

Agenda Report Reviewed by:
City Manager: 

CITY OF SEBASTOPOL
CITY COUNCIL
AGENDA ITEM REPORT

Meeting Date: February 21, 2023
To: Honorable Mayor and Honorable City Councilmembers
From: Councilmember Zollman (City Council Representative to Sonoma Clean Power)
City Administration
Subject: Letter of Support for the Proposal, “Superheat Long-Duration Energy Storage: Sub 24-Hour”
Recommendation: Authorize Mayor to Sign Letter of Support
Funding: Currently Budgeted: _____ Yes _____ No X N/A
Net General Fund Cost:
Amount: \$ _____

Account Code/Costs authorized in City Approved Budget (if applicable) AK (verified by Administrative Services Department)

PURPOSE/INTRODUCTION:

This item requests that the City Council approve a Letter of Support for the Proposal, “Superheat Long-Duration Energy Storage: Sub 24-Hour”

BACKGROUND:

Sonoma Clean Power serves the residents and businesses in Sonoma and Mendocino counties clean energy from more renewable resources, such as geothermal, wind, and solar.

Sonoma Clean Power was formed to provide a choice beyond the for-profit, investor-owned utility (PG&E) and a customer-owned public utility. Today, SCP is a model for community choice programs throughout California. By providing higher percentages of renewable energy that reduce greenhouse gas emissions, SCP customers are helping to solve the climate crisis at the local level.

Sonoma Clean Power is a not-for-profit public agency based in Santa Rosa and are committed to offering our customers clean energy solutions that enhance quality of life while helping solve climate change. Sonoma Clean Power is governed by the Sonoma Clean Power Authority. Sonoma Clean Power Board of Directors is made up of local representatives from participating cities throughout Sonoma and Mendocino Counties.

Councilmember Zollman was appointed by the City Council as the primary representative to Sonoma Clean Power and Councilmember Maurer was appointed as the alternate representative to Sonoma Clean Power.

DISCUSSION:

The City of Sebastopol has been a member of Sonoma Clean Power (SCP) since starting service in 2014. In 2019, the City of Sebastopol passed a resolution declaring a climate emergency and establishes a goal of reducing city-wide greenhouse gas emissions to net zero by 2030. The City of Sebastopol is also a customer of SCP’s EverGreen service, which provides our city facilities with 24/7 100% renewable power from local resources, including geothermal from the Geysers.

As a representative to Sonoma Clean Power for the City of Sebastopol, Councilmember Zollman as brought forward an agenda item to authorize the Mayor to sign a letter of support for the Proposal, “Superheat Long-Duration Energy Storage: Sub 24-Hour”.

Sonoma Clean Power started the Geothermal Opportunity Zone (GeoZone) initiative in 2021 to explore opportunities to reinvigorate local geothermal development. Both the County of Sonoma and County of Mendocino passed resolutions joining SCP in the GeoZone and expressing their shared interest in deploying new technologies to increase local geothermal capacity. In Spring 2022, SCP solicited proposals from the geothermal industry to provide technology and investment to build geothermal projects that could add over 500 MW of capacity that aligned with community values—including land and water conservation.

An expert team reviewed the proposals and selected three finalists, including Cyrq Energy’s thermal storage system. Finalists were also required to participate in a public stakeholder session including participants from local government, environmental NGOs, and organized labor.

Cyrq Energy is one of the largest developers of geothermal power projects in the US and is headquartered in Salt Lake City, Utah. Cyrq’s proposal for the GeoZone involves equipping existing Geysers power plants with thermal storage systems that can be heated by electricity when solar energy is plentiful on the grid and then used to superheat steam entering Geysers units during hours of high need, resulting in higher turbine efficiency and a substantial increase in electric output. Cyrq’s system can be sited with minimal land disturbance and water usage, but greatly increases the flexibility and value of a geothermal power plant. Cyrq’s demonstration project will be 5-10MW, but if successful can be applied at-scale to the entire Geysers fleet (750 MW).

