Public Service Commission of Wisconsin

Rebecca Cameron Valcq, Chairperson
Ellen Nowak, Commissioner
Tyler Huebner, Commissioner

4822 Madison Yards Way
P.O. Box 7854
Madison, WI 53707-7854

March 24, 2021

To the Parties:

Re: Project Year 2020 (PY20) State Energy Program (SEP) Formula Grant Awarded by the US Department of Energy — 9705-FG-2020

Comments Due:	Address Comments To:
Friday, April 2, 2021 – 4:30 PM	**Steffany Coker** Public Service Commission P.O. Box 7854 Madison, WI 53707-7854
This docket uses the Electronic Records Filing system (ERF).	

The Commission Memorandum concerning a Critical Infrastructure Microgrid and Community Resilience Center Pilot grant program design is being provided to the parties for comment. Comments must be received by 4:30 PM on Friday, April 2, 2021. Party comments must be filed using the Commission's ERF system. The ERF system can be accessed through the Public Service Commission's web site at http://psc.wi.gov. Members of the public may file comments using the ERF system or may file by mail at the Public Service Commission, 4822 Madison Yards Way, P.O. Box 7854, Madison, WI 53707-7854.

Please direct questions about this docket or requests for additional accommodations for the disabled to the Commission's docket coordinator, Olivia Shanahan at (608) 267-0317 or Olivia.Shanahan@wisconsin.gov or Megan Levy at Megan.Levy@Wisconsin.gov.

Sincerely,

Kristy Nieto
Administrator
Division of Digital Access, Consumer and Environmental Affairs

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Attachments

PUBLIC SERVICE COMMISSION OF WISCONSIN
Memorandum

March 24, 2021

FOR COMMISSION AGENDA

TO: The Commission

FROM: Kristy Nieto, Administrator
Tara Pray, Deputy Administrator
Joe Pater, Director
Megan Levy, Energy Emergency Assurance Coordinator
Olivia Shanahan, Energy Grants Manager

Division of Digital Access, Consumer, and Environmental Affairs
Office of Energy Innovation

RE: Project Year 2020 (PY20) State Energy Program (SEP) Formula Grant Awarded by the US Department of Energy 9705-FG-2020

Critical Infrastructure Microgrid and Community Resilience Centers Pilot Grant Program Design

Suggested Minute: The Commission (approved/modified and approved/did not approve and made a different selection) the grant program scope options identified by staff.

Background

The Public Service Commission of Wisconsin's (Commission) Office of Energy Innovation (OEI) administers and implements innovative and effective energy planning, policy, and programming to benefit Wisconsin's citizens and businesses. As Wisconsin's designated state energy office, OEI receives funding from the U.S. DOE State Energy Program (SEP) in a formula grant to carry out a state-led Annual Plan that reflects Wisconsin's unique resources and delivery capacity, within the federal framework and state-specified duties that inform the core organizational structure and programming goals of the OEI. (PSC REF#: 387580.)

In its Final Decision issued on June 17, 2020 (PSC REF#: 392202), the Commission approved the 2020 SEP Annual Plan, which established the "Microgrid and Community

Resilience Centers Pilot Grant Program" (Program) for $985,000, setting broad program parameters for innovative pre-disaster mitigation, through critical infrastructure microgrids and other resilient building strategies to demonstrate feasibility, implementation, and best practices in Wisconsin. The purpose of this memorandum is to provide the Commission with more detailed information on the process of program development and to present program design options for Commission decision.

Eligibility Parameters

Eligible Applicants

The U.S. DOE does not, through statute or program guidance, restrict the entity types of grant sub-recipients, contractors, or partners under the SEP program. Thus the parameters for eligible applicants to OEI pass-through grant programs in a given year are based on the list of applicants approved in various actions by U.S. DOE, further refined by the Commission, and clarified by U.S. DOE over time. Historically, these entities have included the following for pass-through grant programs, modified as appropriate for the particular program: private businesses such as manufacturers or convenience stores, and MUSH (Municipalities, Universities, Schools, and Hospitals)[1] Market entities that may be further refined by area of responsibility such as housing authority or county highway shops.

Federal guidance on allowable activities

The broad program parameters approved thus far by the Commission were reviewed and approved by the U.S. DOE in the SEP grant agreement signed on June 30, 2020. Additionally,

[1] Municipalities, Universities, Schools, Hospitals, and Like Entities (MUSH Market): The Commission previously defined the MUSH Market and Like Entities to include: cities, villages, towns, counties, K-12 school districts, tribes, municipal water and wastewater utilities, municipal electric utilities, municipal natural gas utilities, University of Wisconsin System campuses and facilities, Wisconsin Technical College System, public or nonprofit hospitals, and 501(c)(3) nonprofits.

as the program must comply with the National Environmental Policy Act (NEPA), the corresponding NEPA determination will apply to this Program, requiring only those activities outside the bounded categories to undergo further review (DL:1789356).

Considerations for Program Design

To assist the Commission in defining a program design within the scope of eligibility defined above, staff have identified a number of items for consideration, such as lessons learned from previous and existing programming, review of other states' programs, and analysis of industry research and activity. Further, if the Commission determines that the considerations discussed in this section are appropriate to use for establishing programmatic emphases and administrative goals, it may refer to the options provided by staff as alternatives on the various decision points of program design.

