

APPENDIX H: RESILIENT MINNEAPOLIS PROJECT CERTIFICATION REQUEST

I. EXECUTIVE SUMMARY

A. Introduction

The past two years have brought unprecedented economic and social hardship to the residents of Minneapolis, including economic and health impacts from the COVID-19 pandemic and the civil unrest following the murder of George Floyd. These events have disproportionately impacted Black, Indigenous, and People of Color (BIPOC) communities, and have led to increased efforts to address the racial inequities that persist in Minnesota. They have also focused attention on the fact that BIPOC communities tend to be disproportionately vulnerable to a variety of disruptions, including but not limited to the impacts of climate change, and are seeking ways to improve community resilience to such disruptions.

At the same time, the Company and other stakeholders are seeking ways to integrate into the electric system new distribution-level technologies like distributed solar, battery systems, and microgrids that can deliver a wide array of benefits to the electric system. These benefits, if systems are carefully planned and optimized, include backup power for resilience during outages, mitigation of peaks at the system and feeder level, local distribution system support, deferral of conventional distribution system investments, and emission avoidance, among others.

The Resilient Minneapolis Project (RMP) is a proposed initiative, implemented at three Minneapolis locations with BIPOC-led partner organizations, that seeks to improve communities' resilience to crises while advancing the Commission's objectives for Integrated Distribution Plans (IDPs):

- Maintain and enhance the safety, security, reliability, and resilience of the electricity grid, at fair and reasonable costs, consistent with the state's energy policies;
- Enable greater customer engagement, empowerment, and options for energy services;
- Move toward the creation of efficient, cost-effective, accessible grid platforms for new projects, new services, and opportunities for adoption of new distributed technologies; and

- Provide the Commission with the information necessary to understand Xcel Energy’s short- and long-term distribution system plans, the costs and benefits of specific investments, and a comprehensive analysis of customer cost and value.

The RMP will be implemented at three locations: (1) the North Minneapolis Community Resiliency Hub; (2) Sabathani Community Center; and (3) the Minneapolis American Indian Center. At each site, the Company will work with partners to install rooftop solar, battery energy storage systems (BESS), microgrid controls, and necessary distribution system modifications to integrate these technologies. These systems will not only be managed with reserve capacity to provide power for critical services during electric system outages, but also – recognizing that outages are today generally infrequent and brief – dispatched and optimized daily to mitigate system peaks, manage and shape demand, and integrate more solar generation.

The Company seeks certification of the RMP under Minn. Stat. §216B.2425 as a grid modernization initiative meeting the statutory criteria for utilities operating under multiyear rate plans.

The remainder of this Appendix is organized as follows:

- Section I provides a summary clarifying the purpose and history of the RMP;
- Section II describes how the Company selected the three RMP sites;
- Section III describes the three sites, including lead partner and supporting organizations, location on the grid, beneficiaries, technologies proposed, current loads, and complementary objectives addressed by the RMP;
- Section IV details estimated costs, anticipated benefits and presents a benefit-to-cost ratio;
- Section V provides an implementation schedule;
- Section VI proposes a process and schedule for reporting lessons learned; and
- Section VII is the Company’s request for certification.

B. Community Resiliency

The term “resiliency” is used in different ways in different contexts. Sometimes, it is used to refer to the ability of the electric grid or other infrastructure to recover quickly from an outage or other disruption, and/or “hardening” of electricity assets to withstand increasing extreme weather. At other times, the term is used to refer to

communities' own ability to withstand and recover from a variety of disruptions, including but not limited to those related to climate change, by ensuring continued access to electricity and other critical services. This proposal addresses primarily the latter sense of resiliency.

The Urban Sustainability Directors Network (USDN) 2018 paper, *Resilience Hubs: Shifting Power to Communities and Increasing Community Capacity*, provides useful context for the Company's approach in the RMP. That paper defines resilience as:

“the ability to anticipate, accommodate and positively adapt to or thrive amidst changing climate conditions, while enhancing quality of life, reliable systems, economic vitality, and conservation of resources. Resilience requires community capacity to plan for, respond to, and recover from stressors and shocks. Shocks are major disruptions such as storms, heat waves, derechos, or other extreme weather events – often intensified by climate change – that can disrupt a variety of critical systems. Stressors refer to the everyday issues that make people and communities more vulnerable to those shocks, including epidemic drug use, poverty, aging infrastructure and unemployment – all of which are exacerbated by shocks and make it more difficult to respond and recover... A more resilient community also includes consideration of foundational elements of community quality of life, such as greater access to jobs, more affordable housing, strengthening infrastructure, and stronger social support systems.¹

In the USDN framework, a Resilience Hub is a facility designed to support residents and coordinate resource distribution and services before, during, or after a natural hazard event. It can also be used year-round as a neighborhood center for community-building and revitalization, to reduce GHG emissions, and improve local quality of life. Resilience Hubs are best designed, according to USDN, by engaging community members, including the most vulnerable, throughout planning and implementation, or what USDN calls “a bottom-up approach centered on community co-development and leadership.” Key elements of a successful Resilience Hub include strong community support, an appropriate building where residents can gather to receive critical services, resources for emergencies (food supply, refrigeration, medical services, etc.), and on-site energy resources for a potential extended outage (solar, batteries, standby generators).²

This is the type of resilience the Company seeks to support in the RMP, and the collaborative approach we are taking to design the initiative with long-standing and trusted BIPOC organizations in each of the three RMP communities. BIPOC

¹ See <https://ppp-ejcc.com/wp-content/uploads/2020/03/USDN-Resilience-Hubs-2018.pdf>, page 6.

² Ibid, pages 2-5.

communities in Minneapolis tend to be disproportionately impacted by extreme weather and other disruptions (shocks), and disproportionately vulnerable because of pre-existing health conditions, low wealth, historic and continuing discrimination, housing, high energy costs, urban heat island effects, and many other factors (stressors).³ Working with these partners to improve resiliency means recognizing their existing vulnerabilities, investing in critical infrastructure to help in times of crisis and hasten recovery after a disaster, and ensuring a secure power supply for Resilience Hubs in the event of emergencies or extended outages. It also means – as the USDN paper emphasizes – working closely with our community partners to “co-create” solutions to the resiliency and other challenges they face, and looking for ways to address needs that go beyond what we can include in this IDP.

We will support resilience by providing battery energy storage systems (BESS)-enabled microgrids at each site, paired with solar generation. Resilience Hubs will consist of a customer building or multiple buildings in close proximity, where the Company will own and operate a BESS and associated equipment including islanding switch, microgrid controller and interconnection hardware, interconnected directly to the distribution system in front of the customer’s meter. The BESS will be paired with rooftop solar generation and/or standby generators owned by the partner organization. Should there be a grid outage, the system would automatically switch to “islanded” mode, providing back-up power even for an extended outage by managing the available energy stored within the battery, solar and back-up generation assets on site, and reducing loads as needed to ensure the site’s critical functions can continue given the available energy.

The Clean Energy Group’s Resilient Power Project interactive map⁴ shows only two microgrid projects in Minnesota today – OATI’s microgrid in Bloomington, and a nature center in Duluth – so the RMP would not only more than double the number of resiliency projects in Minnesota, but would also install the first resiliency projects specifically focused on delivering benefits to under-resourced and BIPOC communities.

³ See, for example, the Minnesota Pollution Control Agency’s mapping of areas of environmental justice concern (<https://www.pca.state.mn.us/about-mpca/mpca-and-environmental-justice>) and Minnesota Department of Health findings on health equity (<https://data.web.health.state.mn.us/web/mndata/healthimpacts>).

⁴ See <https://www.cleangroup.org/ceg-projects/resilient-power-project/map/>.

C. Grid Services

The primary benefit for the RMP site hosts is enhancing resiliency, generally needed infrequently and for brief durations. During normal grid operations, the solar and BESS assets will be managed to deliver a range of grid services. They will be dispatched and optimized to mitigate peaks at the system and feeder level, integrate more solar generation, and reduce emissions. Section IV details the full range of grid services the Company aims to evaluate in the RMP. In Section VI, we discuss how we propose to report lessons learned from managing the assets to deliver these grid services.

Importantly, while these technologies can deliver multiple different grid services, not all can be delivered at once. There is limited experience in how to optimize such systems to deliver the greatest benefits for all the Company's customers while reserving adequate capacity to provide resiliency for the host. Thus, the RMP is also designed to deliver learnings for the Company, which will ultimately benefit all our customers, on optimizing the day-to-day grid services from solar and battery assets.

