November 30, 2022

Email to: docket@energy.ca.gov
Docket Number: 21-ESR-01
Subject: Request for Information on Clean Energy Resources for Reliability

Re: Comments of the California Energy Storage Alliance on Request for Information on Clean Energy Resources for Reliability

Dear Sir or Madam:

The California Energy Storage Alliance ("CESA") appreciates the opportunity to comment on the Clean Energy Resources for Reliability Request for Information ("RFI") released on November 3, 2022. CESA acknowledges the efforts of the California Energy Commission ("CEC") to mitigate the risks California's electric grid faces today and consider the different tools available for deployment over the coming years.

CESA is a 501(c)(6) organization representing over 120 member companies across the energy storage industry. CESA member companies span the energy storage ecosystem, involving many technology types, sectors, configurations, and services offered. As the definitive voice of energy storage in California, CESA is involved in a variety of venues looking at the deployment of distributed energy storage, both in-front of the meter ("IFOM") and behind-the-meter ("BTM"). These venues include near-term emergency reliability proceedings, demand response ("DR") programs, and long-term planning proceedings and initiatives looking to deploy distributed storage to support a more reliable, cleaner, and more efficient electric grid. Given that distributed storage is one of the key resource types that will be deployed in the Distributed Electricity Backup Assets ("DEBA") program, CESA's background and experience in providing technical and policy insights are of particular relevance to this matter.

I. INTRODUCTION AND SUMMARY.

This RFI follows a workshop held by the CEC on Clean Energy Alternatives for Reliability, where CEC staff presented on near-term electric reliability and market risks in California, as well as long-term planning for clean energy and reliability. The workshop also covered a myriad of requirements for CEC studies and program developments that were established during the 2022 legislative session. Requirements include:

- Conducting a cost comparison of extending Diablo Canyon Nuclear Power Plant ("DCPP") operations versus deploying other resource portfolios
- Creating a goal for the deployment of load shifting resources in California

- Developing a Clean Energy Reliability Investment Plan ("CERIP") to distribute $1 billion in funding for this program

- Developing the DEBA program to incentivize the installation of cleaner and more efficient distributed energy assets that would serve as on-call emergency supply or load reduction for the state's electrical grid during extreme events

The RFI follows up on the requirements presented at the workshop by asking specific questions related to two items. First, the characterization of resources to be used in the variety of analyses the CEC will conduct. Second, the development of DEBA program parameters including the types of resources and customers that should be targetted, incentive amounts, and measurement and verification ("M&V") to ensure that resources deliver during emergency events.

In this response to the RFI, CESA largely focuses on the structure and implementation of the DEBA Program. On November 10, 2022, CESA submitted comments in this docket on the Clean Alternatives for Reliability Workshop, which outlined our proposed principles for the DEBA program:

- **Simplicity:** The CEC should seek to minimize complexity given the goal to launch the program before Summer 2023 to help meet near-term capacity needs. Simplicity should be pursued both in program administration and program participation requirements.

- **Universal accessibility:** DEBA should be designed to be accessible to as many customers as possible, including from different geographies, income levels, and load-serving entities ("LSEs"), and should be inclusive distributed in-front-of-the-meter ("IFOM") resources.

- **Clean energy deployment:** The CEC should prioritize the deployment of clean resources within DEBA to advance the achievement of California's long-term climate and air pollution goals.

CESA recommends that the CEC follow these proposed principles when assessing different aspects of program design proposals submitted by stakeholders.

During the workshop, the CEC discussed a wide variety of technologies and project configurations that could potentially be eligible for DEBA funding, including energy storage. CESA believes that energy storage should be prioritized in this program as a technology that is both dispatchable to meet grid needs and generates no point-source greenhouse gas ("GHG") and air pollutant emissions. This positions energy storage to be a key resource to meet the goals of DEBA – *i.e.*, to add capacity to California's Strategic Reliability Reserve and to replace or reduce the use of heavily emitting diesel generators for backup power. Given that energy storage represents inherently non-emitting resources, it is also able to provide clean, everyday electric capacity outside of emergency days while distributed and/or customer-sited storage can provide resiliency for localized outages. A wide variety of energy storage technologies and configurations can be great candidates for DEBA funding, and the CEC should allow all energy storage technology types to

apply. With regards to specific elements of program design, CESA recommends slightly different approaches for in-front of the meter ("IFOM") energy storage systems and multi-customer microgrids, compared to those for behind-the-meter ("BTM") energy storage systems and make the following general recommendations:

- The CEC should use a Grant-Funding Opportunity ("GFO") Model for IFOM energy storage systems and multi-customer microgrid projects modeled after the Electric Program Investment Charge ("EPIC") Program and Microgrid Incentive Program ("MIP").