Lessons Learned from Existing Programming and Working Groups

As part of ongoing work of the OEI in energy assurance coordination, energy planning, and technical assistance, staff routinely deliver projects and programs that bolster resilience within the state, engage with other Commission staff on this and other related dockets, and coordinate with other states through groups like the National Association of State Energy Officials (NASEO) and National Association of Regulatory Utility Commissioners (NARUC) as part of the NASEO Energy Security Committee and the NASEO- NARUC Microgrids State Working Group (MSWG)[2].

[2] Microgrids State Working Group | NASEO

Through the design, management, and program assessment of petroleum shortage contingency planning[3] and Generator Readiness[4] grants, staff have encountered Wisconsin-specific challenges presented by the dependence of its critical infrastructure on imported energy supplies, particularly diesel and propane used for backup generation, that are subject to disruption in supply during catastrophic weather or other events. When these challenges are considered in the context of national trends and recent events, they underscore the necessity of proactive pilot programs, like the one proposed herein, which prepare critical infrastructure for a worst case scenario that is as yet unknown. For instance, in staff's analysis the recent extreme weather events in Texas related to the degradation of the jet stream coupled with a shortage of natural gas in the state, which is the largest producer of oil and gas in the nation, exemplify the interrelated causes and potentially compounding effects of energy emergencies.

According to the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information, the year 2020 included twenty-two distinct weather disaster events caused by changing climate, which tallied losses in excess of $1 billion dollars each, in the United States[5]. Further, NOAA data indicates that these types of extreme events are on the rise and increasingly costly.

Another existing OEI program, the Municipal Energy Efficiency Technical Assistance Program (MEETAP), has provided a framework for identification and tracking of critical

[3] The Petroleum Shortage Contingency Plan provides detailed guidelines for managing petroleum emergencies, including specific conservation measures and possible emergency orders. This plan is an appendix to "Emergency Support Function-12 Energy" of the Wisconsin Emergency Response Plan.
[4] Wisconsin's Refueling Readiness Plan in partnership with Wisconsin Emergency Management (WEM) builds upon the Petroleum Shortage Contingency Plan, and extends Wisconsin's network of reliable fueling stations with the goal of identifying at least one private business and one municipal fleet fueling facility in each county and bulk fuel terminals where emergency vehicles can obtain diesel fuel or gasoline in response to natural disasters. This project provides funding to install necessary infrastructure to allow for connection to an emergency generator to allow continued and timely distribution of fuel to emergency vehicles during a gubernatorial-declared disaster or emergency.
[5] https://www.ncdc.noaa.gov/billions/

infrastructure energy use by benchmarking water and wastewater data statewide. Similarly, the Energy Independent Communities (EIC) program and the Statewide Assistance For Energy Reliability and Resiliency (SAFER2) program, (through which staff are addressing gaps in local energy emergency planning) among other comprehensive planning efforts, have encouraged municipalities to incorporate emergency planning and identification of critical infrastructure in their energy work.

To develop a program that would address these challenges and build on lessons learned by other Commission activity and other states' programs, Commission staff gathered a staff program development committee consisting of participants[6] from the Office of Energy Innovation, both State Energy Program and Focus on Energy staff, and Division of Energy Regulation and Analysis (DERA) staff. The committee provided early review of the concept, valuable research and analysis, and made recommendations for successful program design.

One observation of the program development committee was the apparent Wisconsin consumer demand for resiliency initiatives shown in recent applications to the Commission, including *Application of Northern States Power Company, a Wisconsin Corporation, for Approval of a Resiliency Service Pilot,* docket 4220-TE-106, (Wis. PSC Dec. 9, 2020) (PSC REF#: 401403) (Xcel Application), and applications for Renewable Energy and Energy Storage[7] projects in response to the *Final Decision*, 2020 *Energy Innovation Grant Program (EIGP) Funded by a Grant Awarded by the Department of Energy, SEP-Formula, on July 27, 2009,* docket 9709-FG-2020 (Wis. PSC October 16, 2020) (PSC REF#: 398392).

[6] OEI: Joe Pater, Director; Megan Levy, Energy Assurance Coordinator and Local Energy Programs Manager; Olivia Shanahan, Energy Grants Manager; Kishan Panduranga, Program and Policy Analyst; Tom Nowakowski, Energy Innovations Manager; Jolene Sheil, Focus on Energy Portfolio Manager. DERA: Joe Fontaine, Energy Policy Advisor; Akanksha Craft, Energy Markets Engineer; Sharayu Bhasme, Engineer; Benjamin Kaldunski, Public Utility Rates Analyst - Senior.

[7] EIGP Eligible Activities: 1) Renewable Energy and Energy Storage 2) Energy Efficiency and Demand Response 3) Electric and Renewable Natural Gas Vehicles and Infrastructure 4) Comprehensive Energy Planning

The Xcel Application is for a voluntary resiliency service pilot for commercial and industrial customers, wherein "customers will pay for their requested Resiliency Service Assets through a unique on-bill charge that recovers the revenue requirement of the assets requested by each customer. Because pilot costs are recovered through dedicated customer charges, the pilot does not rely on subsidization from non-participating customers. Resiliency Service Assets will be located on or near a customer's premise(s) serving load located behind a single customer meter." (PSC REF#: 401403.) The Xcel Energy program, if approved by the Commission, will be available to customers in the latter half of 2021. This utility-sponsored "microgrid as a service" model proposes to provide benefits to the customer that include on-bill financing, operations, and maintenance of the asset.

