BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

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Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap.	Rulemaking 15-03-011 (Filed March 26, 2015)

COMMENTS OF THE INDEPENDENT ENERGY PRODUCERS ASSOCIATION ON ENERGY STORAGE WORKSHOP AND ISSUE PAPER

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In compliance with the schedule set forth in the *Administrative Law Judge's Ruling Noticing Workshop, Jointly Led by the California Independent System Operator and the California Public Utilities Commission and Setting a Comment Schedule,* issued on April 22, 2016, the Independent Energy Producers Association (IEP) submits its comments on energy storage issues raised at the joint workshop held on May 2 and 3, 2016, and the issue paper attached to the ruling.

I. STATION POWER AND ENERGY STORAGE

Resolving the issues around whether and how station power provisions apply to energy storage requires a clear delineation between (1) energy that is purchased or produced for *resale* in wholesale markets or is closely tied to sales for resale and (2) energy that is purchased or produced for *consumption* without a resale. The second category of energy for consumption is complicated in California by statutory provisions that allow for self-generation (*i.e.,* generation that is consumed on-site by the entity producing the power) and "over the fence" sales to customers on adjacent parcels, neither of which is subject to Commission-approved retail rates.

Drawing the line between energy purchased or produced for resale and energy purchased or produced for consumption is complicated by two primary factors. First, due to jurisdictional divisions between retail and wholesale transactions, definitions and protocols may be inconsistent. Second, the variety of technologies for producing and storing energy and the potential for multi-use applications can create tremendous complexity (and commercial uncertainty). From a jurisdictional perspective, in the long-running litigation over station power issues, the Federal Energy Regulatory Commission (FERC) defended (unsuccessfully) its rules on the netting period for station power on the basis of its statutory jurisdiction over *transmission,* rather than its jurisdiction over sales for resale. As a result, there is little definitive legal guidance on the extent of FERC's wholesale jurisdiction in relation to the state's jurisdiction over retail station power charges. From a technical perspective, the significant differences among the various energy storage technologies makes it difficult at times to determine which functions are comparable to the functions that are allocated to wholesale energy or retail energy, including station power, for existing generation and storage technologies.

The state has embarked on a storage program that is relatively modest in scope and scale to date. Decision (D.) 13-10-040 directed the utilities to procure 1325 MW of storage by 2020. In light of the increased focus on distributed resources, the potential scope and scale for installation of storage resources at the retail, distribution, and transmission level is exponentially larger. This expansion of the role of energy storage necessitates a broader consideration of storage, both in-front-of-the meter (IFOM) and behind-the-meter (BTM) in the context of interconnection issues, metering, and the provision of station power. Sorting through the details of this complicated issue may take some time, but some general principles can help

the Commission make its initial steps to refine jurisdictional boundaries and define the role and extent of station power for energy storage resources.

II. GENERAL PRINCIPLES

Some general principles will help guide the Commission as it attempts to classify a storage facility's use of energy as either station power (retail) or wholesale energy.

A. Nondiscrimination and Comparability

Nondiscrimination and comparability are two related but distinct principles. *Nondiscrimination* refers to the legal requirement that market participants should not be subject to different treatment on unreasonable grounds. Discrimination is not totally barred but is permitted only if there is a reasonable basis for different treatment.

Comparability refers to the idea that comparable functions, services, or products should be treated the same. Many of the challenging issues concerning storage and station power arise because of the difficulty of identifying which functions, services, or products provided by generation or pumped storage facilities are comparable to the functions, services, or products provided by energy storage facilities.

At a very basic level, it is not clear that existing regulation recognizes that energy storage provides services that are comparable to the services provided by generation. For example, the definition of "Station Power" in the California Independent System Operator (CAISO) tariff (which is also incorporated into the tariffs of Pacific Gas and Electric Company and Southern California Edison Company) refers to energy for operating electric equipment used exclusively for "the production of Energy." Energy storage does not *produce* energy, but it provides a similar function in that it can *supply* energy to the grid in much the same way that generation supplies energy to the grid. The supply of energy by energy storage facilities is comparable to the production of energy by generators, and, applying the principle of

comparability, those two functions should be treated the same. Existing law and regulation should be amended to recognize the potential for comparable services to be provided by both generation and storage.

The principle of comparability also means that any treatment that is extended to one type of technology should also be extended to comparable functions for other technologies. For example, if the Commission determines that a particular service provided by energy storage is not a retail service subject to the Commission's jurisdiction, the same conclusion should apply to comparable functions for generation technologies. Similarly, if the legal or regulatory boundary between retail and wholesale services is redrawn, the shift should apply to all comparable services, regardless of technology.

B. No Jurisdictional Gaps

Another important principle is that the classification of functions as either retail (including station power) or wholesale (sale for resale) should be performed in coordination with the CAISO and FERC to ensure that no jurisdictional gaps develop.[1] Close cooperation between the Commission and CAISO and FERC is required to ensure that all comparable services are subject to the same regulatory requirements. If a particular technology or application was left in a regulatory gap, market participants using that technology or providing that application could have a competitive advantage over entities that provide comparable services but that are subject to regulatory requirements.