- The CEC should use a Fixed Incentive Model for BTM projects and establish a $0.50/Wh incentive level for BTM energy storage resources and $1/W for BTM renewable generation resources.

- Market participation should not be mandated for either IFOM or BTM resources.

- Some funds should be allocated in future years to allow for program modifications as needed.

II. THE CEC SHOULD USE A GFO MODEL FOR IFOM ENERGY STORAGE SYSTEMS AND MULTI-CUSTOMER MICROGRID PROJECTS MODELED AFTER THE EPIC PROGRAM AND MIP.

For IFOM energy storage resources and multi-customer microgrids, CESA recommends that the CEC adopt a "GFO Model" for DEBA resources, which is a structure familiar to the CEC with its use in the EPIC Program supporting electric-grid research, demonstration, and pilots. Like with the EPIC GFOs, there may be a wide variety of project types that could qualify and apply for DEBA funds and support the DEBA Program's goals and objectives, making it difficult to draw an apples-to-apples comparison of, say, a standalone IFOM energy storage project versus a multi-customer microgrid project. Different project types may have different use cases, operating configurations and modes, and benefit streams, even though they each support the state during emergency events as on-call resources.

The GFO Model is best suited for IFOM energy storage resources and multi-customer microgrids because there are key drawbacks to other potential approaches. Unlike for BTM resources, where a single or small number of incentive levels can be workable for a broad class of BTM technology types and customer classes, CESA cannot fathom a single incentive level that could be workable for the wide variety of IFOM project types. An all-source competitive solicitation under a Request for Proposal ("RFP") Model could also be developed, similar to what is employed by load-serving entities ("LSEs") to meet their Resource Adequacy ("RA") and Renewable Portfolio Standard ("RPS") obligations, but this would likely entail more sophisticated, lengthy, and often opaque evaluation of proposals or bids. In doing so, it may take the CEC more time to set up, design, and run an RFP, which may be less familiar to the CEC compared with a GFO model. CESA would also have questions about whether and how the RFP would consider various benefits (*e.g.*, resiliency

capabilities, location in disadvantaged communities) and avoid a tendency to "race to the bottom" in terms of offering cheap capacity. While there is some appeal to the RFP in allowing the CEC to manage the volume of applications or proposals, this can be better achieved through the GFO Model.

As such, CESA believes that the GFO Model is the most favorable structure for IFOM energy storage systems and multi-customer microgrids. Like an all-source RFP, the GFO Model would still allow a variety of project types to apply and would offer the advantages of being a familiar structure to the CEC, allowing for the prioritization of key project qualities (*e.g.*, resiliency, expected useful life, disadvantaged community and/or low-income customer benefits), and being a program design that can be launched and administered quickly, likely before the end of Spring 2023. Furthermore, since the GFO Model would have upfront and established screening and scoring criteria, it would not only streamline the CEC's evaluation of applications/proposals but also clearly signal to industry on desired and "most competitive" project attributes.

In summary, under CESA's proposed GFO Model, modeled after the CEC's EPIC GFOs and the California Public Utilities Commission's ("CPUC") MIP, the CEC would establish GFO application or proposal submission windows during which applicants would submit projects or portfolios for funding, along with requested funding amounts and accompanying information and documentation substantiating the application/proposal. The requested funding amount would be open ended, allow for applicants to provide information on how much DEBA funds are needed to facilitate the development of the new IFOM/microgrid asset, and allow for the CEC to quickly evaluate projects based on cost competitiveness. The CEC would then assess these applications/proposals against an established set of screening and scoring criteria for three different "product" categories, which enable different minimum attributes and means by which on-call emergency supply could be provided. Finally, a prescriptive points system would be in place as the scoring criteria, supporting streamlined evaluation and clear market signals to the market on desired and critical attributes of any given project. CESA details each component of the GFO Model further in the following paragraphs.

First, CESA recommends that the CEC establish some basic screening criteria, such as the latest online date by which the CEC would find useful for the use of DEBA Funds (*e.g.*, Summer 2027 given the five-year authorization of funding).[1] Minimum project or portfolio sizes could also be established (*e.g.*, 3 MW) to balance between: (a) inclusiveness of the range of potential project and technology types; and (b) reasonable volume of applications and/or proposals for the purposes of CEC administration and management of the GFO process. Additionally, while not specified, CESA believes another screening criterion could be requiring that projects are interconnected at the distribution level, aligning with the "D" of DEBA and considering local distribution resources represent a class of resources that need greater levels of support. There may be other screening criteria established, but at this stage, CESA believes the aforementioned three areas may be sufficient for the purposes of the preliminary launch of the DEBA Program.