Twenty-one of the 108 EIGP applications submitted in January 2021 were for battery energy storage projects. The 21 grant requests totaled $8.5 million and leveraged additional local investment of $20 million. The applicants seeking to install energy storage included at least one each of municipal governments, K-12 school districts, municipal electric utilities, manufacturers, 501(c)(3) non-profits, and tribes. As of the date of this memorandum, the Commission has not yet issued 2020 EIGP awards.

Similarly, the Governor's Task Force on Climate Change Report[8], issued in fall of 2020, demonstrated industry interest in exploring and supporting microgrid deployment. The report's Energy Strategy #6, "Develop electricity storage and microgrids for critical infrastructure," identifies the OEI as having a key role in providing such support.

[8] Climate Change Task Force Home (wi.gov)

Review of other state Microgrid and Community Resilience Center programs

The following overview of other states' critical infrastructure microgrid and community resilience centers programs is limited to a few best practices from each, including funding level, goals, and other pertinent information. A recent report from the North Carolina Clean Energy Technology Center notes that "48 states including Washington D.C. and Puerto Rico took more than 658 grid modernization actions in 2020[9]." While there are multiple approaches for comparison (such as geographic region or similarly sized states) staff focused analysis on the states below due to their concentration on development of microgrids to support critical infrastructure with interface between emergency management agencies and state energy offices. One potential benefit of which is an increase in available funding mechanisms that support pre-hazard mitigation solutions in an innovative energy context (e.g. the Federal Emergency Management Agency Building Resilient Infrastructure and Communities- BRIC program launched in 2020)[10].

Connecticut

In 2013, Connecticut created the first in the nation microgrid program to help support local distributed energy generation for critical facilities under Public Act 12-148, Section 7[11]. This act required the Department of Energy and Environmental Protection (DEEP) to establish a pilot program. It was created as a result of multiple episodes of severe weather that caused widespread power outages for extended periods and is designed to help create ways to ensure that critical buildings remain powered during electrical grid outages.

[9] https://nccleantech.ncsu.edu/2021/02/03/the-50-states-of-grid-modernization-energy-storage-and-utility-business-model-reforms-take-focus-in-2020/
[10] https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities
[11] http://www.cga.ct.gov/2012/ACT/Pa/pdf/2012PA-00148-R00SB-00023-PA.pdf

Under the Connecticut Microgrid Grant and Loan Program, grants and loans were awarded to recipients to support critical facilities and were generally split between small, medium, and large municipalities if possible. Critical facilities, as defined by Public Act 12-148, Section 7 are "any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter or correctional facility, any commercial area of a municipality, a municipal center.[12]"

Having launched the program with $18 million in 2013, by 2016, the program's bond funding was expanded to up to $30 million to provide matching funds or low-interest loans for an energy-storage system or clean distributed-generation projects for a microgrid. A variety of microgrid projects, differing in size, complexity, and facility type have been deployed in the state after four rounds of grants.[13]

New York

The New York State Energy Research and Development Authority (NYSERDA) in partnership with the New York State Department of Public Service (DPS) and the New York State Division of Homeland Security and Emergency Services prepared a report for the New York State legislature entitled "Microgrids for Critical Facility Resiliency in New York State[14]" in 2014. The extensive research compiled in this report led to the program known as "The NY Prize[15]." Though originally borne of resilience concerns left from the devastation of Hurricane Sandy, Commission staff notes a common theme amongst the states researched is expressed in the goal of the NY Prize: "Helping communities reduce costs, promote clean energy, and build reliability and resiliency into the electric grid . . . spurring innovation and community

[12] https://www.cga.ct.gov/2012/ACT/Pa/pdf/2012PA-00148-R00SB-00023-PA.pdf
[13] CT Department of Energy and Environment Microgrid Grant and Loan Program
[14] Microgrids for Critical Facility Resiliency in New York State (nyssmartgrid.com)
[15] https://www.nyserda.ny.gov/All%20Programs/Programs/NY%20Prize

partnerships with utilities, local government, and the private sector." Another common theme noted by staff was a focus on energy or social justice in program construction, according to a recent Microgrid Knowledge article: "Many of the project designs that won NY Prize grants offer good examples of microgrids for social justice. These projects focus on ensuring power supply to critical facilities for low-income or otherwise at-risk communities, particularly during a storm or other crisis[16]." The three-stage competition awarded 83 feasibility studies in stage one. In the subsequent stages, the field was narrowed to 11 applicants, each were awarded up to $1 million for audit grade engineering, and then further competed for up to $20 million in grant funds and $40 million financing support from the New York Green Bank[17]. Should the Commission decide, certain aspects of NYSERDA's evaluation factors, analysis tools, and other resources for applicants, such as the "Assessing the Benefits and Costs of Developing a Microgrid: Model User's Guide[18]" that considers aspects of a microgrid's costs and potential benefits for applicants, may serve as a replicable basis for Wisconsin program design elements and applicant resources.