D. Equity Objectives

Designing the RMP projects in collaboration with BIPOC-led organizations has brought into focus that these communities have broader energy equity objectives that are not limited to serving as Resilience Hubs. These include:

- Energy affordability and reducing energy burden for community residents and businesses;
- Equitable access to renewable energy, and the opportunity to use renewable energy and energy efficiency projects to create jobs and build community wealth in chronically under-resourced and under-invested communities;
- Workforce training, diversification, and BIPOC energy careers; and
- Environmental justice concerns and the desire to reduce or eliminate emissions in neighborhoods that have historically suffered disproportionate pollution impacts.

All our RMP partners are active in workforce readiness and career pathways, in some cases specific to clean energy workforce development. We are designing the RMP projects to link directly to workforce development in solar, energy storage and related areas.

We emphasize that while the primary justification we present for the RMP is couched in terms of the Commission’s IDP objectives, and the resiliency and grid services these technologies can deliver, the energy equity objectives in the list above are crucial to our partners and thus to success of the RMP. Most of these equity objectives, with the exception of carbon avoidance, are not directly quantified in monetary terms in the cost/benefit analysis in section IV. They are nonetheless central to our partners and should be considered as important non-quantified benefits.

E. History of the RMP

The RMP concept originated in discussions, going back to our 2019 IDP, with the City of Minneapolis around a Non-Wires Alternative (NWA) Pilot. The Company continued in 2019-2020 to seek locations on the distribution system where an NWA pilot would meet an evident need. In addition, in the 2020 economic recovery docket, the Commission asked utilities to propose investments that could aid in Minnesota’s recovery from the COVID-19 pandemic – specifically, “all ongoing, planned, or possible investments that meet the following conditions: provide significant utility system benefits; are consistent with approved resource plans, approved natural gas distribution infrastructure or pipeline safety plans, triennial conservation plans, and existing Commission orders; reduce carbon or other pollutant emissions in the power sector or across economic sectors; increase access to conservation and clean energy resources for Minnesotans; create jobs or otherwise assist in economic recovery for Minnesotans; and use woman, veteran, or minority owned businesses as much as possible and provide documentation of these efforts.”⁵

One of the economic recovery investments the Company proposed was an NWA pilot in Minneapolis focusing on rooftop solar, EV charging, battery storage, demand response, and energy efficiency, with an estimated budget of \$4 to \$8 million. However, as our discussions with Minneapolis continued over 2019 and 2020, the Company struggled to identify an appropriate NWA location, primarily because there were no obvious distribution system locations within Minneapolis with a near-term need for the sort of conventional distribution system improvements that an NWA solution could avoid. It became clear that we needed to broaden our focus for this pilot to include not just NWA, but also community resiliency and economic recovery for BIPOC communities disproportionately impacted by the pandemic. We began reaching out to community groups to identify sites where increased resiliency would

⁵ See Minnesota Public Utilities Commission NOTICE, *In the Matter of an Inquiry into Utility Investments that May Assist in Minnesota’s Economic Recovery from the COVID-19 Pandemic*. Docket No. E,G999/CI-20-492 (May 20, 2020).

help ensure safety and facilitate improved delivery of essential services or goods during times of need. We also outlined a new timeline, balancing the need to maintain momentum with the time needed for a collaborative and inclusive process in designing the pilot projects.⁶

The RMP, as the Company is currently pursuing it in collaboration with our community partners, remains consistent with the NWA pilot proposed in 2020 in terms of the technologies proposed and many of the grid services those technologies will be managed to deliver. However, the RMP objectives are now considerably broader than just implementing an NWA pilot to avoid conventional distribution system investments. We are now seeking to enhance community resilience as defined in the USDN paper, as well as deliver an array of grid services during routine, non-emergency operations.

Two learnings have emerged already from our RMP planning stages. First, a genuinely collaborative and inclusive process takes more time than we expected. Consulting with community groups, developing the Request for Applications described in the next section, and working with our partners to flesh out the details of these proposed pilots has taken many months, and will continue to evolve over 2022 and 2023 if the Commission approves the RMP initiative. This is simply the time required for a “co-creation” process which is critical to building trust with community members and ensuring that the projects reflect their interests and priorities. Without that co-creation process, these pilots would likely not be successful because they might not address the communities’ core needs.

Second, while our partner organizations are certainly interested in technologies such as solar, batteries and microgrids, their primary objectives are to achieve broader advancements in equity, energy affordability, environmental justice, and opportunities for energy careers. As such, some of our partners have asked the Company to support measures not directly linked to the distribution system but critical to them: replacing outdated HVAC systems, making buildings more efficient, replacing lighting, etc. While those costs are not included in this request for certification, they are crucial to our partners, so the Company is working to support those efforts through our existing programs and external cost-sharing. Increased targets for low-income spending, as well as support for efficient fuel-switching, under the recently passed Energy Conservation and Optimization Act of 2021 may create future opportunities to

⁶ See Xcel Energy COMMENTS, *In the Matter of an Inquiry into Utility Investments that May Assist in Minnesota’s Economic Recovery from the COVID-19 Pandemic*. Docket No. E,G999/CI-20-492 (October 16, 2020).

support our partner organizations in their energy goals that are not directly related to the IDP.

II. PROCESS TO SELECT RMP SITES

At the time the Company proposed a City of Minneapolis NWA pilot in the economic recovery docket, we had not yet identified specific locations or partners. Mindful of the larger context of civil unrest, disproportionate impacts on BIPOC communities, and ongoing racial and economic disparities in Minneapolis, we sought to identify sites where implementing community resiliency pilots could also advance equity objectives as discussed above. We took several steps:

A. Request for Applications

The Company developed a Request for Applications (RFA) inviting organizations to propose a resiliency initiative. The RFA explained the goal to enhance community resiliency and the Company's interest in supporting projects that use solar, energy storage, and microgrids to create a Resilience Hub to deliver critical services in the event of an electrical system outage. We suggested Resilience Hubs could include facilities such as community centers, schools, food shelves, hospitals or clinics, transportation hubs, communications infrastructure, etc., but that we would rely on the community organizations themselves to identify the most appropriate locations. The stated objectives were (1) advancing the clean energy future, (2) creating renewable energy projects in under-represented communities, (3) improving outage restoration times, (4) securing facilities' power supply, and (5) creating more clean energy jobs.⁷

We opened the RFA to all Xcel Energy electric customers located in Minneapolis, but specifically encouraged BIPOC-led organizations to apply, and distributed the RFA to such organizations both directly and through contacts in the Mayor's Office, City Council, and other networks. We informed interested parties that we would give preference to projects that employ and train community members and are implemented by a certified minority or woman-owned business or BIPOC-led non-profit organization – a preference the Company also intends to apply when we issue Requests for Proposal (RFPs) in 2022 to select vendors to design and install the chosen technologies. The RFA was issued in March 2021 and we requested responses in April 2021.

⁷ Xcel Energy. Resilient Minneapolis Project call for applications, March 2021.

B. Evaluation Criteria

To select the strongest partners and sites for RMP implementation, we designed a robust and transparent selection process, applying scoring criteria and working with both internal and external reviewers.

We established four minimum criteria that all projects must meet to be scored:

- *Geographic location*: project site is in Minneapolis, pursuant to our NWA proposal in the economic recovery docket.
- *Safety*: project would not violate any local, State or Company safety requirements.
- *Regulatory compliance*: project can be implemented under existing rules and regulations governing Xcel Energy; the goal of RMP is not to create new regulatory frameworks.
- *Physical site requirements*: proposed facility must be structurally and electrically sound and have adequate space for the assets proposed.

We then established eight scoring criteria, with definitions, scores and weights assigned to each, as shown in Table 1 below.

Table 1: Weighted Scoring Criteria for RMP Project Selection

Criterion	Requirement	Scoring	Weight
Scope of project benefits	Project should demonstrate how its benefits extend to the community at large or particular under-served segments of the community.	Project benefits relatively few people = 0 points Project benefits greater number, or benefits a disadvantaged group = 5 points Project benefits large number of people and/or disadvantaged groups = 10 points	15%
Geographic location preference	Projects located within the Northside or Southside Green Zone, or within a City-designated Cultural District, are preferred.	Not in a designated Green Zone or Cultural District = 0 points In a Green Zone or Cultural District = 10 points	5%
Impact on distribution infrastructure	Projects must create minimal need to modify/upgrade the existing distribution infrastructure	Expensive modifications = 0 points Limited modifications = 5 points No modifications = 10 points	15%
Maturity of proposed technology and innovation in application of technology	Projects should deploy proven technologies. More points given to projects that apply proven technologies in a new and innovative way.	Novel or unproven technologies = 0 points Mature or "off the shelf" technologies, standard application = 5 points Particularly innovative application of technologies = 10 points	15%
Project timing	As shown in the project timeline in the application, projects should be ready for construction by mid-2022.	Not ready to begin construction by mid-2022 = 0 points Ready to begin construction by mid-2022 = 10 points	10%
Experience of project lead	The application requests a designated point person or people for project design and implementation, and description of their experience and background relative to project planning, energy and/or sustainability.	No point person designated = 0 points Point person with limited relevant experience = 5 points Point person with extensive relevant experience = 10 points	15%
Strength of project team	The Application requests a description of project partners.	Single implementer; no partners = 0 points Multiple partners = 5 points Multiple partners and strong community-based organization = 10 points	15%
Additional resources leveraged	Projects that leverage additional financial or other resources to complement Xcel Energy funds are likely to have greater chances of success.	No financial or in-kind resources proposed to leverage RMP funds = 0 points Some additional resources leveraged = 5 points Significant additional resources, e.g. matching funds requested = 10 points	10%

