

Subject: Comments of Capital Dynamics and Tenaska, Inc. Regarding Potential Alternatives for LCR Assessment

Joint commenters Capital Dynamics and Tenaska, Inc., on behalf of Falcon Energy Storage Holdings, LLC (“Falcon,” a subsidiary of Capital Dynamics), are pleased to provide CAISO with requested information regarding Local Capacity Requirements (LCR) alternatives. Falcon has battery energy storage systems (BESS) in advanced development across the CAISO BAA, including multiple projects in major LCR subareas for each major transmission provider, PG&E, SCE, and SDG&E. Falcon discusses below the benefits of BESS in general as resources that can support LCR. We include certain information on the Falcon projects with a discussion of the benefits the projects can provide to the CAISO. Falcon believes these projects merit the CAISO’s economic assessment as LCR alternatives as a part of the 2020-2021 Transmission Planning Process.

Falcon’s comments are primarily intended to provide the CAISO with information regarding the capability of BESS projects to replace and improve upon the reliability features provided by existing carbon-emitting resources in various LCRs.

[Overview of Falcon Energy Storage Holdings BESS Projects Benefits](#)

Falcon has nine Battery Energy Storage System (BESS) projects under development in California. Several projects are capable of coming online as early as summer of 2022, and all can be operational by summer 2023.

The Falcon BESS portfolio consists of two (2) BESS projects with a combined capacity of 450 MW in PG&E, three (3) BESS projects with a combined capacity of 600 MW in SCE, and four (4) BESS projects with a combined capacity of 900 MW in SDG&E. During the June 3rd TPP stakeholder meeting, the CAISO outlined requirements that BESS alternatives must meet for providing reliability, energy and capacity as potential replacements for fossil fuel-based resources within the same load center or Local Capacity Region. Each of the Falcon BESS portfolio projects provides the required benefits due to interconnection locations within LCR areas and operational flexibility to discharge for the duration needed to meet grid

requirements. The Falcon projects are scalable to meet increased resiliency requirements as load and reliability conditions change. Additionally, the projects offer the following benefits:

1. Flexibility to charge during excess solar and wind output periods in order to make use of oversupply that would otherwise be curtailed
2. Support for California's clean energy and GHG reduction goals
3. Reliably replacing or reducing capacity required of existing gas-fired generation that is inefficient, costly, or scheduled for retirement, and
4. Provide fast response to frequency and voltage events under various grid conditions.

Falcon believes BESS, and its projects in particular, offer strong value to the CAISO. The remainder of the document consists of a high-level discussion of the ability of BESS to reliably augment solar and wind supply and basic information regarding the Falcon projects.

BESS Provides Flexibility to Absorb Oversupply of Solar and Wind Output and Enhance Reliability

When renewable energy resource output exceeds demand, the CAISO is often forced to curtail wind and solar output to bring the grid's supply and demand into balance. As is well-documented elsewhere¹ solar and wind capacity continue to increase in order to meet California's clean energy goals.

The Falcon BESS projects can positively contribute to the solution by charging their approximately 2,000 MW during severe supply-demand imbalance periods.

GHG Emissions Reduction

BESS projects generally reduce GHG and criteria pollutant emissions by facilitating the increased installation and use of other clean, intermittent resources. For purposes of Resource Adequacy, BESS have the capability to replace gas-fired generation on a one-for-one basis unlike solar and wind. Falcon's capacity can reliably reduce reliance on inefficient gas-fired generation based on tailored configurations of charge/discharge durations for each LCR area. BESS is the environmentally preferred solution for LCR resources.

¹ <http://www.caiso.com/informed/Pages/ManagingOversupply.aspx>, accessed on September 14, 2020.

One-to-one Replacement or Reduction of Gas-fired Generation

In the 2021 LCT Report², Table 3.1-3 details the MW, MWh, and duration characteristics required of BESS projects in order to replace gas-fired generation one-to-one. **The Falcon BESS projects have the flexibility to be configured to optimally serve the LCR areas within which they are located.** For example, in Table 3.1-3 of the LCT Report, the maximum number of discharge hours varies for each of the LCR areas defined and ranges from a low of 7 hours, to a high of 16 hours. For the Falcon BESS projects located in the different LCR areas, they would be configured to discharge as required to support the grid and depending on LCR sub-area requirements.

- Projects in PG&E's service territory could be configured to discharge from 4 to 16 hours.
- Projects in SCE's service territory could be configured to discharge from 4 to 11 hours.
- Projects in SDG&E service territory could be configured to discharge from 4 to 11 hours.

Falcon encourages the CAISO and stakeholders to advance clean energy goals as far as possible within the TPP framework. We note that gas-fired generation is not likely to retire based solely on the age of a facility, but that gas units have retired after relatively few years of service due to unfavorable economics and community desire for cleaner resources. Other factors that should be considered when assessing gas retirements and the need for replacement capacity include:

- Load-serving entities' and other stakeholder preferences and planning goals for the procurement of non-GHG emitting resources and the ensuing retirement of GHG emitting resources
- Expiring contracts of many gas fired assets over the next 2-3 years
- Combined cycle gas plants, in particular, are retiring early due to the evolution of the CAISO market which has resulted in uneconomic conditions for such units. These tend to make up large quantities of LCR compliance capacity (500-1000 MW in many cases), creating a large quantity of needed capacity when an unexpected retirement occurs.
- Recent procurement trends have favored grid-edge, System RA. Therefore, there is a risk that Local RA needed to replace retiring once-through-cooled Local capacity will be unavailable when needed if the CAISO and other stakeholders do not take a proactive approach to Local needs.