[1] Online dates can also be used as scoring criteria to favor projects that can come online earlier given the near-term need for reliability and capacity.

Second, CESA recommends that the CEC establish a few product types for the GFO, thus facilitating a streamlined and simpler apples-to-apples comparison of core attributes and capabilities of different project types. Within the funding request application/proposal, the applicant should elect one of three product types as shown in the table below. Since the definition of "on-call emergency supply" is not specified in statute, the CEC can take flexible approaches to fulfilling the intent of the statute while also simplifying evaluation through a pre-determined set of product categories by which on-call emergency supply would be realized. Without the product categories, CESA is concerned that evaluation will become more complicated with too much of an open-ended approach to how applicants can substantiate such operations. On the most part, CESA anticipates IFOM resources will make energy available through the California Independent System Operator ("CAISO") market and thus be economically available and dispatchable on a day-by-day basis in support of the state's overall reliability needs, but DEBA should not preclude the consideration of projects that can serve as emergency-only resources. In order to standardize application review, CESA recommends the following performance compliance "products" that capture common resource configurations and ensure that resources will be available during times of grid need:

Performance Product	**Example Eligible Resources**	**Performance Obligation**
Category 1: Minimum 4-hour CAISO Market Resource	4-hour storage, firm generation, multi-customer microgrids with 4-hour duration resources	Daily bidding into the CAISO Day-Ahead Market with capability to deliver energy in 4 consecutive hours between 4:00 p.m. – 9:00 p.m. PT.
Category 2: Minimum 8-hour CAISO Market Resource	8-hour storage, firm generation, 8-hour duration microgrids	Daily bidding into the CAISO Day-Ahead Market with capability to deliver energy for 8 hours, including 4:00 p.m. – 9:00 p.m. PT.
Category 3: Emergency-Only Resource	Any size or type of resource	Dispatch is triggered by the issuance of an Energy Emergency Alert ("EEA") Watch or declaration of any stage of EEA. Out-of-market dispatch could be coordinated between CAISO and a Board overseeing the dispatch of these DEBA resources.

Given that participation in the CAISO energy market is a source of revenue for IFOM systems, CESA anticipates that many of these systems will be incentivized to bid and dispatch frequently, which will also likely reduce the total requested funding amount from the DEBA Program. However, we stress the importance of not requiring RA deliverability to qualify for any of the product types, particularly for the market-integrated product categories (*i.e.*, Categories 1-2), which would only serve to limit the range of applicants and is not a perquisite by statute to receive DEBA funds. Granted, RA deliverability would be desirable since it would position these projects

to qualify for various LSE procurement obligations, but for emergency purposes, there is still critical value in having projects provide energy-only capacity to the CAISO market.

In the table above, CESA proposes to establish a Category 2 product type that would signal and incentivize the submission of applications/proposals with 8 hours or more of minimum duration. Considering the EEA periods lasted more than four hours on certain days of the September 2022 heat wave and the impact to conventional 4-hour storage on low-solar days,[2] CESA believes that it is prudent to establish the above Category 2 product type, which may also support LSEs' compliance with their Mid-Term Reliability ("MTR") procurement obligations for at least 1,000 MW of long-duration energy storage ("LDES") by 2026. CESA understands that the CEC is separately administering a $140-million LDES Program and may receive additional funds in the 2023 Legislative Session as well as potentially from the Department of Energy ("DOE"), but the currently-available funds are limited and the future funds are still uncertain at this time, such that the DEBA Program should also explicitly signal the need and desire for 8-hour resources through the Category 2 product type. Along the same lines, CESA also proposes the Category 3 product type to support systems looking to provide non-market-integrated energy/capacity only during emergency events and/or to provide backup power in microgrid configurations, which provides its own form of on-call emergency supply or "demand response" not requiring the CAISO system to serve the load already provided by resources under an islanding configuration. For systems looking to only provide reliability services during emergencies, the CEC can look to the structures of the Emergency Load Reduction Program ("ELRP").

Third, CESA proposes that the CEC establish scoring criteria to evaluate applications and/or proposals and assign "points" for particular desired or preferred attributes. The qualitative project attributes described in Table 4 of the RFI could be incorporated in some form into a point-scoring methodology, which is of relevance to our proposed GFO Model, with the exception of customer acceptance that is only applicable to BTM systems. However, given DEBA's focus on ensuring system reliability and getting resources online quickly, we recommend weighing the following attributes more heavily: readiness, permitting, interconnection, and dispatchability. We also recommend adding consideration for the following attributes: commercial online date ("COD") to prioritize resources that can meet earlier CODs, and resiliency services and placement in high fire-threat districts ("HFTD") to prioritize resources that can provide backup power to customers during Public Safety Power Shutoffs ("PSPS") or other outages.