C. Responses to RFA

The Company received applications from six organizations, all led by and/or serving primarily BIPOC populations in Minneapolis:

1. Renewable Energy Partners: North Minneapolis Community Resiliency Hub

2. Native Sun Community Power Development: Little Earth of United Tribes
3. Seward Redesign Inc: Downtown Longfellow Community (Coliseum Building)
4. Minneapolis American Indian Center
5. Sabathani Community Center
6. Friends of Global Market: Midtown Exchange Campus

Figure 1 below shows the approximate locations of each proposed project, overlain on the City of Minneapolis Northside and Southside Green Zones.⁸ The numbering corresponds to the list above and does not reflect any sort of ranking.

⁸ The Green Zones, a product of the [Minneapolis Climate Action Plan](#) Environmental Justice Working Group, are “place-based policy initiative[s] aimed at improving health and supporting economic development using environmentally conscious efforts in communities that face the cumulative effects of environmental pollution, as well as social, political and economic vulnerability.” See <https://www2.minneapolismn.gov/government/departments/coordinator/sustainability/policies/green-zones-initiative/#:~:text=%20Green%20Zones%20Initiative%20%201%20Background.%20Low-income,was%20created%20by%20the%20City%20Council...%20More%20>.

Figure 1: RMP Applicant Approximate Project Locations Overlaid on Minneapolis Green Zones



All six applicants proposed a combination of solar, energy storage, and microgrid technologies, with some also proposing energy efficiency and building envelope measures, efficient electric heating and cooling, electric vehicle charging, building automation, and other technologies. All six applicants are strongly embedded in their respective communities, and all proposed an integrated vision for how these

technologies can be employed to improve resiliency, enable distributed generation and storage, create flexible demand to address distribution system constraints, and promote broader objectives of energy equity, affordability, and workforce development. Many of the organizations also house commercial tenants including BIPOC-led businesses and non-profits focused on social services, employment, racial justice and related areas, and explained how their proposed activities would improve energy affordability and support the work of those organizations.

D. Review Committee

Next, we convened an application review committee consisting of internal and external reviewers, balancing technical expertise in distribution technologies, regulatory expertise, and knowledge of the communities and applicant organizations. The Company particularly appreciates the expertise of our external reviewers, whom we recognize here:

- Paul Williams, President and CEO, Project for Pride in Living
- Jonathan Palmer, Executive Director, Hallie Q. Brown Community Center
- Kelly Muellman, Sustainability Program Coordinator, City of Minneapolis
- Patrick Hanlon, Director of Environmental Services, City of Minneapolis

We incorporated feedback from our external reviewers to finalize the scoring criteria above, then sent the applications to our reviewers. The committee reviewed all applications and supporting materials against the agreed-upon criteria. None of the six applications was eliminated based on the four minimum criteria described in section B, so the committee proceeded to score them all against the scored criteria in Table 1. The committee's consensus scores and rankings are shown in Table 2. They represent the average of all reviewers' assigned scores, to which we applied the weighting in the second column to derive the overall weighted score for each project in the bottom row of the table.

Table 2: Final, Weighted Scores for RMP Project Applications

Criteria	Weight	Coliseum	Global Market	MAIC	Sabathani	REP	Little Earth
Scope of Benefits	15%	5	10	9	10	6	0
Location	5%	0	10	10	10	10	10
Impact on Distribution	15%	5	0	10	10	4	1
Technology	15%	4	6	5	7	10	9
Timing	10%	0	5	9	10	10	1
Experience of Lead	15%	3	6	5	10	10	7
Strength of Team	15%	3	4	5	9	10	8
Resources Leveraged	10%	1	0	10	9	10	7
Weighted Scores		3.1	4.9	7.5	9.3	8.5	5.1

We notified the top three applicants of our desire to work with them to flesh out details of their projects and include it in this IDP request for certification. We thanked the remaining applicants and offered to continue conversations with them to support their efforts through existing programs other than the proposed RMP.

III. THREE SITES FOR RMP IMPLEMENTATION

Through the application process described above, the Company selected three sites to implement the proposed RMP. At each site we are working with one of Minneapolis’ foremost BIPOC-led organizations, with deep and long-standing relationships in the African-American and Native communities, to improve resiliency while meeting a variety of complementary objectives.

A. Renewable Energy Partners: North Minneapolis Community Resiliency Hub

1. Project Lead and Partners

Renewable Energy Partners (REP) is a state and local-certified Minority Business Enterprise (MBE) based in North Minneapolis and formed in 2014.⁹ Its vision is to

⁹ This section is derived from REP’s website, Firm Capability Statement attached to this filing, and response to Resilient Minneapolis Project call for applications, April 2021.

“address the numerous disparities in our community, including education, skills gaps, and economic participation, to increase the health, wealth, and homeownership of those around us.”¹⁰ REP’s goals are to 1) develop solar energy and other energy projects with community benefits, 2) provide electrical and construction labor for Minnesota’s solar energy market, and 3) training and jobs for BIPOC workers in utility and energy-related careers. Please see the *Firm Capability Statement*, provided as Attachment M, for additional information.

REP currently operates the Regional Apprenticeship Training Center (RATC) at 1200 Plymouth Avenue North to deliver workforce training in emerging energy-related careers. REP has installed a 166 kW rooftop solar installation and 30 kW battery system at the RATC, and also partnered with others to install two community solar gardens designed to serve low-income households: a 365 kW system on North High School, and the 176 kW Emerge Second Chance Community Solar Garden on a nonprofit mattress recycling facility that provides job training for formerly incarcerated citizens.¹¹

REP’s partners for the North Minneapolis Community Resiliency Hub are Minneapolis Public School (MPS) and the University of Minnesota. MPS will host the solar and battery assets on three of its buildings. The University of Minnesota has an existing partnership with REP to develop clean energy workforce curriculum and training and will continue those efforts through the installation of solar, battery storage, and microgrid technologies.

2. *Location and Beneficiaries*

The North Minneapolis Community Resiliency Hub will be implemented on three MPS buildings: Hall Elementary School at 1601 N. Aldrich Avenue, Franklin Middle School at 1501 N. Aldrich Avenue, and the MPS Nutrition Center at 812 Plymouth Avenue N. These three buildings are just north of Plymouth avenue and a few blocks east of the RATC. Please see the maps provided below.

¹⁰ [Commercial Solar Energy | Renewable Energy Partners | Twin Cities \(renewableenergypartners.com\)](https://renewableenergypartners.com/).

¹¹ See [Project Highlights | Renewable Energy Partners | Twin Cities \(renewableenergypartners.com\)](https://renewableenergypartners.com/).

Figure 2: East Plymouth Innovation Corridor, showing RATC at west end and the three MPS buildings that will host North Minneapolis Community Resiliency Hub.

