DOCKETED	
Docket Number:	22-RENEW-01
Project Title:	Reliability Reserve Incentive Programs
TN #:	255105
Document Title:	Mainspring Energy Comments on DEBA DER GFO Draft Solicitation Concept
Description:	N/A
Filer:	System
Organization:	Mainspring Energy
Submitter Role:	Public
Submission Date:	3/15/2024 3:15:56 PM
Docketed Date:	3/15/2024

Comment Received From: Mainspring Energy
Submitted On: 3/15/2024
Docket Number: 22-RENEW-01

Mainspring Energy Comments on DEBA DER GFO Draft Solicitation Concept (22-RENEW-01)

Additional submitted attachment is included below.

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March 15, 2024

California Energy Commission
Docket Unit, MS-4
Docket No. 23-ERDD-01
715 P Street
Sacramento, California 95814

Re: *DEBA DER GFO Draft Solicitation Concept (22-RENEW-01)*

Mainspring Energy, Inc., ("Mainspring") files these comments in response to the California Energy Commission's Distributed Electricity Backup Assets ("DEBA") Distributed Energy Resources ("DER") Draft Solicitation Concept (henceforth referred to as the "Draft Solicitation Concept"), released on February 23, 2024.

About Mainspring

Driven by its vision of the affordable, reliable, net-zero carbon grid of the future, Mainspring has developed and commercialized a new power generation technology —the linear generator— delivering local power that is dispatchable and fuel-flexible. Mainspring's linear generator offers a unique non-combustion capacity and energy solution that simultaneously addresses the critical need of reducing greenhouse gas and criteria pollutant emissions, while also enhancing grid reliability and resilience. Linear generators use a low-temperature, uniform non-combustion reaction that maintains peak temperatures below the levels at which NOx forms (1500°C), resulting in near-zero NOx emissions at all loads – including during start-up. This contrasts with the combustion of a fuel with a non-homogenous flame-front, a process that results in higher temperatures and high NOx emissions. California's South Coast Air Quality Management District recently adopted linear generator-specific requirements in the form of Proposed Rule 1110.3, highlighting the low NOx operation of this technology.

Modular and scalable, Mainspring's linear generators can be deployed near load, either customer- or grid-sited, with the ability to immediately generate electricity from a range of renewable fuels – including both 100% hydrogen and ammonia (a hydrogen carrier). Mainspring's inverter-based technology offers a full range of valuable grid benefits including fast (and unlimited daily) starts/stops, a wide dispatch range from minimum to maximum load, quick ramping, and in many cases on-site fuel storage which allows linear generators to firm renewables for short or extended periods of time, thereby facilitating the continued rapid adoption of a reliable renewable energy grid. Our locally-sited linear generators add capacity and resilience to the grid while also providing enhanced flexibility to help avoid renewable curtailment. Finally, by virtue of their modular size (20.5' x 8.5' x 9.5') linear generators are space- and land-efficient and can be sited in load pockets, deferring expensive transmission & distribution investment.[1]

[1] For additional information on technical specifications and performance benefits, visit https://www.mainspringenergy.com/technology/.

I. Executive Summary

Mainspring applauds the California Energy Commission ("Commission") for advancing an important program to increase the reliability and resiliency of California's grid, and for the opportunity to provide comments on the Draft Solicitation Concept. Through these comments, we make the following recommendations:

- The Draft Solicitation Concept should clarify that "dispatch" allows for powering of on-site loads, without relying on grid electricity, during net peak load hours;
- Application evaluation criteria should value resources capable of providing load reduction for durations longer than the specified net peak load hour windows;
- The Draft Solicitation's requirements to bring multi-phase projects online are overly aggressive given the timing of project awards.

II. Comments and Recommendations

A. The Draft Solicitation Concept Should Clarify that "Dispatch" Allows for Powering of On-Site Loads, Without Relying on Grid Electricity, During Net Peak Load Hours

The Draft Solicitation Concept contains three Eligible project Groups and five Performance Demonstration Pathways ("pathway" or "pathways"). The Draft Solicitation Concept should be amended to create greater clarity around utilizing DEBA assets to power on-site loads, and thereby foregoing use of grid electricity, as a viable use case – as opposed to dispatching power to the grid. All five of the pathways covered in Section B(10) of the Draft Solicitation Concept appear to require "dispatch" in order for a project to be eligible.[2] Although none of the pathway descriptions indicate powering on-site loads is viable, the Draft Solicitation Concept states the following for Group 1 Projects (*emphasis added)*:

> Eligible project proposals in Group 1 must be available to supply electricity *or reduce load* at a minimum 6 MW of incremental rated capacity. The nominal capacity for Group 1 projects involving BTM storage must be sustainable for a duration of at least two hours during peak net load hours.