As part of the GeoZone partnership, SCP will contract for output from Cyrq’s deployment at the Geysers. The initial demonstration project is likely to be more expensive than the market value of its capabilities due to its limited size, engineering requirements, and development risk. SCP and Cyrq are pursuing grant funding like the DOE Long-Duration Energy Storage grant to offset above-market costs for the demonstration facility and reduce the required contract price SCP customers will pay for facility output. Cyrq will use the demonstration project to de-risk technology and identify efficiencies of scale to build subsequent projects that are expected to be commercially viable without grant funding. SCP’s agreement with Cyrq includes a first right-of-refusal for GeoZone development which will give SCP customers access to preferential pricing for a technology that is expected to be instrumental in providing intra-seasonal and around-the-clock reliability from a clean and renewable resource.

This project puts our region in the front seat for driving technology innovation and development of clean energy resources. It will provide significant financial benefits to our local communities including jobs, tax revenues, and improved reliability of our energy infrastructure. Unlike other renewable energy projects, Cyrq’s demonstration project principally involves investment and assembly on-site and is constructed with material that can be procured domestically. This will require skilled labor that Cyrq is committing to source locally and is not dependent on global supply chains.

Advancing environmental justice is an important objective in GeoZone. Cyrq’s technology provides the type of capability needed from a clean and renewable resource to enable retirement of natural gas plants. Natural gas power plants are disproportionately located in disadvantaged communities—predominately in central and southern California—and result in significant air and water pollution to their surrounding communities. In addition to proving-up a technology that can alleviate the pollution burden of these communities, Cyrq and SCP are also focused on local community engagement to design a project that is compatible with community values and creates economic opportunity for marginalized communities in our region.

The mission of the Department of Energy (DOE) is to ensure America’s security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. The request tonight is for a letter of support for Sonoma Clean Power’s Department of Energy grant application together with Cyrq and Calpine for a novel way to store heat from the Geysers steam to produce power later when it is most needed and continue the Council’s climate action goals.

CITY COUNCIL AND/OR GENERAL PLAN GOALS:

Goal 5: Provide Open and Responsive Municipal Government Leadership

5.3.3. Encourage and increase public awareness of City Policies, decisions, programs and all public processes and meetings, by investigating effective methods of communication and obtaining feedback from the community.

ction CHW 5c: Practice an open-door policy in City programs, and actively engage and encourage participation from all individuals regardless of ethnicity, race, religion, class, disability, sexual orientation, and gender.

ENVIRONMENTAL REVIEW

PUBLIC COMMENT:

As of the writing of this staff report, the City has not received any public comment. However, if staff receives public comment from interested parties following the publication and distribution of this staff report such comments will be provided to the

City Council as supplemental materials before or at the meeting. In addition, public comments may be offered during the public comment portion of this item.

PUBLIC NOTICE:

This item was noticed in accordance with the Ralph M. Brown Act and was available for public viewing and review at least 72 hours prior to the scheduled meeting date.

FISCAL IMPACT:

There is no cost associated with this item tonight.

RECOMMENDATION:

That the City Council approve a Letter of Support for the Proposal, "Superheat Long-Duration Energy Storage: Sub 24-Hour"

Attachment:

Proposed Letter
SCP Informational Sheet

City Council

Mayor Neysa Hinton
Vice Mayor Diana Rich
Sandra Maurer
Jill McLewis
Stephen Zollman



Agenda Item Number: 4

City Manager

Larry McLaughlin

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Assistant City Manager/City Clerk, MMC

Mary Gourley

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City of Sebastopol

February 21, 2023

CYRQ Energy
Mr. Matthew Rosenfeld
Executive Program Manager, Cyrq Energy, LLC
Salt Lake City, Utah, United States

RE: Letter of Support for the Proposal, "Superheat Long-Duration Energy Storage: Sub 24-Hour"