New Jersey

The New Jersey Board of Public Utilities (NJ BPU) initiated proceedings in 2016 to gather public input on its Microgrid report[19], which discussed the various benefits of microgrids for municipalities to improve resilience. The 2016 report also provided a definition of a microgrid that includes levels, improving upon the more simplistic definition offered by the US Department of Energy (USDOE)[20]. The NJ BPU has developed a classification system for

[16] https://microgridknowledge.com/microgrids-for-social-justice/
[17] NY Prize Opportunity Zones Map - NYSERDA
[18] Cost-Benefit-Analysis-Tool-User-Guide.pdf
[19] https://www.nj.gov/bpu/pdf/reports/20161130_microgrid_report.pdf
[20] 2012 report by Dan Ton and Merrill Smith "*The U.S. Department of Energy's Microgrid Initiative" offered this widely accepted definition* "[A microgrid is] a group of interconnected loads and distributed energy resources within

microgrids according to number of customers[21] that has been widely disseminated through New Jersey's work with the NASEO-NARUC Microgrid States Working Group referenced above:

- Level 1 or single customer: a single Distributed Energy Resource (DER) serving one customer through one meter. Example: a single facility (such as a hospital) using an on-site microgrid to provide backup power.
- Level 2 or single customer/campus setting (partial feeder microgrid): a single DER or multiple DERs serving multiple facilities, controlled by one meter at the interconnection point (also known as Point of Common Coupling or PCC). Example: a microgrid sited on a University campus connected to multiple buildings.
- Level 3 or multiple customers (advanced or full feeder microgrid): a single DER or multiple DERs serving multiple facilities or customers on multiple meters. The DER(s) may be located on a different site from the facilities or customers. While the advanced microgrid has one PCC, the individual facilities or customers within the advanced microgrid may have their own individual connections to the distribution grid. One example of this class would be a community microgrid connecting multiple buildings with individual meters such as the ComEd Bronzeville Microgrid in Chicago.[22]

NJ BPU is now on the second round of grants, having awarded 13 communities over $1 million to prepare feasibility studies in 2017. The second round of funding launched in spring of 2020 is only accessible to those municipalities that participated in round one, further increasing the projects' potential for successful completion.

clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode."

[21] Board of Public Utilities | About BPU (state.nj.us)

[22] https://www.comed.com/News/pages/newsreleases/2019_04_17.aspx

Rhode Island

In 2016, Rhode Island completed a comprehensive study that evaluated policy and program options to promote microgrids in the state. In early 2021, Rhode Island's Office of Energy Resources (the designated State Energy Office) released a Request for Information (RFI) to Support Program Design for Microgrids for Resilient Municipalities.[23] The goal of the RFI is in part "to support community resiliency efforts that reduce greenhouse gas (GHG) emissions, enable the integration of renewable energy sources, and provide energy resilience for critical facilities during electrical grid outages."

Maryland

The state of Maryland Energy Administration (MEA, the designated State Energy Office) launched a program in 2020 entitled Resilient Maryland[24]. Resilient Maryland provides direct funding for project planning and design of distributed energy resource (DER) systems, and connects eligible projects with other MEA programs that provide funding for equipment or installation. Based on varying complexity of the projects, MEA has set the following Areas of Interest (AOIs) and maximum award amounts for Fiscal Year (FY) 2021 (subject to funding availability and may be adjusted by MEA)[25].

- AOI 1: Community/Campus Microgrid - $100,000
- AOI 2: Resilient Facility Power System (Single Facility Microgrid) - $25,000
- AOI 3: Advanced CHP (Black Start & Islanding) - $10,000
- AOI 4: Community Resiliency Hub - $10,000

[23] Resilient Microgrids for Critical Services- Rhode Island -Office of Energy Resources
[24] https://energy.maryland.gov/business/pages/ResilientMaryland.aspx
[25] https://energy.maryland.gov/business/Pages/ResilientMaryland.aspx#:~:text=The%20Maryland%20Energy%20Administration%20(MEA)%20is%20pleased%20to,to%20key%20entities%20across%20the%20State%20of%20Maryland.

In the FY2020 round of grants MEA awarded $1,030,405 to 13 awardees.[26] Commission staff expects MEA to announce FY 2021 awards by May 2021.

The Resilient Maryland program notes a few desired outcomes that are similar to those of other states surveyed and in the 2020 SEP Annual Plan. The desired outcomes and eligible applicants include " [i]dentify prime candidate sites for microgrids, resilient facility power systems, 'black start' and islanding [combined heat and power] CHP systems, and community resiliency hubs; Encourage constructive dialogue between communities, utilities, and other stakeholders on clean and resilient energy systems; and bring projects from initial concept to shovel-ready status. [With eligible entities] "local governments seeking to bolster essential services (e.g. fire, rescue, emergency shelters, etc.); including multifamily housing communities (e.g. senior housing, advanced care facilities, vulnerable populations, etc.);[27] "

Massachusetts

The State of Massachusetts Department of Energy Resources (DOER) was directed by the state's Governor in 2016 to establish a "Municipal Vulnerability Preparedness" program to enhance state and local partnerships and provide direct support and technical assistance[28]. With a budget of $14 million allocated for the program, DOER focused on coordination with the Massachusetts Emergency Management Agency via the Statewide Hazard Mitigation and Climate Adaptation Plan[29]. Key objectives include funding projects that mitigate and reduce greenhouse gas emissions as well as building resilience and adapting to the impacts of climate change.