With the point-scoring methodology in place, the CEC can more seamlessly evaluate applications and/or proposals along the attributes and the equivalent points for different quantitative attributes on a sliding scale or for different qualitative attributes on a binary basis. Depending on the relative weights that the CEC wishes to apply to different attributes, the points system can reflect that consideration, though we caution against point caps on certain attributes that would bias against certain project types (*e.g.*, larger projects). Once the total points for a particular application and/or proposal are tallied, the CEC can develop a "final score" that is denominated on a points per dollars requested basis, thereby ascribing greater value to desired attributes and benefits and identifying

[2] "Summer Market Performance Report June 2022 - CAISO," November 2, 2022. At 146-154 http://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf

those that maximize them on a per-dollar basis. In doing so, the CEC would also be agnostic to project size or funding request amount, if the "bang for buck" is relatively high compared to competing applications or proposals. Even further, the final score per funding requested amount could be denominated in ways that highlight the expected useful life of resources to ensure long-lasting resources are fairly scored and facilitate the development of DEBA projects that can far outlast the funding authorization and extend to meeting long-term needs, such as in 2040 or 2045.

To illustrate, CESA provides the following example point-scoring methodology that could be adopted or adapted for the GFO portion of the DEBA Program:[3]

Point Category	Point Sub-Category	Scoring Method	Project Metrics	Sub-Category Points	Total Category Points
Distribution-Connected Asset	MW Deployed	0.5 point per MW	8 MW	4	8
	MWh Deployed	0.5 point per 4 MWh	32 MWh	4	
Project Location	Location in DAC	Yes/No (1/0)	Yes	1	2
	Location in Low-Income Community	Yes/No (1/0)	No	0	
	Location in HFTD	Yes/No (1/0)	Yes	1	
Grid Services	Energy Deliveries 4-9pm in Local Capacity Area	Yes/No (3/0)	No	0	1
	Resiliency	1 point per 4 hours islanding capability	4 hours	1	
Project Delivery	Viability Risk Score	Qualitative 1-5 rating (5 = most viable)	3	3	4
	Timing	Summer 2023 = 5 Summer 2024 = 4 Summer 2025 = 3 Summer 2026 = 2 Summer 2027 = 1	8/1/2027 COD	1	
				Total Points	**15**
				DEBA Funds Requested	**$11M**
				Final Score (Points/$1M)	**1.36**

For the release of GFOs, CESA recommends that the CEC plan on releasing solicitations on an annual basis over the next five years, with dedicated amounts of funding for each solicitation. With the CEC's experience in running these types of solicitations in the EPIC and other programs, CESA has full confidence in the team's ability to roll out a GFO solicitation quickly.

[3] In terms of expected useful life ("EUL"), if two equivalent projects score 15 – and one lasts 10 years (Project A) and the other lasts 30 years (Project B), the per-dollar score could be extrapolated across the full lifespan of the project. As a result, Project A could score 15 points x 10 years = 150 EUL points and Project B could score 15 points x 30 years = 450 EUL points. If both projects requested $11 million, Projects A and B would have final scores of 13.6 and 40.9, respectively. Under this approach, there would be a clear preference for the CEC to support projects that can provide distributed reliability across a longer period of time, pointing to a prudent use of taxpayer dollars.

III. THE CEC SHOULD USE A FIXED INCENTIVE MODEL FOR BTM PROJECTS AND ESTABLISH A $0.50/WH INCENTIVE LEVEL FOR BTM ENERGY STORAGE RESOURCES AND $1/W FOR BTM RENEWABLE GENERATION RESOURCES.

In contrast with IFOM resources, which are typically larger and operated independently from other resources unless in hybrid or co-located configuration, BTM resources can provide value when operating both as a singular resource or when aggregated into a larger response. While a single 15-kW residential storage system would not make a material difference to the California grid, 300 households participating in a Virtual Power Plant ("VPP") aggregation can be coordinated to provide 4.5 MW of response, both in load-reduction and potential exports. On the other hand, some non-residential customers have large loads and can provide over 1 MW in demand response on their own. These types of coordinated responses from customers was proven to save the grid from impending outages on September 6, 2022, when market-integrated and non-market-integrated DR provided over 1,200 MW of load reduction.[4]

However, BTM projects can have difficulty participating in open, all-source RFPs against larger IFOM resources that are able to leverage economies of scale, flexibly site projects where land and interconnection capacity is most economic and have single points of development. By contrast, project specificity can be harder to achieve with a BTM aggregation, which can have customers acquired and joining aggregations over time to create the portfolio by the determined date for delivery. Therefore, CESA recommends considering BTM projects separately from IFOM given these differences in project development timelines and approaches.