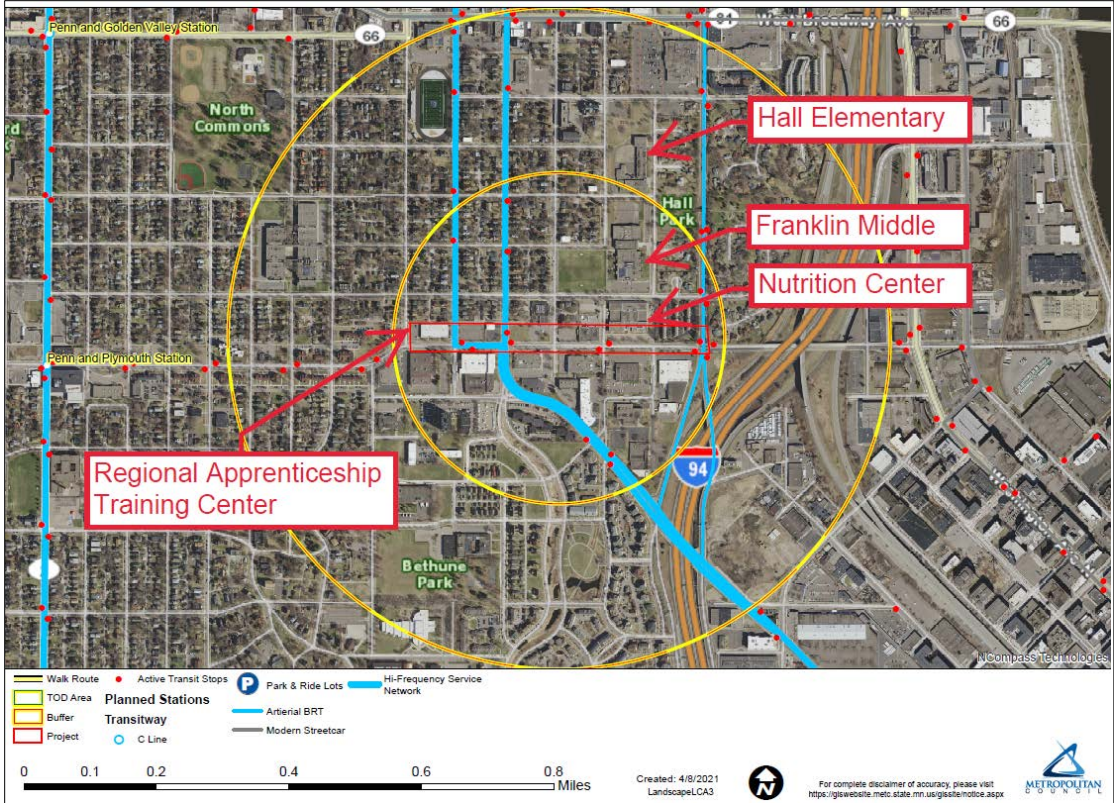


Figure 3: Closer view of North Minneapolis Community Resiliency Hub sites.

Elizabeth Hall	Franklin	Nutrition Center
PV w Roof Aug. Underground Cable	PV Switchgear, Battery, Main Meter	PV Underground Cable



The project site is within the City of Minneapolis' Northside Green Zone,¹² federal EDA Opportunity Zone¹³ and HUD Empowerment Zone.¹⁴ It is also part of the East Plymouth Innovation Corridor.¹⁵

The area served by the North Minneapolis Community Resiliency Hub is primarily BIPOC and low-income. About 85 percent of Franklin students and 96 percent of Elizabeth Hall students are eligible for Free and Reduced Lunch, compared to 55 percent for MPS overall. The estimated population served by the project is 4,775 residents and 15 businesses, including critical infrastructure such as the Comcast technical center and Hennepin County Service Center.

3. *Project Description*

The North Minneapolis Community Resiliency Hub aims to create an island-able resiliency hub to provide emergency services to the community. The hub will serve as a base of operations for emergency response, providing essential services such as shelter, cooling center, electricity, food, water, communications, and phone charging in an emergency. The MPS Nutrition Center has capacity to prepare thousands of meals for delivery throughout Minneapolis in the event of an extended outage.

The proposed technologies are:

- 1.1 MW rooftop solar PV, spread across the three buildings
- 1.5 MW / 3 MWh lithium-ion Battery Energy Storage System (BESS)
- Adaptive microgrid controller, designed to balance DER generation with load and provide multi-site balancing in emergencies

¹² The Northside Green Zone addresses the environmental justice overburden in North and Northeast Minneapolis and designs and implements a plan of action to improve environmental and population health, and social, economic and environmental justice. The Northern Green Zone includes the Northside neighborhoods of Hawthorne, McKinley, and Near-North, and the western portions of the NE neighborhoods of Marshall Terrace, Sheridan, Bottineau, and St Anthony West. See <https://lims.minneapolismn.gov/Boards/ngz>.

¹³ U.S. Economic Development Administration Economic Opportunity Zones are designated economically distressed communities where private investments, under certain conditions, may be eligible for capital gain tax incentives. See <https://www.eda.gov/opportunity-zones/>.

¹⁴ U.S. Department of Housing and Urban Development Empowerment Zones are designated areas of high poverty and unemployment that benefit from tax incentives provided to businesses within their boundaries. See https://www.hud.gov/hudprograms/empowerment_zones.

¹⁵ See <https://www.nordiccitiesolutions.com/hackathon-challenge-1-north-minneapolis-epic-corridor-energy-and-climate-mitigation/>.

- Electric gear to interconnect and enable islanding of the three MPS buildings from the surrounding distribution system

The rooftop solar arrays will be financed, owned and operated by REP and its partners, and net metered. The cost of these is not included in this request for certification. REP has committed to explore longer-term community ownership of the solar assets.

The BESS, microgrid controls and all electric gear will be owned and operated by Xcel Energy, and the cost of these items is included in our request for certification. Xcel Energy will manage the BESS to sustain the load of the MPS buildings in the event of an outage, with a primary emphasis on maintaining food preparation and refrigeration at the Nutrition Center and secondary emphasis on providing community gathering sites. In routine, non-outage operation, the RMP assets will be managed to provide grid benefits including peak shaving, load shifting and demand management for the benefit of all customers. We discuss in Section IV how the RMP assets will be dispatched to provide a range of grid services, and in Section VI how the Company will report on lessons learned.

REP has expressed interest in installing a system for remote monitoring of the solar/BESS/microgrid assets at the RATC, to provide additional training for students and visibility of the benefits for the community. We are exploring how to enable such a system within security constraints.

Both Hall Elementary and Franklin Middle currently have diesel generators for emergency backup power. We would aim to reduce or eliminate operation of these generators once the BESS is installed, reducing or eliminating emissions from diesel combustion.

4. *Loads and Distribution System Constraints*

The table below shows energy data for the three North Minneapolis Community Resiliency Hub buildings in 2020. Note these figures may be lower than typical due to the pandemic.

**Table 3: Energy Data – Resiliency Hub Buildings
 (January – December 2020)**

Premise	Total usage (kWh)	Highest monthly peak (kW)	Lowest monthly peak (kW)	Power factor (kVar)
Hall Elementary	408,352	355	112	0.67-0.77
Franklin Middle	998,545	403	215	1
Nutrition Center	1,794,773	537	317	0.86-0.89

The feeder that serves these three Minneapolis Public School buildings is at relatively high capacity in our 2030 forecast, but is not yet at the point where distribution system upgrades are projected to be needed in our current forecast, so no capex deferral value has been assigned to this project in our cost/benefit analysis. If significant load growth were to occur on this feeder – e.g. due to electrification, and/or the new development that REP hopes to support all along the East Plymouth Innovation Corridor – the resiliency investments could take on additional value by deferring conventional distribution system investments that could otherwise be needed, but we have not assumed that here. As part of our reporting summarized in Section VI, we will monitor load growth on this feeder and evaluate whether, over time, the capex deferral value of the RMP technologies grows as a result.

5. Complementary Objectives Addressed by Project

In addition to its direct benefits as a Resilience Hub and distribution system benefits, the North Minneapolis Community Resiliency Hub will reinforce the workforce development and training objectives of the RATC. Project construction will include significant participation from minority businesses and employ BIPOC workers from the neighborhood. The Resiliency Hub will serve as a demonstration and teaching tool for RATC students in solar, battery systems, and microgrid controls, in both the installation and operational phases. Workforce development, career pathways and STEM education will be integrated into the area around the Resiliency Hub which has been designated as the STEM Learning District for MPS. Building a robust STEM learning environment and supporting demonstrations of advanced energy systems are also key components of REP’s partnership with the University of Minnesota.

6. Supporters

The North Minneapolis Community Resiliency Hub concept has received support from the Northside Green Zone committee and Northside Residents Redevelopment Council. For the broader initiatives of which the Resiliency Hub is part – the RATC,

community solar at North High, and redevelopment of the East Plymouth Innovation Corridor – REP has engaged a network of community-based organizations for community engagement and public education. These engagement partners include North High Site Council, Plymouth Christian Youth Center, Pillsbury United Communities, Juxtaposition Arts, University Research and Outreach Center, Northside Green Zone, Minneapolis Climate Action, and Phyllis Wheatley Center.

The City of Minneapolis and Hennepin County have also provided funding support for the East Plymouth Innovation Corridor. The University of Minnesota has a formal partnership with REP to develop curriculum and training for emerging energy careers in North Minneapolis, as well as hosting an advanced demonstration of solar-plus-storage with microgrid controls at the RATC.

B. Sabathani Community Center

1. Project Lead and Partners

Sabathani Community Center was established in 1966 with a mission to provide people of all ages and cultures with essential resources that inspire them to improve their lives and build a thriving community.¹⁶ Sabathani has served as a pillar for community identity, empowerment, and social change for over 50 years. Sabathani serves over 43,000 community members in South Minneapolis each year with community-oriented, culturally sensitive services and programming including:

- Neighborhood Food Shelf, a permanent emergency food security resource distributing over 1 million pounds of food to approximately 10 percent of Minneapolis' population annually
- Senior Outreach, providing health and wellness services, community service and social engagement, and culturally specific outreach services to seniors
- Community-based Health and Wellness: services targeting high-risk, under-resourced populations to help address disparities in health outcomes
- Clothing Closet to provide clothing and household goods to low-income individuals and families
- Senior Housing Development Project, a 48-unit residential development providing affordable housing for seniors 55 and older, slated to open October 2021

¹⁶ This section is derived from Sabathani Community Center's website and Sabathani's response to Resilient Minneapolis Project call for applications, April 2021.