Dear Mr. Rosenfeld,

This letter of support is provided on behalf of the City of Sebastopol, California. The City is pleased to support this proposal in response to Topic Area 2: Non-Lithium-Based Energy Storage Systems, Area of Interest 2B: Front-of-Meter LDES Demonstrations (10-24 hours), of the Department of Energy (DOE) Office of Clean Energy Demonstrations, Bipartisan Infrastructure Law: Long-Duration Energy Storage Demonstrations, Funding Opportunity Announcement Notice DE-FOA-0002867. "Industrial Efficiency and Decarbonization FOA."

The City of Sebastopol has been a member of Sonoma Clean Power (SCP) since starting service in 2014. In 2019, the City of Sebastopol passed a resolution declaring a climate emergency and establishes a goal of reducing city-wide greenhouse gas emissions to net zero by 2030. The City of Sebastopol is also a customer of SCP's EverGreen service, which provides our city facilities with 24/7 100% renewable power from local resources, including geothermal from the Geysers. Cyrq Energy's proposed demonstration project offers an opportunity for our region to play a key role in deploying technology that increases the flexibility and reliability of clean renewable power and is well aligned with Sebastopol's climate goals.

The City of Sebastopol strongly supports Cyrq Energy and SCP's approach to proactively engage the community in project development. A stakeholder engagement session hosted last year by SCP was a key step in selecting Cyrq Energy's proposal and allowed for early feedback on project design by labor groups, local governments, and environmental NGOs. A commitment from SCP and Cyrq Energy to continue prioritizing engagement will both improve project viability and maximize the economic and societal benefits to our local communities.

DOE's investment in long-duration energy storage, in conjunction with the diverse and experienced Cyrq Energy-led team, will identify and implement solutions to overcome technical and institutional barriers for full-scale deployment throughout a diverse set of regions. This work will be notably consistent with the vision articulated in the Justice40 initiative coordinating Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. The team will engage resident and community leadership throughout the project to reach historically under-served populations and communities, as well as foster connectivity and conditions for growth in these areas.

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City Council Meeting Packet of: February 21, 2023

7120 Bodega Avenue, Sebastopol, California 95472 Tel. 707.823.1153 Fax. 707.823.1135

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For any questions, please contact City Manager Larry McLaughlin at 707 823 1153.

Sincerely,

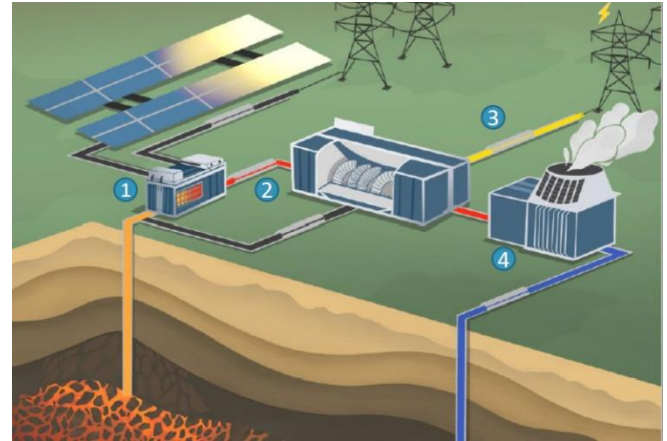
Neysa Hinton
Mayor
City of Sebastopol

GeoZone Long-Duration Thermal Energy Storage Demonstration Project

Overview

Cyrq Energy (Cyrq) has developed a novel application of thermal storage technology to increase the flexibility, climate impact, and value of geothermal generation at the Geysers.

Existing generation at the Geysers uses saturated steam produced from deep geothermal wells to spin turbines that provide a steady around-the-clock output of electricity. To augment the beneficial capabilities of the Geysers, Cyrq has proposed installing thermal storage upstream of turbines to superheat the steam during high-need hours for the grid.