Having transparent and upfront incentive amounts helps the building of new BTM assets. Given the wide variety of resources that can be deployed, having clarity surrounding the amount of money that can be offered to customers is important. This will allow developers to seriously consider whether they can make a compelling value proposition to customers and make project financing work with the incentives being offered. Additionally, having a fixed incentive for BTM resources will allow applications to be accepted on a rolling basis, instead of having to wait for an application window to open or close in order to compare a wide variety of offers on a $/kW or $/kWh basis. The number of applications could be extremely large depending on the size of the portfolios being offered or whether applications are processed on an individual project basis. All in all, an upfront and transparent incentive is straightforward to understand and immediately bankable and allows funds go out quickly instead of waiting for a collective evaluation of all RFP/GFO applications.

In the May 2022 Revised Budget, the Newsom Administration proposed $5.2 billion for California's Strategic Reliability Reserve, targeting a reliability reserve of 5,000 MW, or $1 million per MW of capacity. CESA is not aware if the CEC has a particular deployment target for the DEBA Program but given that the CEC has $700 million available in program funding, CESA believes that a deployment target of 700 MW is reasonable. Many BTM energy storage systems and other demand-side resources have minimum durations of two hours. Therefore, $1 million per MW of

[4] CAISO "Summer Market Performance Report September 2022" November 2, 2022, at 39. Available at: http://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf

capacity translates to $1.00/W for BTM renewable generation projects[5] or $0.50/Wh for BTM energy storage projects.[6]

To reap the benefits of accepting applications on a rolling basis while not processing hundreds of applications for very small systems, an administrative burden, CESA suggests that the CEC take lessons from the Distribution Investment Deferral Framework ("DIDF") Partnership Pilot, which is leveraging BTM aggregations to defer distribution investments. In the Partnership Pilot, there are transparent payment amounts for the deployment of new technologies to support investments in distribution deferral needs ($/kW), reserving capacity ($/kW-month), and performance or energy delivered ($/kWh) in exchange for meeting operational parameters that are shared by the IOUs. However, offers are placed by aggregators for aggregations, not individual projects. Offers for portfolios are accepted on a rolling basis for portfolios within a dedicated window, with provisions in place for the adding of individual customers to the portfolio. In the Partnership Pilot, aggregators are incentivized to create larger portfolios, given that 90% of the Partnership Pilot MW/MWh needs must be met before any contracts are executed. Since every incremental MW is helpful for reliability and DEBA is not targeting a specific MW in a go or no-go scenario for resource build, CESA recommends that the CEC establish a minimum aggregation/project size of 100 kW to streamline submissions. No limits should be placed on the maximum size of individual resources or aggregations, as larger non-residential customers can provide valuable resources to DEBA.

Once an aggregator applies for funds, the CEC should establish that the application is complete and meets minimum criteria for developer experience, technology readiness, COD, participation term, and other needs for the viability of the aggregation. Once the application is accepted, DEBA funds should be reserved for the aggregator's portfolio of projects. In order to prevent developers from reserving significant amounts of funds for projects that do not ultimately get built, CESA recommends that the CEC establish terms for development security collateral in order to ensure that projects to incentivize a developer who is awarded a contract to complete its project on time and at the contracted level of performance and to maintain the level of project performance over the term of the agreement. Similar contracts are in place for the Partnership Pilot, which could be adapted for the purposes of the DEBA Program for BTM aggregations.

CESA acknowledges that this level of incentive may not unlock participation from all customer segments, particularly low-income customers, and DEBA could consider adders to help encourage adoption amongst certain customers. Additionally, to enable more customer participation, the CEC should allow for stacking of DEBA funds with incentives from other programs, such as the Self-Generation Incentive Program ("SGIP"), Disadvantaged Communities Single-Family Solar Homes Program ("DAC-SASH"), Solar on Multifamily Affordable Housing Program ("SOMAH"), electric vehicle adoption incentives, or other technology incentives that do not require participation in emergency reliability grid services.

[5] Since BTM renewable generation likely does not have energy limits, denominating an incentive at $/W is more appropriate than $/Wh.
[6] No caps or derates on the incentive amount for incremental energy duration should apply given the need for as much energy as possible.

In order to spread the funding over time, CESA recommends that the CEC create multiple application windows, during which applications are accepted and processed on a rolling basis until funding is exhausted or the window closes. Unused funding would then rollover to future windows.