- **Community Businesses:** a lease program offering commercial space for rent at affordable rates to 20+ minority-owned businesses and nonprofits including African American, East African, and Latinx-owned. Tenants include Community Action Partnership of Hennepin County, Multiple Choice Adult Day Care, Somali Family & Youth Services, Connections to Independence (support for youth in foster care), Kids Care Zone (daytime childcare), Out Front MN LGBT, Narcotics Anonymous, Association for Training on Trauma and Attachment in Children (ATTACH), and various mental health providers including licensed social workers, therapists, and psychologists who offer free, sliding-scale, and multilingual care services to clients.

The population Sabathani serves are 87 percent BIPOC, and 80 percent live below the poverty line in the most disinvested neighborhoods of South Minneapolis (Central, Bryant, Phillips, and Powderhorn). Sabathani's leadership and the majority of staff and board members are people of color.

Center for Energy & Environment (CEE) has partnered with Sabathani over the past several years for energy assessment, redesign and retrofit options. CEE provided a One-Stop Efficiency Shop assessment of potential lighting upgrades at Sabathani. Elevate Energy, based in Chicago, has provided Sabathani a preliminary solar resource analysis, and will continue to engage to support the solar component of this project.

2. *Location and Beneficiaries*

Sabathani is located at 310 East 38th Street in South Minneapolis. Sabathani estimates the area served by a community resiliency hub would extend from Nicollet Avenue on the West to Bloomington Avenue on the east, and from 36th Street on the north to 40th Street on the South, with an approximate population of 72,000 people and over 30 businesses.

Figure 4: Sabathani Community Center



Sabathani is at the core of the 38th Street Thrive Cultural District approved by the Minneapolis City Council in early 2021, with a vision to “continue the legacy and heritage of a deeply rooted African-American community by preserving our economic vibrancy, creative identity, and affordability that strengthens the vitality, resilience and partnership of the people who live and work in the district.”¹⁷ Notably, the 38th Street Thrive strategic plan envisions creating a Resilience Hub at Sabathani to “enhance our ability to recover from traumas, disturbances, shocks or stresses due to climate changes, power outages, medical outbreaks, fires or other human-caused disasters...” and “serve as a facility in supporting the community before, during, and after disruptions by 1) mitigating climate change using resilient energy systems, 2) providing

¹⁷ *Thirty-Eighth Street Thrive Cultural District Strategic Development Plan*, February 2021.

opportunities for the community’s benefit with a solar farm cooperative, 3) providing local emergency management and communication, 4) coordinating the distribution of essential resources - shelter, water, food, medical supplies etc. when needed, and 5) creating a mobility hub with bike lanes, bus transit, bike parking and wheelchair accessibility, etc.”¹⁸ Funding through the RMP – while it cannot support every one of these objectives – would enable Sabathani to move forward on key aspects of this vision to become a Resilience Hub for the 38th Street Thrive Cultural District.

3. *Project Description*

Sabathani’s RMP application notes that “the resilience of the surrounding community is directly tied to the health and resilience of the Sabathani Community Center and the services that it offers... Sabathani’s uninterrupted operations are critical to community resilience. The technologies proposed below... will serve as a demonstration to the surrounding community as well as all of Xcel Energy’s customers of how even older buildings such as Sabathani can contribute to a clean energy future and be made significantly more resilient in the face of future extreme weather events. They will also provide grid services on a daily basis, including peak shaving, voltage control, and demand response.”¹⁹

The proposed technologies are:

- 240 kW AC rooftop solar PV system, sized based on a preliminary solar assessment from Elevate;
- 1 MWh (500 kW, two hour) BESS; and
- Electric gear to interconnect and enable islanding of Sabathani from the surrounding distribution system.

The BESS, microgrid controls and all electric gear will be owned and operated by Xcel Energy, and the cost of these items is included in our request for certification. Xcel Energy will manage the BESS to sustain critical loads at Sabathani in the event of an outage, including food preparation, community sheltering spaces, medical and emergency services, etc. In routine, non-outage operation, the RMP assets will be managed to provide grid benefits including peak shaving, load shifting and demand management for the benefit of all customers.

¹⁸ Ibid. at pp. 40-41.

¹⁹ Sabathani Community Center response to Resilient Minneapolis Project call for applications, April 2021.

In Sabathani's case it is important to note that the proposed resiliency investments (i.e. solar, BESS, microgrid) are only one piece of broader energy objectives that are centered on improving energy affordability in order to continue delivering Sabathani's core services and offering affordable rent to BIPOC-owned tenant businesses. Sabathani occupies a 100-year old building that is inefficient and has very old heating, cooling and lighting systems, and currently pays about \$18,000 per month for gas and electric service. In its RMP application, Sabathani proposed measures to upgrade its HVAC system, make the building more efficient, reduce energy costs, and reduce emissions. These included:

- Variable refrigerant flow (VRF) system, capable of providing both heating and cooling, to replace two 55-year old natural gas fired steam boilers and 104 thirty-year old in-room ceiling mount air conditioning units. Sabathani is evaluating either a geothermal (water-source) VRF system, which they believe would allow for complete electrification of the building's heating systems since it would be capable of meeting the building's heating loads even on the coldest winter days, or an air-source VRF system, which would be less expensive but could still meet much of Sabathani's heating load (and all of the cooling). Sabathani is also open to other efficient HVAC options. The Company is working with Sabathani to support an HVAC engineering study to explore these options.
- Building envelope efficiency measures, reducing energy loss and both electricity and gas utility bills. Sabathani proposes to insulate to R-30 and air seal under the roof.
- Lighting retrofits, replacing T8 fluorescent lights throughout the building with LEDs. These lighting retrofits are estimated, based on a One-Stop Efficiency Shop assessment, to provide 107 kW in demand savings, which will significantly lower total load and allow the BESS to sustain the building's load for longer during an outage. The Company is working with Sabathani to support lighting retrofits through CIP rebates and Minneapolis Green Cost Share funding.
- Building automation system, tying together the various installed technologies and providing the controls necessary to operate Sabathani efficiently and enable it to be grid interactive (schedule heating and cooling loads, lighting schedules, providing demand response, reducing demand to critical loads during an outage)

Note the costs of the measures in the list above are not included in this request for certification, since they are not directly tied to IDP objectives. The Company

understands the priority Sabathani places on these investments, however, so is working actively with Sabathani to identify ways to fund all or a portion of them through rebates from the Company’s Conservation Improvement Program (CIP) offerings, City of Minneapolis Green Cost Share funds, and other external funding.

4. *Loads and Distribution System Constraints*

Sabathani is a 188,257 sq. ft. building with a current peak annual load of 330 kW. Over the last three years, monthly peak demand has ranged from almost 350 kW to as low as 100 kW during autumn months of 2020 (presumably affected by mild temperatures combined with reduced operations during COVID). Annual energy use pre-pandemic was over 1 million kWh.

The feeder that serves Sabathani is approaching full capacity in our 2030 forecast, but is not yet at the point where distribution system upgrades are projected to be needed in our current forecast, so no capex deferral value has been assigned to this project in our cost/benefit analysis. If significant load growth were to occur on this feeder – e.g. due to electrification or other factors – the resiliency investments could take on additional value by deferring conventional distribution system investments that could otherwise be needed, but we have not assumed that here. As part of our reporting summarized in Section VI, we will monitor load growth on this feeder and evaluate whether over time the capex deferral value of the RMP technologies grows as a result.

5. *Complementary Objectives Addressed by Project*

Sabathani sees the RMP in the context of its larger environmental and racial justice objectives. Sabathani notes, “the pandemic combined with George Floyd’s murder only three blocks away and righteous protests this past year laid bare the systemic racism, power dynamic, and economic disparities which have plagued our community for decades. We cannot return to business as usual...” Sabathani sees its participation in the RMP as investing “in the communities that have been hardest hit by these inequities and committing to fight for a new future where wealth-justice, a clean energy transition, resilient communities and opportunity are built from the ground up by and for the people who live and thrive in this neighborhood.”²⁰

The South Minneapolis neighborhoods served by Sabathani bear disproportionate environmental and health burdens, including some of Minneapolis’s highest asthma

²⁰ Sabathani Community Center response to Resilient Minneapolis Project call for applications, April 2021.

rates among children according to the Minnesota Department of Health,²¹ and are expected to experience disproportionate impacts from climate change-related events. Sabathani's efforts under the RMP begin to address these inequities by reducing pollution locally, improving community resiliency to climate change, and providing a secure gathering space with reliable power to continue providing services in the case of weather-related outages.