² 2021 Local Capacity Technical Study – Final Report and Study Results, May 1, 2020



- Local pollutant rules and community concerns with emitting resources may speed gas project retirements, either due to environmental pressures and/or City or County pressures to retire and to be replaced with non-emitting alternatives such as battery storage.

Table 1 below shows the location of the Falcon projects and LCR needs in associated locations.

Table 1: Falcon Projects

Falcon Flexible Duration BESS Project	POI	In-Service Date	LCR Area/Sub-area	2021 LCR Deficiency (MW)
SDG&E				
Imperial Valley BESS (200 MW)	Imperial Valley 230 kV Substation	2023	LA Basin	3,888
			San Diego	2,270
			San Diego-Imperial Valley	3,888
Sycamore BESS (300 MW)	Sycamore 138 kV Substation	2022 or 2023	San Diego	2,270
			Border	160
			El Cajon	48
Silvergate BESS (200 MW)	Silvergate 230 kV Substation	2022 or 2023	San Diego	2,270
			Border	160
			El Cajon	48
Talega BESS (200 MW)	Talega 138 kV Substation	2023	San Diego-Imperial Valley	3,888
SCE				
Hinson BESS (200 MW)	Hinson 220 kV Substation	2023	El Nido	394
			Western LA Basin	3,303
Walnut BESS (200 MW)	Walnut 220 kV Substation	2023	Western LA Basin	3,303
Highgrove BESS (200 MW)	Highgrove 115 kV Substation	2022 or 2023	Eastern LA Basin	2,867
PG&E				
Martin BESS (250 MW)	Martin 115 kV sub	2023	Ames-Pittsburg-Oakland	1,967
			Oakland	99
Los Esteros BESS (200 MW)	Los Esteros 230 kV sub	2023	Llagas	31
			San Jose	793
			South Bay - MossLanding	1,833

Falcon notes that the Highgrove, Walnut, and Silvergate substations are all located near or within Disadvantaged Communities, which has been a preferred locational attribute in recent offtaker solicitations due to the non-emitting nature of Falcon BESS projects.

Additional Considerations to Advance Clean Energy Storage Resources

There are currently many challenges confronting electric reliability and achievement of California's clean energy and GHG reduction goals. Besides the comments provided above, Falcon also wants to point out that the Falcon clean energy BESS fleet is one of the most advanced portfolios in the market ready to resolve the thorniest issues facing the state today and into the future, including:

1. The joint CAISO, CPUC, and CEC Preliminary Report of Causes of August Rotating Outages identified several immediate actions needed to ensure reliable energy supply in 2021 and beyond. These actions include procurement of additional resources and expediting fixes to various regulatory processes to bring new resources online quickly. Falcon suggests initiating resource contracting immediately and in parallel tackling the regulatory process hurdles plaguing the market. Lastly, it may be worth considering moving forward with contracting through the TPP process given the extraordinary circumstances facing the state.
2. One of the key areas for the state to focus on is to eliminate unnecessary areas of uncertainty that are impeding the ability to bring online new critically needed BESS projects. The frequent discussions related to regulatory and market rule changes related to RA quantification and BESS participation in the CAISO market are slowing down progress. Off takers are reluctant to move forward due to uncertainty that comes with potential future changes and developers and financiers are also challenged to move forward due to potential for changes that could materially affect BESS revenues. Less change and more certainty will go along ways toward expediting the needed procurement of new BESS resources.
3. BESS is the environmentally preferred and most cost-effective solution available for these critically needed new resources at scale; superior in all aspects to installation of alternatives including backup diesel generators being considered at the same substations Falcon projects propose to connect into. BESS projects connected into transmission and distribution substations in local grid areas, like the Falcon fleet, can be viable resources to mitigate the impact of PSPS situations by serving as local generation resources during PSPS episodes.
4. Without a large fleet of energy storage assets, CA will continue to see large curtailments of renewable energy supply due to renewable overgeneration during low load hours. Falcon projects provide a path toward balancing this oversupply situation and redistributing that otherwise curtailed clean energy to be available in the evening hours.



5. Falcon projects are in advanced state of development enabling online dates as soon as 2022 to provide critically needed new capacity within the key load centers of California and the Falcon fleet has been strategically designed to meet the locational preferences of the Investor Owned Utilities, the Community Choice Aggregators, and the Public Owned Utilities. Our products are favorably located with all CA Load Serving Entities in mind.

Falcon provides these projects for the CAISO's consideration in its assessment of LCR alternatives. Falcon believes some or all of the projects can provide for the future reliability needs of associated LCRs while serving as zero-emission alternatives to gas-fired generation. If needed, Falcon will be pleased to provide the CAISO with additional confidential information about the projects to support the economic analysis.

Sincerely,

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