strides to implement its Roadmap, all to provide the smarter, stronger and more resilient grid that customers deserve and that will support Maine's clean energy future.

IV. COST RECOVERY

Q. How does the Company propose that the initiatives presented in this testimony be funded?

A. Each of the initiatives proposed here are important and necessary early steps to facilitate the transition of the Company's distribution grid and implementation of Maine's clean energy and climate change objectives. As such, it has included the GMEP and innovation initiatives within its Capital Investment Plan presented by the Capital Investment Panel for recovery through the forward-looking multi-year rate plan presented by the Policy and Revenue Requirements Panels. Mindful of the overall rate impacts on customers, CMP proposes that the funding for the proposed EV, energy storage, and ANM Pilot projects and programs be funded on an incremental basis. As discussed in the Policy Panel testimony, to the extent approved by the Commission in this proceeding, CMP's rates will be adjusted during each rate year based on actual plant additions resulting from these initiatives during the prior calendar year.

To Establish the Maine Climate Action Council and An Act to Promote Solar Energy Projects and Distributed Energy Resources in Maine. The Roadmap also addresses numerous gaps identified by EPE as documented in its Gap Analysis Report, submitted in Docket No. 2021-00039. The GMEP proposal, in fact, is a foundational investment by CMP called for in the Roadmap to address a gap identified by EPE.

Q. Please explain how CMP proposes to recover costs for the ANM Pilot.

A. CMP believes this type of grid pilot which enables hosting capacity and higher levels of DER interconnections is a positive step in the right direction given the growth in solar DER interconnection applications. Rather than recover the costs associated with the ANM Pilot in base rates, the Company proposes that, with Commission's approval, the capital and O&M costs of this pilot be recovered on an incremental basis, with CMP's distribution rates adjusted annually for each rate year as part of the Company's Annual Compliance Filing based on actual plant additions and expenditures during the prior calendar year. The Company will monitor the performance of the pilot for approximately one year after commissioning with quarterly status updates and will file a final report with the Commission at the end of the one-year period. This report will include evaluation of system performance and recommendations of future actions. CMP also proposes that if the Commission determines that it would be beneficial to scale up the ANM Pilot, the Company would defer cost recovery of both the capital investments and operating costs of the scaled-up ANM Pilot through a regulatory asset for recovery in the Company's next general rate case.

Q. Please summarize total capital investments for the initiatives proposed by the panel?

A. Table 1 below provides a summary of the initiatives included in the Capital Investment Plan for recovery through the revenue requirement presented by the Revenue Requirements Panel.

Table 1: Grid Modification Initiatives Included in the Capital Investment Plan for Recovery through the Proposed Revenue Requirement

Program / Project	2022	2023	2024	2025
Innovative Partnerships & Pilot Projects		$182,295	$186,015	$189,735
CYME Server - Hardware and Software		$162,500		
Grid Model Enhancement Program	$1,937,764	$4,156,016	$4,156,016	$2,328,008
Advanced Load and DER Forecasting			$335,000	
AMI-CYME Integration			$100,000	

Table 2 below presents a summary of the expected capital expenditures by year of the grid modernization initiatives CMP proposes to be funded in an incremental basis.

Table 2: Expected Capital Expenditures for Grid Modification Initiatives Proposed for Cost Recovery on an Incremental Basis by Year

Program / Project	2022	2023	2024	2025
Transportation Electrification		$1,370,315	$2,283,858	$5,481,259
Energy Storage		$3,941,641	$7,563,829	
Active Network Management		$1,757,000		$450,000

Q. Does this conclude the Panel's testimony at this time?

A. Yes.