

November 4, 2022

Submitted electronically via the Federal eRulemaking Portal

Re: Preliminary Comments of the California Energy Storage Alliance on Treasury and Internal Revenue Service (IRS) Notice 2022-49 Requesting Public Comment on Certain Energy Generation Incentives of the Inflation Reduction Act (IRA) of 2022

To Whom It May Concern:

The California Energy Storage Alliance (CESA) appreciates the opportunity to submit comments on Notice 2022-49 on Certain Energy Generation Incentives.

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 and the largest trade association in the nation focused on grid-connected energy storage, CESA is uniquely positioned to speak to the various issues and questions posed in the Treasury Notices. However, we note that the comments below do not represent any particular view or position of any individual member company.

We appreciate the opportunity to provide these comments and would appreciate the opportunity to discuss them further with you. If you or your staff would like to discuss the contents of these comments, please contact Jin Noh, Policy Director of CESA at 510-296-0420 or jnoh@storagealliance.org, with a copy to Grace Pratt at gpratt@storagealliance.org.

I. INTRODUCTION & SUMMARY.

The IRA represents landmark legislation that will transform the nation's economy and will spur historic levels of investment in clean generation, energy storage, alternative fuels, transportation, and consumer/commercial devices and appliances – all in a national effort to tackle climate change and increase the sustainability and resiliency of the economy. With the IRA touching on so many aspects of the clean energy economy, Treasury and IRS are tasked with many areas of implementation of the IRA's key provisions. As such, in issuing six different notices requesting public comment, Treasury and IRS have expressed their core principles in guiding the implementation process and have quickly moved to solicit public comments.

CESA appreciates the timely action to seek public comment in order to mobilize the various clean energy investments over the medium and long term and provide greater clarity and certainty for many investments already underway or planned in the near term. Given the multitude and

complexity of many IRA provisions, as well as the likely resourcing constraints faced by the Treasury and the IRS to review and process thousands of public comments, CESA submits these preliminary comments as key areas of clarifications and potential proposals that are important to the grid-connected energy storage industry.

II. CERTAIN ENERGY GENERATION INCENTIVES.

In Notice 2022-49, Treasury and IRS seek comments and responses to questions on various provisions regarding §§ 45, 45U, 45Y, 48, and 48E of the Internal Revenue Code. In these comments, CESA seeks the following clarifications and offers several recommendations for consideration.

- Clarify the definition and boundaries of qualifying energy storage facility
- Affirm the definition of thermal energy storage property to include systems for use in an industrial or agricultural process
- Clarify the definition “maximum net output” to consider interconnection capacity at the point of interconnection for the purposes of “qualified interconnection property”
- Establish clear augmentation policy to differentiate long-term energy storage capacity from “routine maintenance”
- Clarify the eligibility of existing energy storage projects that are repowered
- Clarify the accounting and applicability of different credits for hybrid generation and energy storage projects
- Clarify the applicability of the low-income adder to community solar and storage projects
- Clarify and define the baseline criteria, boundary conditions, and/or timeframe to determine achievement of the 20% threshold projects

A. Clarify the definition and boundaries of qualifying energy storage facility

The IRA amended § 48(c) to add a definition of “energy storage technology” and amended § 7701(e) that cited § 48(c)(6) in defining the “storage facility” term as a facility that uses energy storage technology. Considering the range of energy storage technologies, CESA requests that Treasury and IRS clarify the definition and boundaries of a qualifying

energy storage facility that would or could apply to, but not limited to, the following “classes” of energy storage technologies:

- Lithium-ion batteries
- Redox flow batteries
- Compressed-air energy storage
- Thermo-mechanical energy storage
- Hydrogen storage
- Pumped hydro storage
- Thermal-electric storage

Not all energy storage technologies are “containerized” or have clear and obvious physical or functional boundaries to determine where an energy storage property receives, stores, and delivers energy for conversion to electricity. For example, certain equipment or components of an energy storage technology could support auxiliary functions critical to supporting the charge and discharge of electricity, or play a role in the safe and efficient operation of the energy storage technology, but they could fall outside the physical or functional boundaries of a qualifying energy storage facility if too narrowly defined. To provide clarity, Treasury and IRS could define the physical or functional boundaries of a qualifying energy storage facility and/or, inversely, identify exclusions as done in § 48(c)(6) with the definition of thermal energy storage property.