Cyrq's thermal storage (1) will be installed upstream of turbines (2) at the Geysers to superheat the steam and increase output to the grid (3) during high-need hours with limited impact to cooling (4) and reinjection.

Super-heating the steam enables the existing turbines to operate much more efficiently—as much as doubling their power output. Increasing the output of the Geysers during high-need hours allows geothermal resources to maximize their climate impact by displacing the least efficient gas peaker plants that otherwise provide power at that time. The thermal storage system is then reheated from grid electricity during solar hours when renewable generation is plentiful and emissions are negligible.

Geothermal Opportunity Zone (GeoZone)

Cyrq's proposal was selected as a finalist in Sonoma Clean Power (SCP)'s Geothermal Opportunity Zone (GeoZone) solicitation. SCP is the default public power provider for Sonoma and Mendocino counties. In 2021, SCP started the GeoZone initiative to reinvigorate development of local geothermal resources—with a goal of adding 500 MW of new capacity. The Counties of Sonoma and Mendocino both passed resolutions to join SCP in forming the GeoZone. SCP released a solicitation for proposals from the geothermal industry to expand local geothermal capacity through new technology and development. Proposals to SCP's GeoZone solicitation were judged by a team including technical experts on the Geysers, a local permitting official, and a consultant to the Department of Energy's Geothermal Technology Office.

GeoZone finalists like Cyrq that develop new technologies and projects in the GeoZone that are compatible with community values, cost-effective, and scalable are offered a commitment from SCP to contract for power. SCP will also assist private partners with community engagement and policy advocacy. SCP expects to bring a cooperation agreement it has negotiated with Cyrq to its board for approval at its meeting on March 2nd, 2023.

Community Impact of Cyrq's Thermal Energy Storage System

Cyrq's proposed system increases the capabilities of the Geysers with minimal impact to the environment. The thermal storage system has a negligible surface footprint, includes no hazardous materials and no emissions, requires no drilling, and does not significantly impact the water requirements at the Geysers for cooling or reservoir recharge.

Unlike lithium-ion battery storage, Cyrq's storage system is completely comprised of equipment and materials that can be procured domestically. Installation and maintenance of Cyrq's system will be a significant creator of jobs. Most of the subcomponents will be assembled on-site and require skilled labor. Cyrq's GeoZone cooperation agreement includes a commitment to hire locally and focus on building local workforce capacity.

Enhancing the capability of the Geysers also has long-term financial and reliability benefits to the community. Enabling the Geysers to increase revenues by outputting at hours with higher wholesale prices improves their economic viability—allowing them to extend their operational life, improve the business case for new expansion, and continue providing valuable tax revenue to the community. Increased flexibility also increases the ability to use local power sources to maintain electric service to local customers when the grid is stressed.

Demonstration Project

To validate the scalability and feasibility of its thermal storage system, Cyrq has proposed installing a 5 to 10 MW demonstration project at a Geysers power plant in Sonoma County. The project will be capable of storing as much as 20 hours of energy. Cyrq has assembled a multidiscipline team including SCP, the National Renewable Energy Laboratory, Calpine (the existing operator of the power plant), Babcock & Wilcox (a power technology company), and EthosEnergy (a turbine technology company) to design and deploy the demonstration project.

The demonstration project will be more costly than deployment at-scale due to upfront engineering, cost uncertainty, and technology risks. To minimize the impact of funding the demonstration project to the SCP ratepayers that will contract for off-take from the system, Cyrq is pursuing grant funding. The Department of Energy's Office of Clean Energy Demonstrations is accepting applications for non-lithium long-duration storage for which Cyrq's technology is a great fit. SCP and Cyrq are also hoping to pursue anticipated grants from the California Energy Commission.

If successful, Cyrq's thermal storage system could be cost-effectively deployed at-scale at most Geysers units—potentially doubling the 750 MW of current capacity. Through the GeoZone initiative, SCP will be a primary customer of these commercial deployments.