In light of the variety of storage technologies that are reaching commercial application in response to the Commission's storage procurement requirement, maintaining clear jurisdictional boundaries between wholesale and retail services may become more complicated.

[1] Self-generation and "over the fence" sales under Public Utilities Code section 218 are special types of what are essentially retail sales, *i.e.,* sales for consumption.

It is possible that a new framework is needed for the allocation of costs between retail and wholesale services, and among retail customers and wholesale customers. Any such re-allocation should follow the basic principles that costs should be allocated to those who "cause" the costs to be incurred (cost causation) and that no cost should be recovered more than once (no double recovery).

C. Energy Storage Is Not New

The Commission is appropriately focused on expanding storage resources as a critical tool to deliver energy when it is most needed in an increasingly volatile energy market. However, energy storage is not new. It has been available for decades in California and elsewhere in the form of pumped storage and other technologies. Historically, the economic value of storage was determined by its ability to charge when prices are low and discharge when prices are high. The price differential between buying low and selling high determined its value in the marketplace. Today, the California energy markets, characterized by locational pricing, day-ahead energy markets, and real-time energy markets, provide a straightforward determination of the economic value of storage resources.

D. The Problem of Revenue Insufficiency and Market Design

When energy price arbitrage is not sufficient to support investment in energy storage, then developers of potential storage projects have looked to earn additional revenues through capacity payments or markets. However, California (a) has chosen to not implement a transparent capacity market and (b) has limited its resource adequacy requirement to a single year-ahead showing and obligation. This market design limits a project's ability to earn capacity revenues and creates a barrier to storage development. Moreover, this problem is not unique to storage.

In response to the problem of insufficient revenues to support resource development faced by storage resources (and other resources) operating in the California energy markets, the Commission might be tempted to modify or redesign the energy markets to provide revenue sufficiency for multiple use storage resources only. If this redesign occurs, the jurisdictional issues become complicated and lead to two observations. First, the Retail Customer Services presented in Table 4 of the Issue Paper attached to the ruling (*e.g.,* time-of-use bill management, demand charge reduction, back-up power, and increased solar self-consumption) should be transacted outside of the wholesale markets. If the Commission attempted to integrate cost recovery of these retail services directly in the wholesale markets, the Commission would risk undermining the integrity of the existing market structure and framework that has served California well for the past 15 years. Second, if the Commission determines it necessary to redesign the markets in California to address the problem of revenue insufficiency, then all reforms should apply broadly.

E. The Importance of Metering

Once services or functions have been classified as either wholesale or retail, it is essential to have the necessary metering or sub-metering in place to clearly and accurately measure the energy taken or delivered for either wholesale or retail functions. Although some parties may object to the cost of metering wholesale and retail services separately, use of a single meter for both wholesale and retail functions may lead to confusion and potential cost-evasion that could provide some market participants with an unfair competitive advantage over other participants providing comparable services.

III. CONSIDERATION OF STATION POWER MATTERS

The Commission and the CAISO should cooperate to define the boundary between their respective jurisdictions (*i.e.,* retail and wholesale) and be consistent with regard to

the treatment of station power. Moreover, the rules on station power should apply to all affected supply resources on a comparable, nondiscriminatory basis. This nondiscrimination is essential to support healthy competitive wholesale markets. In this regard, there are two critical questions associated with station service: (a) what types of activities fall within the definition of station power? and (b) what, if any, netting period will apply?

Storage resources have two distinct modes of operation: they "charge" by drawing power from the grid or self-supplying and they "discharge" by delivering power for use or resale. If the stored energy is sold for resale in wholesale markets, then the charging should be considered a wholesale activity. On the other hand, if the stored energy is used for retail services (*i.e.*, the underlying purpose is not a sale for resale), then the charging should be considered a retail activity. To the extent that the storage resource is configured to provide both retail and wholesale services, the Commission and the CAISO must require accurate metering to distinguish between the two activities on a real-time basis.

To ensure transparency in the wholesale markets and consistency in retail service, the Commission should require storage resources to be configured to ensure accurate metering that distinguishes between wholesale and retail products and services.

With regard to measurement issues associated with components of station power (objective 4 on p. 9 of the Issue Paper), IEP recommends providing all supply resources, including storage, a more commercially accommodating period for netting of station power consumption against power supply. Currently, Commission jurisdictional utilities net station power over a 15-minute interval. The Commission should consider allowing all resources, including multi-use storage resources, to net station power over a longer period (*e.g.,* one week).

IV. CONSIDERATION OF MULTIPLE-USE APPLICATIONS

The effort to integrate distributed resources into the energy markets has highlighted the concept of multiple-use applications. As noted in the Issue Paper, "During the development of the Storage Roadmap, energy storage developers articulated that one of the biggest challenges to realizing the full value of energy storage is the ability of a single installation to provide multiple services to several entities with compensation provided through different revenue streams."[2] In response, the Commission identified the definition and development of models and rules for multiple-use applications that cross jurisdictional boundaries as an issue for further discussion and resolution. IEP agrees that there is the need to define and develop rules for multiple-use applications, particularly those that cross jurisdictional boundaries.