In particular, for cold thermal energy storage systems used in chiller-cooled buildings, certain equipment, such as charging chillers, may be also used to support the building’s HVAC system, thereby saving redundant chiller equipment. In other words, Treasury and IRS should not preclude the dual use of a charging chiller for HVAC purposes and as a critical “must-have” part to operate a thermal energy storage system.

B. Affirm the definition of thermal energy storage property to include systems for use in an industrial or agricultural process

The IRA amended § 48(c) to add a definition for “thermal energy storage property” as a system that meets all of the following criteria:

- (I) is directly connected to a heating, ventilation, or air conditioning system
- (II) removes heat from, or adds heat to, a storage medium for subsequent use

(III) provides energy for the heating or cooling of the interior of a residential or commercial building

The above definition should not be interpreted so as to apply to thermal energy storage technologies for commercial and residential HVAC applications only. Such a narrow definition would overlook the 35% of U.S. greenhouse gas (GHG) emissions attributable to the agricultural and industrial sectors and the application of thermal energy storage in this sector.¹ Considering there are common and emerging energy storage technologies that can support the decarbonization of the industrial heat sector, Treasury and IRS should broadly interpret criterion (III) to include thermal energy storage properties that can provide energy for the heating or cooling of an industrial or agricultural process. Qualifying thermal energy storage property would otherwise still need to meet the statute’s criteria.

Importantly, affirming a broader interpretation of qualifying energy storage property across more economic sectors will advance Congress’ intent to support broad and equitable investments in clean energy and energy security investments. CESA’s recommended changes would have the benefit of supporting thermal energy storage investments in rural communities and geographically-diverse locations by establishing a broader definition to include agricultural and industrial processes, whereas a narrower definition would concentrate these investments in denser urban load pockets.

C. Clarify the definition “maximum net output” to consider interconnection capacity at the point of interconnection for the purposes of “qualified interconnection property”

The IRA amended § 48(a) to add a definition in § 48(a)(8) for “qualified interconnection property” that would be included in the determination of credits for the installation of energy property, so long as the maximum net output is no greater than 5 megawatts, as measured in alternating current. Clarity is needed on how maximum net output will be defined since generation and energy storage projects, in practice, can assure a level of maximum net output at the point of interconnection to the transmission and distribution grid less than the nameplate capacity of the qualifying energy property. While the provision to establish the 5-megawatt threshold based on measurement in alternating current addresses qualifying energy property that are limited by the inverter (hardware) capacity (*i.e.*, oversizing direct-current generation and storage capacity relative to the inverter), it is unclear how the 5-megawatt threshold would apply for projects that limit their output using power control systems and software. Such approaches are increasingly used for generation and energy storage projects and are memorialized through interconnection agreements with transmission owners and utilities.

¹ U.S. Environmental Protection Agency Sources of Greenhouse Gas Emissions in 2020: <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

To this end, Treasury and IRS should affirm that the maximum net output should be measured not only in alternating current but also be qualified based on the interconnection capacity at the point of interconnection. Especially if such software- and firmware-based approaches are used in legally-binding interconnection agreements, CESA believes that a clarified definition based on interconnection capacity is reasonable and consistent with federal energy regulations and policies.² Along these lines, CESA requests that Treasury and IRS clarify the recapture risk for the portion of the credit covering qualified interconnection costs if, for whatever reason, the maximum net output increases beyond 5 megawatts.