IV. MARKET PARTICIPATION SHOULD NOT BE MANDATED FOR EITHER IFOM OR BTM RESOURCES.

Market participation is not the only way to elicit emergency response. CAISO's 2022 Summer Report estimates that 1,200 MW of non-market resources, including load reduction and exports from customers participating in Emergency Load Reduction Program ("ELRP"), Demand Side Grid Support ("DSGS"), load-modifying DR, and other programs, were provided during September 6, 2022 when the CAISO triggered an EEA 3 event.[7] Given this significant potential, CESA opposes making CAISO market participation mandatory for BTM resources receiving DEBA funds.

Currently, BTM DERs participate in the CAISO market via Proxy Demand Response ("PDR"), a market product that provides compensation for load reduction at a customer site only. This does not recognize the incremental export capacity that could be provided by these resources, and limits market contributions from facilities with low loads during times of grid constraint, like schools and commercial facilities that do not operate in the evening or on weekends. Currently, the Distributed Energy Resource Provider ("DERP") model compensates for exports, but this pathway has not been used by developers given that DERP resources are ineligible for RA credit.[8]

On the other hand, there are programs overseen by the CEC/CPUC or created by individual LSEs that compensate for exports, including ELRP and DSGS. Additionally, a wide variety of LSEs are creating new, innovative programs for VPPs and BTM systems. Instead, the CEC should make a wide range of deemed-compliant pathways available for eligible IFOM and BTM projects to commit to being available during grid emergencies, including:

- Wholesale market participation
- ELRP
- DSGS
- Investor-owned utility ("IOU") DR Programs, such as the Base Interruptible Program ("BIP") and Capacity Bidding Program ("CBP")
- Other LSE Programs

[7] CAISO "Summer Market Performance Report September 2022" November 2, 2022, at 109. Available at: http://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf

[8] CESA and other parties have submitted proposals to assign an RA Qualifying Capacity value for DERP resources, but these proposals have not been adopted as of the submission of these comments.

- Demonstrated islanding capability during EEA events/triggers

Additionally, providing a wide range of compliance options will also allow customers to pick those programs with revenue streams that work best for their financing needs and operational capabilities. Although the CEC highlighted this in the Clean Alternatives Workshop on October 28, CESA would like to emphasize that DEBA is an incentive program designed to enable the installation of resources. DEBA incentives are not in themselves performance payments for response and should not take away from the payments provided by market participation or DR programs.

V. SOME FUNDS SHOULD BE ALLOCATED IN FUTURE YEARS TO ALLOW FOR PROGRAM MODIFICATIONS AS NEEDED.

Given the experiences of nine straight Flex Alert days in 2022, CESA understands the CEC's desire for urgency behind getting DEBA launched as soon as possible so that funds could help get additional capacity online for Summer 2023 and to distribute funds for projects with longer lead times, but potentially more valuable resources, to come online in 2024.

However, since DEBA has a budget of $700 million and is authorized for five years, CESA suggests that some funding be reserved for future years of the program. The urgency surrounding near-term reliability needs and near-term cost increases due to inflation across the economy and supply-chain constraints will make it prudent to allocate more funding to the first years of DEBA than later years. At the same time, reserving funding for later years and allowing DEBA to be modified and improved over time can help dollars be spent on the projects that will provide the most value to California's long-term grid.

Therefore, CESA recommends the following distribution of funds across the five years of the program, 2023-2027.

Year	Funding allocation
2023	$250 million
2024	$250 million
2025	$100 million
2026	$50 million
2027	$50 million
Total	**$700 million**

In addition to spreading funding over multiple years, CESA also suggests that the CEC create an explicit schedule for revisiting the program parameters and making modifications before annual solicitations are opened for funding. CESA has seen most ongoing incentive programs, particularly BTM programs, need tweaks to program application forms, customer attestations or signature requirements, or other aspects of program logistics that are posing unintended barriers.

VI. RESPONSES TO RFI QUESTIONS ON DEBA PROGRAM DESIGN.

In addition to the above sections on broader program design recommendations, CESA offers the following responses to specific questions posed in the RFI:

1. **What size of resource and what types of customers should the program target?**

   CESA recommends that resources of all types and sizes should be considered in the DEBA Program. In Sections II-V above, we discuss how program administration can be managed by separating the consideration of IFOM and BTM resources and allowing for smaller BTM projects to be aggregated into a consolidated application for funds and obligations. Overall though, CESA believes that energy storage resources are particularly well-positioned for this program as a dispatchable and flexible resource that also supports the integration of renewable generation.

2. **What types of incentive structures and amounts are needed to accelerate the development and deployment of this resource?**

   As discussed in Sections II and III, CESA recommends different program designs for IFOM and BTM projects based on their different project development needs. It may be reasonable to carve out a portion of the DEBA funds to the GFO Model versus the BTM Fixed Incentive Model. CESA suggests a 50-50 split across the two models at this time, but this split may be revisited in future years after an assessment of uptake.