Finally, Sabathani is partnering with the City of Minneapolis to launch a solar PV training program that will focus on job training for a diverse workforce. Reimagining and upgrading Sabathani's inefficient building would not only support Sabathani but also provide a city-wide demonstration and training site for renewable energy technologies.

6. Supporters

In addition to its formal implementing partners CEE and Elevate, Sabathani enclosed with its original RMP application letters of support from Minneapolis City Council Vice President Andrea Jenkins and Institute for Market Transformation. Sabathani's RMP activities are strongly supported by these partners as a way to create a model for community resiliency, energy affordability and equity.

C. Minneapolis American Indian Center

1. Project Lead and Partners

The Minneapolis American Indian Center (MAIC), built in 1975, is focused on serving a large and tribally diverse urban American Indian population, numbering well over 35,000 in the eleven-county Minneapolis-St. Paul metro area.²² MAIC hosts over 10,000 visitors annually, and engages 43 different American Indian tribes along Minneapolis' American Indian Cultural Corridor. MAIC serves as a central meeting location for urban American Indian organizations, community-based organizations, educational institutions, and entrepreneurs from throughout South Minneapolis, surrounding neighborhoods and the greater Twin Cities.

MAIC's programs and services are predominantly focused on Native American children, youth, adults, elders, and families. Most participants are low-income and

²¹ <https://www.health.state.mn.us/diseases/asthma/data/quickfacts.html>

²² This section is derived from MAIC's website and response to Resilient Minneapolis Project call for applications, April 2021.

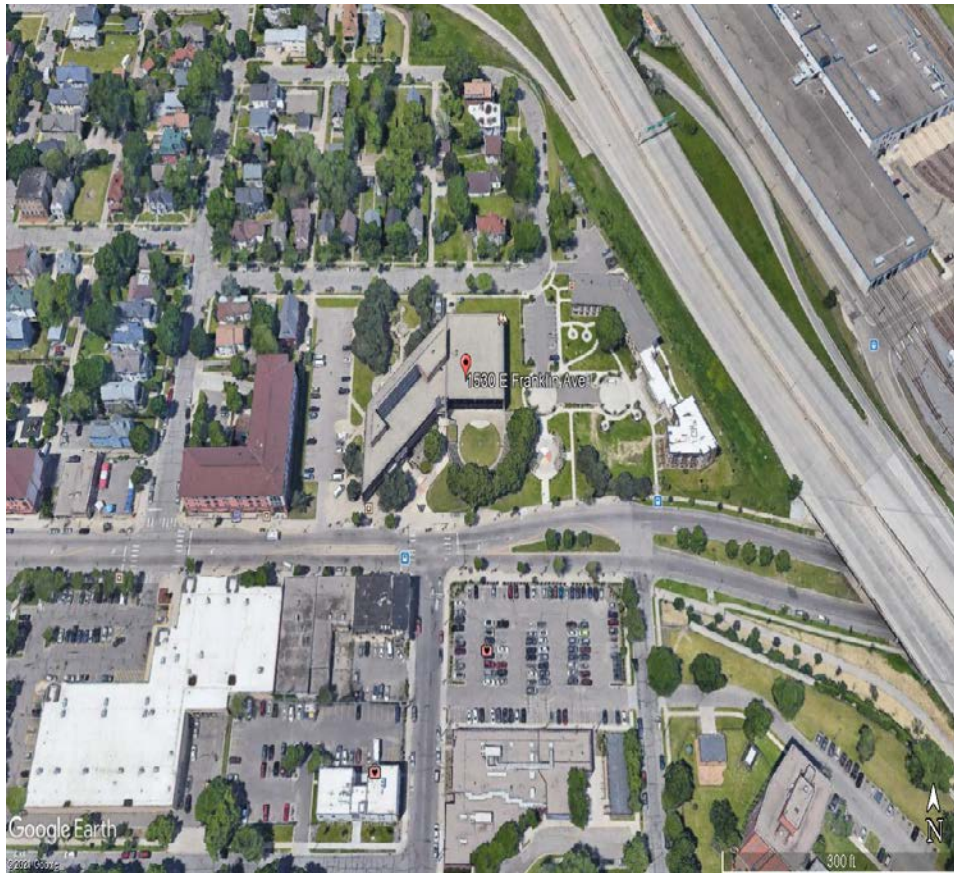
experience significant opportunity gaps in health and wellness, education, access to basic needs and resources, housing, living-wage jobs and career pathways, civic and community engagement, and long-term economic stability and prosperity. MAIC's culturally supportive programming engages urban Native Americans within the context of their own traditions and experiences, promoting positive outcomes and addressing disparities between the Native and mainstream populations. MAIC also functions as a cross-cultural bridge by providing a destination for non-Native people to attend events, seminars, performances, and exhibitions. In particular, its Gatherings Café, Two Rivers Art Gallery and Woodland Crafts Gift Shop draw many diverse visitors to engage in learning and understanding about Native values, traditions and philosophy, providing learning for visitors who would otherwise likely have limited interaction with the broader American Indian community.

MAIC's partners for its planned renovation are Cuningham Group, serving as lead architects under the direction of Sam Olbekson, Native architect and MAIC Board Chair; Emanuelson-Podas Consulting Engineers, serving as mechanical/electrical engineers for the project, with experience in solar arrays and emergency power generation; and Crowley, White, Helmer & Sevig, Inc., who are assisting with MAIC's capital campaign.

2. Location and Beneficiaries

The MAIC is located at 1530 E Franklin Avenue, in the heart of Minneapolis's American Indian Cultural Corridor. The approximate population served is 22,015, with an approximate business count of 500.

Figure 5: Minneapolis American Indian Center



3. *Project Description*

The energy and resilience activities at MAIC fall within a planned renovation and expansion of their existing space, roughly doubling its size from about 30,000 sq. ft. currently to about 65,000 sq. ft. This will update the existing spaces, improve the sustainability and efficiency of the building, and create a broad array of new multi-use spaces for programs, service delivery and events. The current plan is to begin construction in late spring/early summer 2022, which aligns well with the RMP timeline.

MAIC's proposed RMP investments include:

- Rooftop solar PV system of around 200 kW, installed on the approximately 35,000 sq. ft. of new roof space on the addition, with the possibility of additional capacity on existing roofs contingent on structural and shading constraints;

- 1 MWh (500 kW, 2 hour) BESS;
- Back-up natural gas/diesel generator for emergency power; and
- Electric gear to interconnect and enable islanding of MAIC from the surrounding distribution system.

MAIC is working with Xcel Energy's Energy Design Assistance program to finalize key aspects of the upgraded HVAC systems, thermal envelope, efficient lighting, food preparation, and building automation system. The renovation is being planned to meet Minnesota's B3 building standards. These costs are not included in this certification request. The Company is working with MAIC to identify ways to help fund those activities through CIP rebates and/or external cost sharing.

4. Loads and Distribution System Constraints

MAIC is an approximately 30,000 sq. ft. building with a current peak annual load of about 250 kW. Over the last three years, monthly peak demand has ranged from 250 kW in summers to a low of around 100 kW. Annual energy use pre-pandemic was almost 800,000 kWh. With the expansion to 65,000 sq. ft., MAIC's peak load is forecast to grow to about 400 kW.

The feeder that serves MAIC is nearly at full capacity in our 2030 forecast, and is the most heavily loaded feeder of the three RMP sites. It is approaching, but has not yet reached, the point where added load could require distribution system upgrades. Note that this forecast still reflects MAIC's current average annual peak load of 250 kW; the projected increase to 400 kW when the MAIC expansion is complete would bring this feeder even closer to full capacity. This means any subsequent load growth on that feeder – e.g. due to electrification or other factors – could trigger the need for distribution system upgrades. The load reduction created by the proposed resiliency investments at MAIC could help defer such costs. However, because this feeder is not yet overloaded in our 2030 forecast, we have conservatively not included any capex deferral value for this project in our cost/benefit analysis. As part of our reporting summarized in Section VI, we will monitor load growth on this feeder and evaluate whether over time the capex deferral value of the RMP technologies grows as a result.

5. Complementary Objectives Addressed by Project

The RMP project will support community-identified needs for the facility as a core gathering place for cultural, social, arts, and physical fitness activities for the Native

community, reduce operating costs, enhance MAIC's ability to generate revenues, and improve visibility, access and security.