Finally, CESA generally requests that Treasury and IRS provide further clarification on qualified interconnection property. As CESA understands it, § 48(a)(8) would include not only interconnection facilities individually attributable to a given energy property but also to network upgrades, operation and maintenance costs, and other infrastructure-related costs and charges allocated and imposed on the energy property for its share. Similarly, Treasury and IRS should clarify whether interconnection costs are covered for projects that are 5 megawatts or less, or if credits for interconnection costs will cover the *pro rata* share of interconnection costs up to 5 megawatts (*e.g.*, 5% of interconnection costs of a 100 megawatt project).

D. Establish clear capacity augmentation and capacity maintenance policy to differentiate long-term energy storage capacity from “routine maintenance”

The IRA added § 48(c)(B) to define the applicability of credits to modifications of energy storage property, which would apply, starting in 2023, to existing energy storage technologies with increases to the capacity, either: (1) from less than 5 kilowatt-hours to more than 5 kilowatt-hours; or (2) increases the capacity by at least 5 kilowatt-hours.

Overall, CESA seeks clarification from Treasury and IRS on a clear capacity augmentation and capacity maintenance policy that differentiates long-term capacity from routine maintenance (*e.g.*, system or specific equipment repair). This issue could be broadly applicable to different classes of eligible generation and energy storage technologies but is particularly important to technologies such as lithium-ion batteries where capacity degrades over time. In light of this, the current aforementioned provisions require further clarification and guidance from Treasury and IRS since they do not differentiate whether and how capacity increases are attributable to new capacity investments or could be classified as routine maintenance, which are likely not eligible for credits.

Take, for example, a 10-MW, 4-hour energy storage project that would degrade to 9 MW in capacity in Year 7 of the project absent any augmentation with replacement or added

² See Order No. 845 that determined how interconnection agreements should allow for interconnection service below the rated capacity of a resource, which may allow avoidance of costly network upgrades, and should create a new surplus interconnection service outside of interconnection queues, which can expedite the ability to co-locate storage with existing generators. 163 FERC ¶ 61,043. <https://www.ferc.gov/sites/default/files/2020-06/Order-845.pdf>

battery cells. In the simplest case, the battery could be allowed to degrade, and the credits available at the time of augmentation could be applied in Year 7 when the project undergoes a 1 MW capacity augmentation. However, this is typically not how energy storage projects are contracted, financed, and built. Rather, capacity augmentation terms are often executed in supplier and off-taker contracts upfront in order to *maintain* the same level of capacity and not just *increase* the capacity as specified in § 48(c)(B). In other words, over the lifetime of the project, there may be more than 10 MW of battery modules (*e.g.*, 12 MW over a 15- or 20-year contract) and equipment purchased to fulfill the life of the 10 MW of contracted or project/interconnection capacity.

Yet, the current provisions are insufficiently clear regarding whether the § 48 credits would narrowly apply to the capacity at the time when credits are claimed or if they could apply to the full scope of the contract. In consideration of the above, CESA recommends that Treasury and IRS provide clear and specific guidance on the treatment of capacity augmentation and capacity maintenance, which is distinct from not only routine maintenance but also incremental capacity increases. For example, CESA suggests that the full investment of energy storage capacity, inclusive of investment made for augmentation, be eligible for § 48 credits if a supplier and/or off-taker contract specifies how additional battery storage modules and/or equipment will be purchased and constructed in the future. If capacity augmentations and capacity maintenance are contracted upfront at the time of initial claim and done in the future, they can qualify separately at the time, but even in this case, further clarification is needed because the current provisions suggest that only increases to the project/property or interconnection capacity could qualify for the § 48 credits.