[26] MEA-Resilient-Maryland-FY-20-Award-List.pdf
[27] https://energy.maryland.gov/business/pages/ResilientMaryland.aspx
[28] https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program
[29] Executive Order 569- "Establishing an Integrated Climate Change Strategy for the Commonwealth"

Massachusetts demonstration grants included an investment of $20 million to accelerate energy storage deployment and $40 million for "Clean Energy Resilience." The program provided a suite of tools for applicants including a Resilience Clearinghouse.[30] Similar to Wisconsin's EIC program, Massachusetts collaborated with municipalities through their Green Communities program to offer technical assistance and deploy funds for state facility energy resilience. In concert with the Massachusetts Clean Energy Center (CEC), the states' economic development agency, grants for community microgrids with an emphasis on serving low-income communities were awarded in 2018[31].

Commission staff notes that additional states have made investments in microgrid and community resilience centers that may not be featured here based on relative size, scope, or other factor.

Strategic Objectives

Innovative Financing

In many of the states surveyed during program development, utilities and energy performance companies (performance contractors) are offering a "microgrid as a service" to commercial and industrial customers, including local and tribal governments. This is similar to the Xcel Energy proposal discussed previously in this memorandum. Innovative funding mechanisms are key to accelerated deployment of microgrids, according to a recent paper[32] published by the MSWG in which Commission staff have participated since inception in the fall of 2019.

[30] MA Climate Change Clearinghouse (resilientma.org)
[31] https://microgridknowledge.com/microgrids-for-social-justice-cities/
[32] Private, State, and Federal Financing Options to Enable Resilient, Affordable, and Clean Microgrids

Phased Approach

Another product of the MSWG is the jointly authored white paper "*User Objectives and Design Approaches for Microgrids: Options for Delivering Reliability and Resilience, Clean Energy, Energy Savings and other Priorities*[33]*,"* which provides a more comprehensive definition of the various types of microgrids, and outlines the motivations and operational steps taken by various entities to realize a successful microgrid investment. This work underscores the need for a measured approach by designing projects and providing support in phases generally including: 1) Initial feasibility study 2) Engineering, design, and business planning 3) Construction and 4) Operation.

The paper notes "Designating critical loads, generation source(s), interconnection to the larger grid, and control systems are key elements of these initial phases. Decisions around each element are heavily dependent on the characteristics of the customer, local distribution system, and area in which the potential microgrid is to be located, as well as the customer's overarching objectives and motivations for procuring a microgrid." Commission staff propose a pilot program for critical infrastructure owners to explore resilience via clean energy microgrid deployment, with a first phase dedicated to planning, gathering the appropriate partners, and initial design. Further, Commission staff propose the Commission consider adopting the NJ BPU approach to evaluate proposed microgrid feasibility and design funding based on the complexity attempted. Staff analysis (along with discussions of the MSWG) shows the additional detail provided by the NJ BPU definition has provided stakeholders with a certain amount of guidance and clarity when approaching these projects and the associated feasibility of

[33] E1F332D4-155D-0A36-31CB-889ABED753D5 (naruc.org)

microgrid deployment. Research conducted by the National Renewable Energy Laboratory (NREL) examining microgrid feasibility study components and costs states "[a] feasibility study determines whether and how a microgrid will interact with the proposed facility or facilities and the electric distribution system. The feasibility study will consider options for each of the four distinct components of microgrids and should evaluate potential revenue streams available to the microgrid, such as peak shaving, net metering, demand response participation, and ancillary services. Typically, the cost and time investment required for a feasibility study increases with the complexity of the microgrid." Using NJ BPU's classification system, a Level 1 microgrid would see a relatively brief and inexpensive feasibility study, while a Level 3 microgrid would require significantly more expertise and time. The NREL study also notes, "regardless of the number of DERs, facilities, and meters involved, an interconnection study can add complexity, cost, and time to a feasibility study. Once a feasibility study is complete, the technical design of the microgrid commences, based on recommendations from the feasibility study. These feasibility and design costs can make up a significant portion of total microgrid costs."[34]

Local Level Leaders and Partners

A need to foster resilience on the local level is a common theme Commission staff note amongst all programs discussed in the section above. All emergencies begin locally, and thus mitigation measures must also be implemented at the local level. Further, extreme weather events in recent years (hurricane Sandy, wildfires, and derechos, for example) have highlighted the need for updated energy emergency plans and resiliency improvements to infrastructure and critical facilities.

[34] Phase I Microgrid Cost Study: Data Collection and Analysis of Microgrid Costs in the United States (nrel.gov)

Clean Energy for Resiliency

However, in reviewing other states' energy security related programs, Commission staff note a common theme included funding for single critical facility clean energy back-up power (often solar photo voltaic arrays deployed with a battery energy storage system). A 2020 study from the American Council for and Energy-Efficient Economy (ACEEE) which studied 66 plans from the international program "100 Resilient Cities" notes that solar-plus-storage systems have a 90% chance of surviving a power outage of 3.5 days when paired with diesel generation.[35] The study also notes "An important consideration when siting such systems is to prioritize (1) buildings that can serve as community shelters and (2) critical facilities such as police departments, fire stations, and healthcare facilities." One option included in the eligible activities section below includes a prioritization of energy storage paired with renewable energy to foster community resilience, which would better inform efforts of the Commission or staff related to energy resiliency coordination and grid modernization.