MAIC's broader renovation aims to create a more livable community in South Minneapolis and increase opportunities for disadvantaged and underprivileged Native people to thrive. MAIC will modernize its 1975 building and add a one-level addition, creating a more welcoming community space. The Gatherings Café, Two Rivers Art Gallery and Fitness Center will be relocated to be more accessible to clients and the public while increasing income generation. MAIC will add new meeting spaces for programming and for rent by external organizations and groups, as well as create coworking office space for rent by individuals, non-profits and businesses.

Ultimately, MAIC's goal is to create a lasting impact along the American Indian Cultural Corridor and Franklin Avenue Commercial Corridor, contributing to neighborhood vitality and providing the urban American Indian population and visitors with a state-of-the-art facility that stimulates inclusive local economic growth and sustainable, resilient community development, while firmly establishing investment in strategic, community-led placemaking.²³ The energy activities proposed here fit within that broad vision – reducing costs, improving resilience, and building wealth for the Native community. The figure below shows a rendering of the proposed renovation once complete.

Figure 6: Exterior Study of Completed MAIC Renovation.



²³ MAIC response to Resilient Minneapolis Project call for applications, April 2021.

IV. COSTS AND BENEFITS

In this section, we summarize the anticipated costs of implementing the RMP; provide a narrative summarizing both quantified and non-quantified benefits; and provide a cost/benefit analysis.

A. Cost Estimates

The following table summarizes estimated costs for the three RMP sites. Note these are preliminary estimates, to be refined with more detailed design work and vendor estimates once the Company issues Requests for Proposal (RFPs) in 2022. Costs of rooftop PV systems will be borne by the RMP hosts and/or their financial partners. Costs included in this request for certification are comprised of capital cost of the BESS, interconnection costs at each site (medium voltage work, site preparation, islanding switch, etc.), and systems integration, security and communications, plus annual O&M costs.

Table 4: Cost Estimates for each RMP Site (preliminary)

	North Minneapolis Community Resiliency Hub	Minneapolis American Indian Center	Sabathi Community Center	Total
A. Capital Costs				
Battery Energy Storage System	\$ 2,123,123	\$ 940,163	\$ 940,163	\$ 4,003,449
Islanding Switch (ATO)	\$ 241,800	\$ 241,800	\$ 241,800	\$ 725,400
Medium Voltage work	\$ 128,464	\$ 56,668	\$ 112,964	\$ 298,096
Site Evaluation/Surveying/Prep/Etc.	\$ 211,420	\$ 211,420	\$ 211,420	\$ 634,260
Business Systems Integration	\$ 330,274	\$ 330,274	\$ 330,274	\$ 990,822
Project Management and labor	\$ 236,890	\$ 220,075	\$ 282,075	\$ 739,040
Miscellaneous	\$ 639,396	\$ 382,835	\$ 525,579	\$ 1,547,811
Total capital	\$ 3,911,367	\$ 2,383,235	\$ 2,644,276	\$ 8,938,878
B. Annual O&M Costs				
Annual O&M	\$ 23,861	\$ 19,091	\$ 19,091	\$ 62,043

B. Benefits Discussion

The solar, BESS, and microgrid controls installed at the three RMP sites will deliver multiple benefits. These include benefits to the host organizations themselves, to the

communities they serve, benefits for grid modernization, and learnings that will benefit the Company's customers overall as these technologies become more common in the coming years. Some of these benefits are quantifiable in dollar terms, which we do in the following section; others are non-quantified but no less important. We urge the Commission to consider the non-quantified benefits as well, even though they are not part of the benefit:cost ratio presented in the next section.

Please note that while the RMP investments can provide multiple grid services, not all services can be performed simultaneously; rather, they would be called upon individually as determined by current electrical system conditions. One of the key benefits of the RMP, therefore, is learning about how to optimize these services, recognizing not all can be delivered at once. That learning will benefit all the Company's customers, not just our three partner organizations.

1. *Quantified benefits*

The following benefits of the RMP grid modernization investments are quantified in dollar terms in the next section.

- *Backup power and resilience.* Through the use of inverter-based technology with grid-forming capability, the BESS systems will be able to provide multi-hour backup power to the relevant facility's load in the event of a utility power outage. This service is capable of extending to a multi-day outage event given the availability of on-site solar and/or back-up generators. The percentage of total energy storage capacity reserved for backup power will be configurable based on building load, available generation, and other system conditions (e.g., weather, system peaking, etc.). A relatively short outage (up to 4-5 hours, depending on the building loads and state of charge of the BESS) could be covered by the BESS alone, while longer outages could be covered by recharging the BESS with solar generation, curtailing non-critical loads and limiting building energy demand to those loads critical for resiliency, and as a last resort running back-up generators.
- *Bulk system capacity.* Ability to dispatch the BESS during peak electrical system days based on a signal from the Company.
- *Local distribution system support.* Ability to dispatch the BESS to reduce local feeder peak.
- *DER integration.* Ability to increase the amount of distributed generation that can be hosted on a particular feeder by creating a load (the BESS) for excess solar generation that would otherwise have to be curtailed.

- *Non-wires alternative.* Creating more “head room” for load growth on a feeder that is nearing its capacity, thus deferring capital expenses for conventional distribution system upgrades that would otherwise be needed to handle the anticipated load growth. As described above, our quantitative cost/benefit analysis conservatively includes no capex deferral value for any of the RMP sites, even though some are nearing full capacity such that additional load growth could necessitate distribution system upgrades in the absence of the RMP investments.
- *Arbitrage.* Ability to set predefined or ad hoc charge/discharge commands in order to take advantage of daily electricity price differentials and maximize the monetary benefit of price variations.
- *Emission avoidance.* Solar generation, and the ability to store that generation in the BESS and inject it into the grid during hours when solar is not generating, will displace other generation resources, a portion of which are fossil resources emitting carbon dioxide and criteria pollutants. Avoided emissions have societal benefit (avoided monetized damages to society) per the environmental externalities framework used by the Commission.

While the RMP investments will support community resiliency in the event of an extended outage, such outages are today rare – i.e., low-probability but high-impact events. Considering this, the RMP systems will be managed on a day-to-day basis to provide the multiple grid benefits listed above, while reserving enough BESS capacity for an unanticipated outage (and increasing the BESS reserve capacity if a severe weather event is anticipated with some advance notice). This will also provide valuable opportunities to learn how best to operate solar/BESS/microgrid systems on a routine basis, optimize these systems to deliver multiple benefits, and learn which services can realistically be delivered simultaneously and which exclude delivery of others. These learnings will benefit all our customers as these systems become more common.

2. *Non-quantified benefits*

The RMP investments also provide a range of benefits that we did not attempt to quantify in dollar terms:

- *Training and job creation.* The RMP projects will create training and energy workforce diversification opportunities, including preparing BIPOC individuals for clean energy apprenticeships and careers. These include:

- The North Minneapolis Community Resiliency Hub will provide training via its RATC for installation and operation of solar, BESS and microgrid equipment, as well as partnering with the University of Minnesota on curriculum development and to provide research opportunities for university students.
- Sabathani is working with the City of Minneapolis to launch a solar PV training program that can use the new solar and BESS assets for training purposes.
- All RFPs issued by the Company to select vendors for RMP design and installation will apply supplier diversity criteria to give preference to women- and minority-owned businesses. The solar assets will be procured by the host organizations themselves, so the Company does not have direct control of vendor selection there, but all three organizations are likely to prioritize working with BIPOC-owned businesses and creating training opportunities.
- *Value of learning for future resiliency and/or NWA projects.* Implementing the RMP at these three sites will provide learnings that can benefit all the Company’s customers as solar, battery storage, and microgrid technologies become more prominent on our distribution system in the coming years. Specifically, we expect that more communities will be interested in resiliency investments, and it will be important to better understand how to optimize these projects to deliver multiple services on a routine, non-outage basis as described in the foregoing section. In Section VI we propose a reporting mechanism to track and share lessons learned.
- *Energy equity objectives.* We here use energy equity as a general term to capture a broad set of objectives – clearly stated in the mission and vision statements of Renewable Energy Partners, Sabathani and MAIC – around enhancing equitable access to clean energy alternatives, using clean energy to build community wealth, energy sovereignty, improving energy affordability and reducing energy burden, and advancing environmental justice in communities historically disproportionately impacted by pollution and marginalized in energy decision-making. We do not attempt to quantify these benefits, but we acknowledge them as real concerns that the RMP initiative can help address.

C. Cost/Benefit Analysis

The Company conducted a CBA that uses the costs from section A above, and estimates the monetary value of resilience back-up power, capacity, generation savings, carbon avoidance, and arbitrage. The table below the results of that CBA,

including benefit:cost ratios for each project and for the RMP overall. The CBA is included as a workpaper to this filing.