Likewise, CESA seeks the following additional areas of clarification on the augmentation policy that appear somewhat clear in the IRA but would benefit from Treasury and IRS affirmation:

- Eligibility of augmentations to energy storage projects put into service prior to January 1, 2024 for the standalone energy investment tax credit
- Eligibility of augmentations to energy storage projects for the standalone energy investment tax credit as it applies not just to nameplate kilowatt power capacity changes but also to nameplate kilowatt-hour energy capacity changes

E. Clarify the eligibility of existing energy storage projects that are repowered

The IRA does not add any provisions in § 48 that define or qualify the eligibility of energy storage technologies when repowering an existing project site, whether prior to or after IRA enactment. During the next 10+ years in which § 48 credits will be available, pre-IRA energy storage projects (and even some IRA projects) may face an opportunity to repower the existing project site with new energy storage technology, even though the site

would not be considered “new” energy property and the project/interconnection capacity would not change. As it stands, neither § 48(c)(B) regarding modifications to energy property that increase the energy storage capacity or our recommended requests and modifications to establish an augmentation policy for energy storage technologies address the repowering use case.

The IRS previously issued a Notice 2016-31, which established an 80/20 test to determine whether equipment is “new” for the purposes of the PTC or ITC and would be eligible to qualify for credits as a “repowered” facility, whereby any spending on the repowered facility must be at least four times the value of the used parts retained from the old equipment. This notice was provided in the context of existing wind facilities, but the IRS should clarify the applicability of this previous guidance and how it relates to, among other things, repowered energy storage facilities.

F. Clarify the accounting and applicability of different credits for hybrid generation and energy storage projects

The IRA amended §§ 45 and 48 to potentially allow for the generation facility to claim the § 45 production tax credits and for the energy storage facility to claim the § 48 investment tax credits in a hybrid configuration. Though the IRA does not specifically explain or state how such combination of credits is allowed for hybrid facilities, nothing in the law prohibits such configurations, raising a number of questions about how IRS will assess these claims for a mixing and matching of credits as applicable.

For the § 45 credits, CESA recommends clarification from Treasury and IRS that production tax credits will be calculated based on the generation component exclusive of storage-related efficiency losses. CESA suggests that Treasury and IRS adopt this calculation approach in formulating guidance related to hybrid facilities as administratively simpler, especially when the energy storage component is allowed to charge from the grid and would complicate accounting for what is eligible for the production tax credit for any output to the grid.

For the either the §§ 45 and 48 credits, CESA seeks clarification from Treasury and IRS on how the bonus credits and adders would apply to hybrid facilities. For example, when it comes to establishing the apprenticeship requirements, an accounting is needed on the total labor hours employed by the qualified apprentice, but it is unclear if such accounting must be done separately for each facility to qualify for the bonus credit or if they can be applied and calculated for the entire project with the combined generation and energy storage facilities.

Similar questions occur for the domestic content requirements. For example, for a project that plans to begin construction in 2026 and qualify for the domestic content bonus credit, at least 50% of the total cost of the components of the project must come from those

mined, produced, or manufactured in the United States. If, say, the wind generation components were 40% produced from the United States and valued at \$50 million for the entire wind component of the project (or \$20 million in value of domestic content) while the energy storage components were 60% produced from the United States and valued at \$100 million for the entire storage component of the project (or \$60 million in value of domestic content), only the energy storage component may qualify for the bonus credit related to domestic content. From a total cost perspective of the hybrid facility, however, more than 50% of the total project value (\$80 million out of \$150 million) would come from domestic content, qualifying both components for bonus credits. CESA therefore requests clarification on how the various bonus credits and adders would be calculated for hybrid facilities, whether on a combined basis or for each component separately.

G. Clarify the applicability of the low-income adder to community solar and storage projects

The IRA added § 48(e) to establish special rules for certain solar and wind facilities placed in service in connection with low-income communities. In particular, CESA requests clarification from Treasury and IRS regarding the definition for “qualified low-income economic benefit project, where “at least 50% of financial benefits of electricity produced provided to households.” The IRA added a brief definition of “financial benefits” that “electricity acquired at a below-market rate shall not fail to be taken into account as a financial benefit.” Taken together, the IRA seems to suggest that total economic benefit approach, but clarifications should be provided on the applicability to community projects,³ which could be well-suited for these adders. Considering how community generation projects in different states and jurisdictions typically assess low-income benefits in a more straightforward manner based on the proportion of low-income off-takers,⁴ Treasury and IRS should clarify that a community project qualifies as a low-income economic benefit project as long as at least 51 percent of the project’s output is subscribed by or attributable to customers and/or off-takers who meet the household income criteria outlined in §§ 48(e)(2)(c)(i) and 48(e)(2)(c)(ii).