Based on the above passage, Mainspring understands the term "dispatch" to mean utilizing DEBA assets either to export power to the grid *or* to power on-site loads in lieu of using grid electricity. Clarifying and confirming that DEBA projects can power on-site loads during extreme events in the final solicitation is critical since, from a grid reliability perspective, it is equivalent to dispatching power to the grid for other electric customers. This is particularly essential given that microgrids, defined in state statute as capable of being "…isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure…", are an eligible technology type in both Group 1 and Group 2 projects.[3]

There are a host of use cases where existing operations will need to retain power for on-site loads – even, and in some cases especially, during grid outages. Among the most important are commercial and industrial applications where high levels of reliability are of paramount importance (e.g. critical infrastructure such as medical facilities, cold storage facilities, data centers, etc.). These and similar facilities cannot afford long-duration outages; deploying resources through DEBA that can maintain power supply for on-site loads during extreme events –and in the process reducing the net demand of grid electricity– increases the reliability of the system as a whole by effectively eliminating the need for the grid to serve

[2] Draft Solicitation, p. 14.
[3] California Code, Public Utilities Code - PUC § 8370(d).

those (generally large) loads. Similarly, electrified transportation infrastructure must maintain reliable and consistent operations during extended grid outages as the general public cannot afford to lose access to the electric buses, garbage and drayage trucks, and freight movement that provide critical and essential services. As electrification efforts take hold, communities relying on electrified infrastructure should not be subjected to the status quo of being forced to rely on diesel backup generators that negatively impact air quality when the grid goes down. Ensuring continued operation of electric vehicles ("EVs") –especially medium- and heavy-duty EVs– is paramount, particularly in light of the massive increase in the volume of vehicles, charging infrastructure, and capacity needed to meet state EV goals and in the context of increasingly frequent, more volatile, and longer-duration outages.[4] These selected examples are representative of a large pool of activities where operations must continue – regardless of grid conditions. Empowering resources to operate by supplying on-site loads enables projects to meet the DEBA program's stated goals of utilizing "distributed energy assets will serve as on-call emergency supply or load reduction for the state's electrical grid during extreme events."[5] Mainspring appreciates the Commission more clearly delineating this in the final solicitation.

B. Application Evaluation Criteria Should Value Resources Capable of Providing Load Reduction for Durations Longer Than the Specified Net Peak Load Hour Windows

The Draft Solicitation rightly recognizes that, "Due to the increased frequency, intensity, and duration of extreme events, the grid is more vulnerable and therefore needs greater investments in cleaner technologies, in alignment with the state's clean energy goals, to bolster reliability." However, the proposed approach to determining the rated capacity of resources delineated in the Draft Solicitation states:

> To evaluate and compare project proposals with varying durations of nominal capacity, or maximum power output or load reduction, projects will be compared on the basis of 4-hour or "rated" capacity.
>
> Projects with a nominal capacity that can be maintained for a duration of less than 4 hours will be normalized to rated Capacity. The rated capacity of the project is the average power output or load reduction level that could be sustained over a 4-hour period. For a project with a nominal capacity level that can be maintained for 4 or more hours, the nominal and rated capacity will be considered equal.

While the requirements proposed are adequate for short-term extreme events, application evaluation criteria should explicitly value event performance of *greater than* 4 hours, and weighted by performance across total possible hours, to account for the current and future reality that the Draft Solicitation rightly appraises California is facing. Mainspring understands the Draft Solicitation defining duration in line with recognized net peak load hours (4 p.m. to 9 p.m.); however, we strongly urge the Commission to adjust the scoring criteria for projects that are capable of providing output for longer periods – on a marginally-increasing scale. Since, as noted, grid outages are increasing in "frequency, intensity, and duration", incentivizing resources capable of weathering even extended (especially multi-day) outages

[4] The Commission has found MDHD ZEVs will require an "…about 109,000 depot chargers and 5,500 public chargers for 155,000 vehicles in 2030". This represents an increase of 21,000% in just a nine-year period compared to the number of MDHD vehicles CALSTART determined as operational in California in 2021. California Energy Commission, "Assembly Bill 2127 Electric Vehicle Charging Infrastructure Second Assessment Staff Draft Report", p. 59. August 2023.
[5] Distributed Electricity Backup Assets (DEBA) Program Guidelines, First Edition, p. i.