Table 5: Cost and Benefit Summary Table for RMP

	Units	North Minneapolis Community Resiliency Hub	Sabathani Community Center	Minneapolis American Indian Center	Aggregate
COSTS					
Capital					
Total Capital Cost	\$	\$3,911,367	\$2,644,276	\$2,383,235	\$8,938,878
O&M					
Annual O&M Cost	\$	\$23,861	\$19,091	\$19,091	
NPV of Annual O&M Costs (10 years)	\$	\$172,662	\$138,146	\$138,146	\$448,953
Total Capital and O&M	\$	\$4,084,029	\$2,782,421	\$2,521,381	\$9,387,831
BENEFITS					
Resilience/Value of Lost Load	\$	\$575,076	\$575,076	\$460,060	\$1,610,212
Bulk System Capacity Value	\$	\$111,344	\$54,384	\$65,643	\$231,371
Generation & Carbon Emissions		\$133,138	\$25,417	\$22,997	\$181,551
Arbitrage	\$	\$62,174	\$3,173	\$12,417	\$77,764
Lifetime Benefit	\$	\$881,732	\$658,050	\$561,117	\$2,100,899
BENEFIT:COST RATIO					
		0.22	0.24	0.22	0.22

We note that the benefit-to-cost ratios above are not particularly high. We understand the priority placed by the Commission on advancing development of distributed energy systems that combine solar and energy storage to create multiple grid benefits. Also, the emergency back-up role these BESS projects support in these applications could support communities in times of significant or prolonged duress, which is inherently hard to value, as discussed above. Therefore, we do not believe these low benefit-to-cost ratios are a cause for concern here as they might be in a different context.

Also, we reiterate that, while some of the benefits discussed in Section IV.B can be quantified in dollar terms, others are equally important but more difficult to quantify. Since all costs are quantified, but only a subset of benefits are quantified, the benefit-to-cost ratios presented in this section reflect an incomplete picture of the overall benefit of the RMP projects to our communities and customers.

D. Alternatives Analysis

Among the certification requirements is a description of the available alternatives to meet a project's intended objectives.²⁴ The intended objectives of the RMP are directly linked to the statutory criteria for IDP investments by utilities operating under multiyear rate plans²⁵: modernizing the distribution system to improve reliability in an extended outage, as well as increasing energy conservation opportunities through control technologies, energy storage and microgrids, and technologies to enable demand response (among a range of other grid services as discussed in Section IV.B). Implementing this pilot will enable Company learnings around managing solar/battery/microgrid systems to deliver multiple grid benefits.

Because the RMP is essentially a pilot project, rather than a project addressing an immediate inadequacy or deferring a conventional distribution system upgrade, the alternative the Company would implement if the Commission disapproves this request is a no-action alternative.

V. IMPLEMENTATION SCHEDULE

If the Commission grants this request for certification, the Company will work with our community partners to implement the following steps as quickly as feasible, targeting projects coming online by summer 2023. The schedule below assumes Commission approval no sooner than May 2022, so most other steps cannot start until summer 2022. It also assumes a 4-6 month lead time for BESS delivery after placing an order. Note the schedule below focuses only on the period up to the in-service date of the RMP projects, not the subsequent operations and learning period which will extend through at least the ten-year assumed life of the battery systems.

²⁴ *In the Matter of Xcel's Residential Time of Use Rate Design Pilot Program* and *In the Matter of Xcel's 2017 Biennial Distribution Grid Modernization Report*, Dockets E-002/M-17-775 and E-002/M-17-776, Order Approving Pilot Program, Setting Reporting Requirements, and Denying Certification Request (Aug. 7, 2018) at 9.

²⁵ See Minn. Stat. §216B.2425, subd. 2 (e).

Table 6: Gantt Chart for Implementation in 2022-23

	2022												2023								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
PUC hearing and decision on certification					■																
PUC order							■														
Draft RFP(s), with preference for BIPOC-owned vendors					■	■	■														
Issue RFP(s) to select vendors for Company-owned assets							■														
RFP responses due								■													
Evaluate RFP responses and select vendors									■												
Sign contracts with chosen vendors										■	■										
Detailed design by Company of distribution system modifications											■	■	■								
Detailed design by Vendor of BESS (and possibly solar) system configurations													■	■	■	■					
Site preparation															■	■	■				
BESS delivery																	■	■			
Installation																		■	■		
Commissioning																			■	■	

VI. REPORTING LESSONS LEARNED

Because the RMP is a pilot project, the Company feels it is important to provide a formal mechanism for reporting lessons learned. We propose an annual reporting schedule to update the Commission and stakeholders on RMP progress and lessons learned. These reports would include both progress on the initial installation and commissioning of the RMP projects, and lessons learned in the operations phase as the projects are managed to provide the grid services as summarized in Section IV. We propose the following schedule, but are open to a different schedule or reporting approach if the Commission prefers.

- Initial Progress Report (December 2022)

As of December 2022, the RMP systems will not yet be installed, so this will be a report on progress toward commercial operation. The report will summarize the status of agreements with RMP project hosts, RFP(s) for battery systems, methods used to support women- and BIPOC-owned firms in the RFP stage, contracts with battery vendors, and expected delivery of battery systems at each site. The report will include detailed engineering designs and more refined cost estimates.

- Construction Progress Report (December 2023)

This will be the first report after installation and the commercial operation date (COD) of the RMP projects. We will report on those installations, hurdles encountered and solutions reached, any significant changes to the initial project plan, actual costs and any material deviations from the cost estimates in the prior report. The report will also summarize the first few months of operation of the solar/battery/microgrid systems.

- Annual Operations Reports (each December, 2024 through 2026)

In annual reports filed at the end of each year, the Company will report lessons learned from operation of the solar/battery/microgrid systems to deliver resiliency and a range of other grid services as summarized in Section IV. These reports will be the primary mechanism for compiling lessons learned to apply to similar projects as they become more common on our distribution system. Proposed report contents include but are not limited to:

- Number and duration of islanding events for each project;
- Battery state of charge at the time of islanding events;
- Use of on-site renewable and non-renewable generation during islanding events;
- Summary of any unplanned outages, technical failures or maintenance issues;
- Summary of how batteries were dispatched over the course of the year, including dispatch for arbitrage, system peak, and feeder peak, and associated non-quantifiable benefits realized from dispatch;
- Summary of monetary benefits and emission reductions related to the projects, to the extent such data can reasonably be isolated to the projects collectively or individually;
- Load growth on the feeders serving each RMP site, and whether over time these projects grow in their ability to serve as Non-Wires Alternatives deferring capital expense for conventional distribution system upgrades;
- Summary of interactions and feedback from host communities: how well are the RMP projects serving the core needs of our partner organizations? What changes to the project design could serve those needs better?; and
- Summary of lessons learned from the operations of the RMP projects to date.

VII. REQUEST FOR CERTIFICATION

We respectfully request that the Commission certify our proposal to implement the RMP at the North Minneapolis Community Resiliency Hub, Sabathani Community Center, and Minneapolis American Indian Center, with estimated total costs as summarized in section IV.A. If this request for certification is granted, the Company would expect to seek cost recovery via the Transmission Cost Recovery (TCR) Rider.

In accordance with Minn. Stat. §216B.2425, utilities operating under multiyear rate plans must identify in biennial reports:

...investments that it considers necessary to modernize the transmission and distribution system by enhancing reliability, improving security against cyber and physical threats, and by increasing energy conservation opportunities by facilitating communication between the utility and its customers through the use of two-way meters, control technologies, energy storage and microgrids, technologies to enable demand response, and other innovative technologies.²⁶

The RMP is a project eligible for certification under the above statutory criteria in that it:

²⁶ Minn. Stat. §216B.2425, subd. 2 (c).

- Helps to modernize the distribution system by enhancing reliability and improving security against physical threats, including but not limited to physical threats (i.e. extreme weather events) that are anticipated to increase in frequency and severity due to a changing climate; and
- Provides energy conservation opportunities and facilitates communication between the utility and its customers through the use of control technologies, energy storage and microgrids, and other innovative technologies. These technologies will enable demand response as well as other grid services, as described in section IV.B, when dispatched on a routine, non-emergency basis. Managing the solar, battery and microgrid technologies to optimize these grid services will provide learnings to the benefit of all the Company's customers. Managing the same assets to provide power for critical services in the event of an extended outage will support community resiliency hubs in disproportionately impacted communities.

Beyond these statutory criteria for IDPs, the RMP delivers a broad range of benefits as summarized in section IV, including greater DER integration, emissions avoidance, workforce training and diversification, enhancing energy affordability, and environmental justice.

We note that we did not perform a rate analysis of this proposal because we expect the total dollars invested to be under \$10 million, and thus any rate impacts to be minimal. Additionally, until the specific projects are budgeted, we are unable to calculate a cost-of-service analysis. We are happy to perform this analysis after the Commission makes its certification decision and the project components are finalized.