Equity

Throughout its research into similar programs across the country, Commission staff noticed a particular focus on Energy Justice[36] (also noted as environmental justice or social justice) was prevalent in the deployment of Distributed Energy Resources (DER) and storage in furtherance of enhancing the resiliency of communities. Commission staff have followed the progress of the Clean Energy States Alliance (CESA) "Resilient Power Project" which is focused

[35] "Community Resilience Planning and Clean Energy Initiatives: A Review of City-Led Efforts for Energy Efficiency and Renewable Energy" ACEEE York, Jarrah January 2020 https://www.aceee.org/sites/default/files/publications/researchreports/u2002.pdf

[36] NAACP Definition of Energy Justice: Energy Justice aims to provide all individuals across all areas with safe, affordable, and sustainable energy. Energy justice seeks to embed principles of justice, fairness, and social equity into energy systems and energy system transitions.

on "accelerating market development of resilient, clean energy solutions for affordable housing and critical community facilities in low-income and disadvantaged communities. The project is targeted on the deployment of solar PV combined with energy storage (solar+storage) – to power essential services during extended power outages and to reduce the economic burden of energy costs in such vulnerable communities. The goal of the project is to further clean energy equity by ensuring that all communities have access to the economic, health, and resiliency benefits that solar and energy storage technologies can provide."[37] CESA has examined programs in Massachusetts, New York, California, Vermont, and other states that are focused on energy equity and providing resilient power services to vulnerable communities through clean energy solutions. To this end, the group has produced many useful resources, such as the "Resilient Power Toolkit"[38] which provides specific information for communities regarding technology considerations, economic analysis, and project evaluation tools, and other project development resources. Finally, strategic placement of resilient critical facilities can ensure that the most vulnerable members of a community are not unduly burdened when seeking shelter or resources. San Francisco's Solar + Storage for Resiliency Project is an example of how solar plus storage systems can be used to increase community resilience. This project aimed to create a citywide network of buildings powered by solar-plus-storage energy systems. The project (supported by a grant from US DOE's Energy Solar Market Pathways Program) considered financial and technical feasibility, identified critical power needs, and studied how to size the system for maximum benefit.[39] Staff analysis notes that the San Francisco Resiliency project (which

[37] https://www.cleanegroup.org/ceg-projects/resilient-power-project/
[38] https://www.cleanegroup.org/ceg-projects/resilient-power-project/toolkit/
[39] https://sfenvironment.org/solar-energy-storage-for-resiliency#:~:text=San%20Francisco's%20Solar%2BStorage%20for,the%20City's%20emergency%20response%20plans.

concluded in 2017) as one of the first of this type of project, has provided useful insights for other communities attempting similar projects. The San Francisco Resiliency project also created resources such as a free, online calculator to help size batteries to ensure a building has enough power to run critical loads during emergencies[40] as well as a roadmap and best practices guide. Staff consider a significant outcome of San Francisco's work which resonates with Wisconsin's goals is the intersection of clean energy programs and the emergency management agency and planning process. As a direct result of the resiliency project, the city is now considering resilient solar (paired with storage) a strategy in the city's emergency management plans.

Critical Infrastructure Microgrids and Community Resilience Centers Pilot Grant Program Design

Commission staff have gleaned project parameters and best practices for consideration in program design. In order to establish the Program, the following program elements require decision by the Commission: Definitions of Key Terminology for the Purpose of the Program, Areas of Interest and Eligible Activities, Eligible Applicants, with Maximum Grant Requests, and total Available Funds for each Area of Interest. Additionally, the memorandum provides updated options regarding overall budget, and discusses other aspects of program administration for reference. Commission staff recommend a streamlined approach to eligibility (including the same lead applicants for both Areas of Interest) due to the relatively small amount of funding available. Demand from this pilot grant round should inform future program parameters at the Commissions discretion.

[40] https://solarresilient.org/

Definitions of Key Terminology for the Purpose of the Program.

Microgrid: A group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.[41]

- Level 1 or single customer: a single Distributed Energy Resource (DER) serving one customer through one meter. Example: a single facility (such as a hospital) using an on-site microgrid to provide backup power.
- Level 2 or single customer or campus setting (partial feeder microgrid): a single DER or multiple DERs serving multiple facilities, controlled by one meter at the interconnection point (also known as Point of Common Coupling or PCC). Example: a microgrid sited on a University campus connected to multiple buildings.
- Level 3 or multiple customers (advanced or full feeder microgrid): a single DER or multiple DERs serving multiple facilities or customers on multiple meters. The DER(s) may be located on a different site from the facilities or customers. While the advanced microgrid has one PCC, the individual facilities or customers within the advanced microgrid may have their own individual connections to the distribution grid

Critical Infrastructure: The term "critical infrastructure" as defined in the Critical Infrastructure Annex of the Wisconsin Emergency Response Plan (WERP) means those facilities, systems, and other assets deemed vital to the public confidence and to Wisconsin. Loss or incapacity of critical infrastructure would have a debilitating impact on the state's security, public health, economy, safety, or well-being.