H. Clarify and define the baseline criteria, boundary conditions, and/or timeframe to determine achievement of the 20% threshold projects

CESA requests that Treasury and IRS specify an important clarification in guidance regarding greenhouse gas emissions baselines and reductions, namely that the Treasury and the IRS include both Scope 1 and Scope 2 emissions. Specifically, CESA recommends that

³ By reference, CESA refers to “community projects” as in-front-of-the-meter generation and generation paired with storage projects whereby any output is “credited” on the bills of subscribing customers.

⁴ See, e.g., “Sharing the Sun: Community Solar Deployment, Subscription Savings, and Energy Burden Reduction” NREL Presentation on July 2021. <https://www.nrel.gov/docs/fy21osti/80246.pdf>

Scope 2 emissions resulting from grid-sourced electricity be measured using either hourly electricity grid emissions data or renewable energy certificates (RECs) from temporally- and spatially-matched zero- or low-carbon generation. Failure to use such hourly emissions or tightly matched certifications could result in false or inaccurate claims of emission reductions, and in some cases even lead to increases in GHG emissions. For instance, an industrial facility could simply replace a natural gas boiler with an electric boiler and run it using grid-sourced electricity during hours when coal and natural gas are the predominant source of electricity generation and harvest the tax credits, despite not actually reducing overall emissions.

As such, we respectfully suggest that:

1. Scope 2 emission measurement for grid-sourced electricity be based on hourly average emissions factors; and that
2. Indirect (i.e. book-and-claim) accounting mechanisms are limited to hourly matched generation from a local generator.

Using this type of hourly carbon intensity accounting properly captures the actual emissions intensity of a given industrial or manufacturing facility and will incentive investments in infrastructure that actually reduce emissions.

For grid-sourced electricity, we recommend that guidelines be established that incorporate measurements and/or estimates of the hourly average emissions intensity of electricity for the local grid. An hourly basis for accounting incorporates sufficient resolution to capture the important time-variable features of a grid with significant generation from variable wind and solar resources while also being a tractable accounting problem (as opposed to a higher fidelity model tracked on the order of minutes or seconds). Multiple methodologies for assessing hourly electricity emissions intensity are in use and being developed in national laboratories, universities, and industry. In years past, an annual average carbon intensity of electricity, reflective of the varying sources of electric power, was suitable for Scope 2 emissions assessments; however, the grid is rapidly changing, and this approach is no longer adequate. In parts of the grid where renewable power is abundant, average emissions factors at certain times may be at or near zero, whereas at times when renewables are not available, emissions may be several times higher than the annual average. Requiring an hourly emissions factor to calculate emissions reflects the strong and increasing importance of the temporal variance of emissions on the grid. Preserving this signal of variable emissions factors will properly incent investment in technologies that align power consumption with low-carbon power generation and ultimately reduce GHG emissions.

Likewise, requiring any indirect or book-and-claim accounting mechanisms (such as renewable or zero-carbon energy certificates) to meet hourly matching requirements from a local resource will ensure carbon reduction claims match reality and preserve the incentive to invest in systems that align power consumption with low-carbon power generation. Ignoring such an hourly matching requirement would be deleterious, and could even result

November 4, 2022
Page 10 of 10

in facilities increasing net emissions while claiming the tax credit. For instance, a recent study from Princeton's ZERO Lab on hydrogen production with grid-connected electrolysis indicates that lack of hourly matching could directly incentivize large increases in CO2 emissions, which would directly undermine the intent of the IRA.

III. CONCLUSION.

CESA appreciates the opportunity to provide these comments on the Treasury Notices and look forward to collaborating with Treasury in implementing the various provisions of the IRA.

Respectfully submitted,



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