3. **What types of conditionalities and measurement and verification requirements should the program include to ensure funded resources participate and deliver during emergency events?**

   CESA generally believes that M&V requirements should be coordinated with participation in one of the deemed-compliant pathways as discussed in Section IV above. For example, many DR programs already have M&V for performance obligations and non-compliance penalties. Creating a duplicative or additional requirements on top of those already required by these grid-support programs would be burdensome and unnecessary. On the other hand, simple M&V can be coordinated with CAISO to ensure that resources submitted market bids in accordance with their DEBA obligation.

4. **In general, please provide any specific proposal or recommendation on the design and implementation of the DEBA program.**

   See above Sections II-V.

VII. RESPONSES TO RFI QUESTIONS ON RESOURCE TYPES AND EVALUATION ATTRIBUTES.

Most of CESA's responses to the RFI questions on resource types and evaluation attributes were included in our comments on November 10, 2022 on the workshop presentation and discussion. They are briefly recapped here, with some areas of additional response.

1. **Are the categories (indicated in Tables 1, 2 and 3) appropriately representing how the CEC should be evaluating resources?**

   As explained in Section II of our November 10, 2022 comments, CESA recommends that the CEC include the full range of resource options made available in the CPUC's IRP and CEC's Assessing the Role of Long-Duration Storage Docket (20-MISC-01), considering the current approach only models two technology types of energy storage: pumped hydro and lithium-ion batteries. Moreover, while a diverse scope of demand response and demand flexibility technologies are listed, Table 2 should also explicitly highlight the role of BTM energy storage, which in previous Lawrence Berkeley National Laboratory ("LBNL") DR Potential Studies highlighted for exceptional DR capabilities.[9]

2. **Are there resources that should be added to or removed from the preliminary list under each of the categories (shown in Tables 1, 2, and 3)?**

   See our response to Section VII Question 1 above.

3. **Are there other attributes that should be considered, in addition to the ones listed in Table 4? If so, should those be considered for the qualitative and/or quantitative evaluation?**

   CESA has no further additions at this time.

4. **How should the attributes be weighted relative to each other? Should some attributes be weighted more than others?**

   CESA does not recommend weighting of attributes at this time.

[9] *2025 California Demand Response Potential Study – Charting California's Demand Response Future: Final Report on Phase 2 Results* published by Lawrence Berkeley National Lab in March 2017. Available at: https://buildings.lbl.gov/potential-studies

5. **What data/information sources can help inform characterization and evaluation (both qualitative and quantitative) of the different resources?**

   See our response to Section VII Question 1 above. First and foremost, the CEC must expand the energy storage technology options since commercial readiness, permitting, supply chain, among others, vary depending on the technology. It would be impossible to conduct this assessment for energy storage technologies if we are only making this assessment for lithium-ion technologies or pumped hydro projects, which are distinct from alternative storage technologies along these characteristics.

VIII. RESPONSES TO RFI QUESTIONS ON RESOURCE CHARACTERIZATION.

Most of CESA's responses to the RFI questions on resource types and evaluation attributes were included in our comments on November 10, 2022 on the workshop presentation and discussion. They are briefly recapped here, with some areas of additional response.

1. **Please provide a general overview of the resource, including the following: Resource category (e.g., supply, demand) and type (e.g., solar) and scale (e.g., utility, distributed)?**

   See Section II of our November 10, 2022 comments.

2. **How does the resource compare to conventional generation in terms of greenhouse gas and priority pollutant emissions?**

   With no point-source emissions, energy storage technologies compare favorably to conventional generation. Since wholesale market prices are correlated with marginal GHG emissions, there would also be no GHG emissions associated with the operationalization of energy storage in response to CAISO market prices. This is also affirmed through IRP modeling co-optimizing for GHG emissions targets and reliability, where significant energy storage buildout is done in tandem with renewable generation buildout.[10]

3. **How does the resource support reliability (e.g., supply, permanent load reduction, net peak reduction, or emergency asset)? List all that apply. How can the resource be used as an incremental on-call resource during emergencies?**

   The reliability benefits of energy storage are affirmed through IRP modeling co-optimizing for GHG emissions targets and reliability, as well as in how energy

[10] Batteries are often sited to reduce curtailment of renewable energy resources. *See* "Methodology for Resource-to-Busbar Mapping & Assumptions for The Annual TPP" published by CPUC Energy Division in October 2022, "An additional benefit of siting battery storage resources in […] LCR areas with solar resources with which the battery resource can be co-located, is to reduce transmission congestion and curtailment."

storage performed most recently during the Summer 2022 heat wave.[11] Market-integrated and RA-qualifying IFOM energy storage resources self-evidently support reliability, but CESA also believes that they may support emergency reliability on an energy-only basis where grid conditions allow (*e.g.*, available interim deliverability, available hosting capacity) and/or in islanding configurations in shedding and self-serving load that needs to otherwise be served by the CAISO system.