[41] U.S. DOE Microgrid Exchange Group

Community Resilience Centers (CRC)[42]: Facilities designed to provide emergency heating and cooling capability; refrigeration of temperature-sensitive medications, vaccines and milk from nursing mothers; plug power for durable medical equipment (to include dialysis equipment and continuous positive airway pressure machines); plug power for charging of cell phone and computer batteries; and/or emergency lighting. A CRC may also be a designated location (by the city, county, or State of Wisconsin) for the distribution of emergency services during extended grid outages. This center would not necessarily be a replacement for an emergency shelter, and should not be required to have food service capabilities, showers, or locker rooms; however, an emergency shelter that does provide these services would still be eligible to apply. A CRC is a Level 1 Microgrid (see definition of Microgrid).

Areas of Interest (AOI) and Eligible Activities

The broad program parameters approved by the Commission in the establishment of this Program are, for the most part, limited only by the federal guidance on allowable activities. The following potential AOIs, AOI 1: Critical Infrastructure Microgrid Feasibility Studies, and AOI 2: Community Resilience Centers, could be selected in combination, or separately, as shown in the options identified by Commission staff. Alternative One would address both of the AOIs, which were discussed in the Commission order establishing the program. The Commission may wish to select this alternative in order to support the varying scales of technologies covered by CRCs and larger Microgrids. Alternative Two would focus on AOI 1 only, providing all funds towards Microgrid investigation. The Commission may wish to reserve AOI 2 activities for a later date with an alternate funding source due to the relatively small scale of this program compared to the other states' examples discussed in this memorandum.

[42] Definition based on Maryland, New York, and Massachusetts CRC program definitions.

AOI 1: Critical Infrastructure Microgrid Feasibility Studies

Eligible Activity 1: Feasibility Studies for Level 2 Microgrids as defined above

Eligible Activity 2: Feasibility Studies for Level 3 microgrids as defined above

Eligible Technologies for both: Feasibility studies may be conducted on any fuel or generation technology including, but not limited to natural gas, combined heat and power, renewable energy, and energy storage.

AOI 1 is in alignment with the strategies discussed above by adopting a phased approach to rolling out investments in microgrids. The initial phase may focus on strategic investments in studying feasibility on larger scale microgrids (omitting Level 1 Microgrids, which could be served by AOI 2, or through future efforts), and focusing on implementation in the future.

AOI 1 may serve to set an improved baseline for Wisconsin-specific examples of innovative use of microgrids as backup generation to keep critical infrastructure online during severe weather events or other interruptions, whether cyber, seismic, or otherwise. Detailed design and implementation could be supported by future programs, building on the feasibility planning done under this program or other efforts like utility programs.

AOI 1 may be further refined in a Request for Proposals to provide minimum requirements for length of self-generated electricity, number of people supported, operation standards, self-generation assets, and partner involvement and match contribution. Staff's research into other states' programs indicates a significant financial investment is necessary for full implementation, and due to the relatively modest budget available for this inaugural round, and ever-changing technology costs, staff recommend a phased approach with an emphasis on valuing resilience by including AOI 1 in both staff-identified options in this section.

AOI 2: Community Resilience Centers

Eligible Activity 1: Planning and Implementation of Community Resilience Center

AOI 2 would allow for the Commission to fund some implementation to complement the focus on feasibility planning in AOI 1. This AOI would be in alignment with the carbon-free technology strategy discussed above by allowing for a technology-neutral approach for flexibility, but an emphasis on carbon-free technologies in the scoring. This AOI also allows for immediate equitably distributed investments in community resiliency. This AOI would allow for necessary program design to be incorporated into more shovel-ready smaller scale (Level 1) microgrid projects that establish a CRC. Implementation costs would be for the installation (equipment, installation, and indirect costs) of host-owned battery storage to complement existing parallel generation units onsite. The Commission may choose to incorporate this level of implementation by selecting the bifurcated program setup discussed in Alternative 1.

Commission Alternatives on Areas of Interest and Eligible Activities

Alternative One: Establish a bifurcated program by selecting both AOI 1: Critical Infrastructure Microgrids, and AOI 2: Community Resilience Centers with the eligible activities described, consistent with the discussion in the open meeting.

Alternative Two: Establish a program with a single AOI, by selecting AOI 1: Critical Infrastructure Microgrids with the eligible activities described, consistent with the discussion in the open meeting.

Alternative Three: Make a different selection consistent with the discussion at the open meeting.

Alternative Four: Decline to make a selection and remand the matter back to staff.

Funding Available per AOI and Maximum Grant Requests per Eligible Activity

The Commission may wish to designate a certain amount of the overall program funds to the AOIs selected, and to establish maximum grant requests within those AOIs. Table 1 shows the staff identified option to divide the available funds by AOI if the Commission chooses to include both AOIs. The maximum grant requests allow for the applicant to apply for any amount up to that maximum. This Table depicts Alternative One in this section. Alternative Two would be consistent with Alternative Two of the Commission Alternatives on Areas of Interest and Eligible Activities, by dedicating all available funds to AOI 1, with the maximum grant requests shown in Table 1.

Table 1. Funding Available per AOI and Maximum Grant Requests per Eligible Activity

Area of Interest – Eligible Activities	Total Funds Available	Maximum Grant Requests
AOI 1: Critical Infrastructure Microgrid Feasibility Studies	$400,000	
Level 2 Microgrid Feasibility Study		Up to $50,000
Level 3 Microgrid Feasibility Study		Up to $100,000
AOI 2: Community Resilience Centers	$585,000	
Planning and Implementation of Community Resilience Center		Up to $250,000
	$985,000	

Commission Alternatives on Funding Available per AOI and Maximum Grant Requests per Eligible Activity

Alternative One: Distribute the total funds available as shown in Table 1, $400,000 for AOI 1, and $585,000 for AOI 2, with the maximum grant requests shown in Table 1 for each of the eligible activities.