represents both the most cost-effective use of state funds as well as the most secure insurance policy against a worsening climate reality. Mainspring suggests the following amendments (shown below **in bold**) to Evaluation Criteria Section 2, as an example:

2. Contribution to Reliability The application will be evaluated on:
    a. The additional capacity (in MW) the project can deliver.
    b. The number of hours during net peak load hours (4 p.m. to 9 p.m.) that the project is capable of operating.
    c. The number of hours beyond net peak load hours that a project is capable of operating
    d. The degree to which the proposed project will:
        i. Support grid reliability during net peak load hours through providing load reduction or supply, or both.
        ii. Provide energy capacity with high-precision metered accuracy.
        iii. Demonstrate dispatchability and responsiveness to a diverse range of event frequencies, durations, and notification periods on a real-time, day-ahead, or on-call basis.
        iv. Minimize the extent to which successful deployment of awarded capacity or stored energy during emergency events may be impacted by any limitations or exceptions. v. Incorporate unique design features that enhance the overall diversity of resources participating in the state's Strategic Reliability Reserve.
    e. The degree to which the project will contribute to reliability post- DEBA grant agreement term, such as a pathway for incorporating the DEBA incentivized capacity into the Resource Adequacy framework of the applicable LRA (as a supply-side or load-modifying resource, or some other proposed pathway.

C. The Draft Solicitation's Requirements to Bring Multi-Phase Projects Online are Overly Aggressive Given the Timing of Project Awards

The Draft Solicitation proposes the opportunity for projects to utilize a phased approach, with such projects required to demonstrate "…at minimum 25 percent of total project capacity installed and online by May 1, 2025, 50 percent by May 1, 2026, and 100 percent by May 1, 2027, and in each subsequent year." While Mainspring appreciates Commission staff's recognition that some projects are most effectively developed in phases, the timing of the structure that is advanced in the Draft Solicitation is overly aggressive in the context of the proposed schedule for awards, as well as operational realities. The Draft Solicitation's schedule prospectively indicates that Notice of Proposed Awards could be released in September 2024, with approval at a CEC Business Meeting for the General Application Period prospectively taking place in September 2024. Assuming the proposed schedule remains valid, a period of 10 months to undertake all the necessary steps to begin actual development, construction, and operationalization of a project –notably including interconnection– is extraordinarily short for projects the smallest of which are 6 Megawatts. As demonstrated in the 2023 IEPR, current utility interconnection timelines for projects of this size is multiple *years,* driven by supply chain constraints arising from the period needed to manufacture and deliver new appurtenant equipment (e.g. the switchgear and transformers necessary to serve this new load), the volume of interconnection applications utilities are receiving, and other factors.[6] Given the Draft Solicitation states that project readiness require, "Any utility

[6] California Energy Commission, "2023 Integrated Energy Policy Report", p. 27.

and/or balancing authority interconnection studies or approvals that must be completed for the project to begin operations", the proposed timeline for phasing projects of this magnitude is at odds with the reality on the ground, such that few applications are likely willing to undertake the proposed phased approach. This, in turn, serves to reduce and/or delay the amount of capacity that could be rapidly brought online under the DEBA program.

As such, Mainspring recommends that the Commission revise the proposed phased timeline approach to more accurately account for the administrative, permitting (e.g. interconnection and building permits), and supply chain realities (e.g. transformer delays) project developers will face by. This could be accomplished either by adjusting the phasing requirements to begin with 50% of capacity available by May 1, 2026, or to enable projects in the interconnection queue to be considered to be "in process". This allows sufficient time for projects to navigate the considerably complex interconnection application process, alongside other requirements to facilitate phases deployment of projects.

III. Responses to Questions for Stakeholders

Solicitation Requirements

1. *Are the minimum and maximum award amount funding levels and match requirements appropriate for each Group?*

Based on initial review, the minimum and maximum award amount funding levels seem appropriate.

2. *Is the proposed timeline in the solicitation, including application submission windows, reasonable to accommodate project proposals for project group?*

Broadly, the proposed timelines are appropriate. However, it is essential that the Commission releases responses to formal questions rapidly, as this is essential to informing the development of complex projects.

3. *Is it reasonable to allow project proposals that do not have all sites or customers pre-identified at the time of application? Are there any concerns with this approach?*

Yes, as many projects require longer development timelines than the relatively short period between solicitation release and application due date.