Further, BTM energy storage resources are under-utilized and under-deployed as potential on-call emergency assets. Whether due to export constraints, lack of export valuation, or misaligned retail tariffs (*e.g.*, non-coincident demand charges), BTM storage is just as dispatchable as IFOM storage. BTM thermal storage resources can also provide high-efficiency permanent load shifting ("PLS") capabilities but similarly lack the deployment incentives, even though their capacity-reducing benefits are greatest during the highest and extreme temperature days.[12]

4. **How many new MWs and MWhs can the resource provide per year, taking into account resource characteristics and known barriers between now and 2035? How is that different if used incrementally as an emergency asset during an extreme heat event?**

   See Section II of our November 10, 2022 comments.

5. **What is the levelized cost for the resource in $/MW-yr. and $/MWh-yr. from 2023 to 2035?**

   See Section II of our November 10, 2022 comments.

6. **What is the average length of time from ordering or purchasing the resource to operation? How long does that typically take in today's market? What conditions must be met to deploy the technology rapidly?**

   Every technology is different in terms of deployment timelines. For lithium-ion battery storage, supply chain constraints represent an unknown variable, but batteries are typically purchased and shipped within 12 months of expected commercial operations.[13] However, depending on the system integrator or developer, these rule-of-thumb assumptions may be different, with some being positioned to have inventory or certainty of purchase orders of batteries.

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[11] CAISO "Summer Market Performance Report September 2022" November 2, 2022, at 146-154. Available at: http://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf

[12] *See* "Valuation of Thermal Energy Storage for Utility Grid Operations" published by University of California, Davis Western Cooling Efficiency Center. Available at: https://wcec.ucdavis.edu/wp-content/uploads/2017/11/Thermal-Energy-Storage-Case-Study.pdf

[13] *See* the *Comments of the California Energy Storage Alliance on the Proposed Decision and Alternate Proposed Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026)* submitted in CPUC Rulemaking 20-05-003 on June 10, 2021.

For non-lithium-ion storage technologies, the average length of time from purchase to operation will vary by technology, with some modular technology manufacturers and providers well-positioned to scale production to meet operation dates as soon as Summer 2023, whereas others are better positioned for the 2024-2026 timeframe. Meanwhile, other non-lithium-ion storage technologies may use off-the-shelf equipment and components and do much of the construction and assembly onsite (*e.g.*, molten salt thermal storage, advanced compressed air energy storage), where timeline from "purchase" to operation is not the appropriate metric, but rather it may be more appropriate to time to delivery based on procurement contract. Many of these types of infrastructure-like storage projects are targeting commercial operations by 2026-2028.

7. **For an emerging technology, when will it be ready for deployment, and at what scale?**

   See our response to Section VIII Question 6 above, along with our comments on the CEC LDES Program.

8. **Is the target customer primarily residential, commercial, agricultural or industrial?**

   Depending on the technology, the target customer may be one or the other, or not applicable (*i.e.*, IFOM energy storage).

9. **What are the key non-financial barriers to the development and implementation of this resource (including, but not limited to, permitting, interconnection, supply chain, customer acceptance, and alignment with policy goals)?**

   For emerging technologies, there are commercialization barriers, as summarized in our April 2022 comments on the CEC's LDES Program. In addition, permitting and interconnection pose across-the-board challenges for all technology types due to the queue backlogs and delays experienced with the construction of key transmission upgrades. A workable and sustainable model for BTM energy storage resources, inclusive of exports, is also critically needed.

10. **What are the key financial barriers to the development and implementation of this resource?**

    For certain resource types (*e.g.*, emerging LDES technologies, BTM energy storage), there is a "missing money" gap associated with key attributes not being valued, such as incremental energy duration or export capacity.

11. What types of benefits or impacts is the resource anticipated to have on low income and disadvantaged communities, and tribes, if any in terms of development and deployment?

As an emission-free, dispatchable, and flexible resource, energy storage sited in low-income and disadvantaged communities and tribes have immediate benefits in offsetting local fossil-fueled generation (if present) and in offering greater resiliency to these communities (if applicable and configured as such). BTM energy storage can also be critical to customer bill management, thereby delivering immediate economic benefits.

IX. CONCLUSION.

CESA appreciates the opportunity to provide this response to the RFI and looks forward to collaborating with the CEC and other stakeholders in this docket.

Respectfully submitted,

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