Alternative Two: Designate all available funds, $985,000, for AOI 1, consistent with the Commission decision to on AOIs and eligible activities, with the maximum grant requests shown in Table 1.

Alternative Three: Make a different determination consistent with the discussion at the open meeting.

Alternative Four: Decline to make a determination and remand the matter back to staff.

Eligible Entities per AOI

The eligible applicant types in a given year are defined in the Eligibility Parameters section. Commission staff has identified a lead applicant-target partner model that would allow a tailored group of applicants to serve in a lead role and partner with other appropriate groups in each of the AOIs. Consistent with the Commission's focus on fostering resilience at the local level (via the SAFER2 effort and ongoing Energy Assurance planning) and limited funds available, staff offer a streamlined approach to program eligibility.

AOI 1: Critical Infrastructure Microgrids

- Lead Applicants: MUSH (Municipalities, Universities, Schools, and Hospitals) Market.
- Target Partners: Lead applicants should partner with appropriate public, private, and non-profit entities, or their subunits, with unique oversight or expertise in sectors appropriate to the project such as housing authorities, municipal utilities, and engineering firms.

AOI 2 : Community Resilience Centers

Lead Applicants: MUSH (Municipalities, Universities, Schools, and Hospitals) Market.

Target Partners: 501(c)(3) nonprofits, particularly including Community Action Agencies that deliver the weatherization program to vulnerable and typically underserved communities, as well as other similar nonprofit agencies, Local Emergency Management authorities, Housing Authorities, Utilities among others.

These lead applicant-partner selections would be in alignment with the equity strategy discussed above, as well as the strategy to involve the appropriate local partners, by placing an emphasis on emergency management in particular. Further, an interest in leveraging the investment of the State of Wisconsin's Weatherization program was expressed and approved in the Commission Order PSC REF#: 392202 issued June 17, 2020.

Commission staff notes that MUSH Market entities, particularly municipal and tribal governments are ideal lead applicants due to the complexity of the project and the need to coordinate across governmental subdivisions and private partners. The Request for Proposals may be designed to require letters of support from the designated partners to strengthen their commitment. Per the Order cited above "This includes a particular focus on fostering resilience at the local level by opening up the opportunity to political subdivisions, school districts, tribal governments, and utilities. Doing so would coincide with the efforts of Statewide Assessment for Energy Reliability and Resiliency (SAFER2), . . . through which staff is addressing gaps in local energy emergency planning." Staff note that an ideal partnership would include private businesses (such as convenience stores with fueling infrastructure) which support critical first responder operations or critical government services.

Commission Alternatives on Eligible Entities per AOI

Alternative One: Select the Lead Applicants and Target Partners for each AOI as discussed in this section, and consistent with the discussion in the open meeting.

Alternative Two: Select the Lead Applicants and Target partners for AOI 1 only, consistent with the discussion at the open meeting.

Alternative Three: Make a different selection consistent with the discussion at the open meeting.

Alternative Four: Decline to make a determination and remand the matter back to staff.

Program Administration

The remaining sections of this memorandum provide additional informational detail related to the next steps in the development of the program following a Commission decision on program design.

Tentative Timeline

March 2021	Provide Grant Program Design Memorandum for Public Comment
April 2021	Commission consideration of Grant Program Design
May 2021	Application Released (RFP open 30 days or more)
June 2021	Applications due and scoring panel convenes
July 2021	Award Recommendations Considered, Awards Announced
July-August 2021	Contract Negotiations, Award Agreements Signed by Awardees
Date of Counter-signature- June 30, 2022	Project performance period
September 2022	Final Reports and Request for Reimbursements Due

Merit Review Scoring Criteria

A Commission staff review panel will read, organize, and perform a provisional analysis and evaluation of the applications received, in order to facilitate the Commission's own review of the record. It will base its merit review on these core factors and as further refined to apply

uniquely to the eligible activity category. Commission staff will score projects among the like projects in the category. Merit review scoring criteria may include, but is not limited to the following: initial design and planning costs; capital costs; operation and maintenance (O&M) costs and associated savings; environmental costs and benefits; energy benefits; reliability and resilience benefits (during outages not caused by events beyond a utility's control); power quality benefits; benefits of avoiding major power outages (i.e., outages caused by major storms or other events beyond a utility's control), amount of matching funds; existing energy planning efforts; level of planning completed; financial impact (cost savings, economic development); job creation; engagement of and benefit to communities of color, low-income communities, and other impacted communities that may be historically left out or disproportionately negatively affected by climate change and inefficient or traditional energy systems due to race, ability, income level, age, geographic region, language, or other factors; pairing project activities with a behavior modification program, training, or curriculum development. The Commission is not bound by the recommendations of the rating team, as the scoring of a particular project will be one of several considerations that the Commission may consider. The grant award determinations will be made by the full Commission

Issuance of RFP and Application Documents

To facilitate implementation of the program, Commission staff will work with the delegated Commissioner to develop and issue the Requests for Proposal (RFP) and application documents.

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