4. *To mitigate the risks of funding multiphase projects, staff have proposed minimum deployment targets for multiphase projects under "Project Readiness" (25% by June 1, 2025, 50% by June 1, 2026, and 100% by June 1, 2027). Are these proposed deployment targets reasonable? What measures should the CEC take in the event of a deployment shortfall?*

Please see Mainspring's response to project phasing in Section II.C of these comments.

5. *Is the proposed payment structure, with 50% of the award disbursed during project development, and 50% disbursed annually based on successful performance, adequate to ensure successful performance by DEBA assets, including during emergencies?*

While this structure appears appropriate, Mainspring requests clarification of what performance payments, if any, will be made in the event that no extreme events take place in a season. The Commission

should further clarify the exact timing and structure of payments made during construction and operationalization of projects, particularly as it relates to the interconnection process. Additionally, requests the Commission clarify how uncompensated funds will be used in the context of future DEBA program years.

6. *This GFO proposes to amend the DEBA Program Guidelines, First Edition, to grant eligibility under Group 1 to projects connecting to the transmission grid behind-the meter at a load center not receiving distribution service. Please comment on whether this use case is of interest and, if possible, describe potential proposed projects and the reliability benefit they would offer.*

Enabling behind-the-meter transmission-connected resources in the DEBA program would unlock valuable benefits. These types of projects could defer transmission investments, expedite load connections, and provide local resource adequacy. Specifically, by adding capacity directly at load centers, the need for bulk system upgrades to meet demand growth would be reduced, thereby lowering costs. Meanwhile, load could connect faster by leveraging behind-the-meter resources while waiting for transmission upgrades. Additionally, local resource adequacy supplied by these resources (acting as load modifying resources) would benefit load centers by reducing needs to procure capacity elsewhere. Overall, this DEBA eligibility clearly encourages beneficial projects that enhance system reliability and resiliency in a cost-effective manner.

Project Requirements

7. *Are the Project Group definitions and requirements clear and adequate to sufficiently target DER technologies and projects capable of supporting statewide grid reliability?*

Please see Mainspring's response in Section II.A of these comments.

8. *Are the minimum project capacity requirements for each Group reasonable or should they be adjusted?*

Mainspring requests that minimum project capacity for Group 1 be reduced to 2 MW to enable siting of DERs at sites that are space constrained such that many of the eligible technologies listed may not be able to provide localized resilience.

9. Are there any additional eligible technologies that should be included, or any currently eligible technologies that should be excluded?

Mainspring does not offer a response to this question at this time.

10. *Are the proposed performance pathways sufficient and flexible enough to accommodate the variety of eligible technologies and project groups targeted by this solicitation?*

Please see Mainspring's response in Section II.B of these comments.

11. *What data should be required from DEBA Program participants for measurement and verification purposes as well as other public reports and initiatives?*

Mainspring does not offer a response to this question at this time.

12. *Are the metering and telemetry requirements for projects sufficient for measurement and verification purposes and determining performance of DEBA funded projects?*

Mainspring does not offer a response to this question at this time.

Miscellaneous

13. *What are the key performance indicators (KPIs) or metrics that should be used to evaluate and score VPP and Load Flex Aggregation projects and assess whether they will be reliable DEBA assets?*

In line with Mainspring's response in Section II.B of these comments, measuring reliability across the maximum number of hours will maximize the value of DEBA assets to California's grid.

14. *Are the proposed evaluation criteria, including preference points criteria, reasonable and sufficient to achieve the aims of funding DER projects that best bolster grid reliability in the state?*

Mainspring broadly agrees with the evaluation criteria, with the exception of valuing the maximum number of available hours as described in Section II.B of these comments.

15. *Are the provisions for supporting projects that either benefit or are located in DACs sufficient? What other application components could facilitate greater participation from projects located in or benefiting DACs?*

Mainspring does not offer a response to this question at this time.

16. *What are the potential pathways for DEBA-funded projects across different Balancing Authorities and LRAs to continue to provide reliability value after the conclusion of the DEBA program?*

Mainspring does not offer a response to this question at this time.

17. *Are there any other recommended improvements or necessary clarifications for the CEC to consider for this draft solicitation concept document?*

Mainspring does not offer a response to this question at this time.

IV. Conclusion

Mainspring appreciates the opportunity to comment on this important Draft Solicitation, and looks forward to collaborating in the future.

Sincerely,

/s/ Serj Berelson

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