IEP is concerned that the pursuit of multiple revenue streams to support various business models might undermine the integrity of the efficient and relatively successful market structure existing today (IEP, however, is aware of the problems created by the absence of a viable, transparent capacity market). California has designed a relatively transparent, market-based approach to the provision of needed energy and ancillary services (AS). This approach is premised on defining, in a clear and transparent manner, the products and services necessary to maintain the integrity of the overall electric grid while matching demand and supply day-ahead and in real-time. Individual technologies and resources compete within this overall construct to achieve least-cost, best-fit solutions to grid reliability needs in light of public policy goals. To the extent that the state seeks preferred resources that are not competitive in the energy market structure operating today, it relies on competitive solicitations conducted outside of competitive

[2] Issue Paper, p. 4.

energy and AS markets to finance the development of those resources (*e.g.,* solicitations of Renewable Portfolio Standard (RPS), Combined Heat and Power, Energy Efficiency).

The Commission need not and should not focus on ensuring revenues streams to individual resources or technologies through re-configuration of the existing overall market design. Rather, the Commission should stay focused on energy and on activities within its jurisdiction and let resources look elsewhere for added revenues associated with multiple-uses (*e.g.,* various retail services) not related to the products and services bought and sold in the wholesale energy markets. For example, storage resources can reduce a customer's demand charge by trimming its energy demand during peak periods, or a power plant might lease its excess land for recreational vehicle storage. However, these revenue streams are derived from products and services transacted outside energy markets. The Commission shouldn't care about these transactions as long as the electric system is not affected.

To the extent that the Commission focuses on realizing additional revenue streams for storage resources, one tool to achieve this goal would be a transparent, forward capacity market. Alternatively, IEP notes that the Commission can implement resource development programs similar to the existing storage procurement requirement, the Self-Generation Incentive Program, the RPS program, etc. These programs provide additional revenues streams to preferred resources outside of the energy and AS markets. Entities that secure revenues through these programs then may adjust their energy or AS bids as they compete to provide products and services in the wholesale markets. This model has proven successful in delivering low-cost, reliable power to California consumers.

A. Issue Paper: Multiple-Use Application Use Cases and Questions

The Issue Paper attached to the ruling presents five Multiple-Use Application use cases, which provide a good basis for scoping the range of potential storage applications. Table

5 of p. 19 of the Issue Paper disaggregates storage applications along two dimensions. One dimension is associated with the physical location of the storage resource, *i.e.,* whether the storage resource is located behind the customer's meter or in front of the customer's meter. The second dimension distinguishes storage resources based on the types of products or services the storage resource provides for retail customer services, distribution grid services, and wholesale markets.

In the following paragraphs, IEP responds to two questions posed in the Issue Paper related to these use cases.

4. Are there any concerns of overlap between wholesale, distribution, and retail services that must be addressed?

Yes. The risk of overlap between wholesale, distribution, and retail services is apparent, and the importance of this risk will increase as the scope and scale of the storage program expands. The risk is that storage resources are positioned to sell a single product in multiple markets. Selling the same service twice will undermine the integrity of energy markets (*e.g.,* by skewing the price signals used to clear discrete wholesale energy markets). Moreover, the reliability of the electric grid is undermined when resources presumed to be available are not available. For this reason, it is critical that the Commission and the CAISO impose metering requirements that clarify what products are being sold and delivered to the electric grid.

6. Have metering and sub-metering issues, pertinent to both BTM and IFOM storage, been addressed in the CAISO's Expanded Metering and Telemetry Options and ESDER initiatives? Are there any metering concerns that must be addressed?

Yes. IEP is concerned that the metering rules and requirements may be weakened to accommodate various multiple-use storage configurations, rather than creating incentives for multiple-use storage resources to configure their resources to match metering and the information needs of the grid operator. In this context, it is essential for storage resources with

multiple-use applications to configure their projects so that they have a single meter measuring wholesale transactions and a separate meter measuring retail transactions.

V. CONCLUSION

Maintaining a reliable electric grid requires clear standards of performance for all participants. Energy markets are governed by critical principles, including comparability and nondiscrimination, and those principles should also guide the identification of jurisdictional boundaries. The jurisdictional lines of separation between retail and wholesale functions must be clear, transparent, and uniformly applied. Metering standards must ensure accurate and separate measurement of the provision of retail and wholesale products and services. The Commission must resist proposals to modify proven market rules and design and to weaken metering standards to accommodate specific business models favoring one technology or resource-type versus all others in the wholesale marketplace.

IEP respectfully urges the Commission to consider these points as it continues the development of energy storage resources in California.

Respectfully submitted May 13, 2016 at San Francisco, California.

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