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**Calpine's Comments on the SB 423 Emerging Renewable and Firm
Zero Carbon Resources Workshop**

Additional submitted attachment is included below.



CALPINE CORPORATION

1 December 2023

California Energy Commission
Energy System Reliability
Docket Number 21-ESR-01
715 P Street
Sacramento, CA 95814

Re: Calpine Corporation's Comments on the Lead Commissioner Workshop on Senate Bill 423
Emerging Renewable and Firm Zero Carbon Resources

Calpine Corporation ("Calpine") appreciates the opportunity to comment on the November 17th Workshop on Senate Bill ("SB") 423 Emerging Renewable and Firm Zero Carbon Resources ("Workshop"). The Firm Zero Carbon Report ("Report") is an essential document for aligning the definition of firm zero carbon resources across agencies and proceedings. As the developer of several projects involving carbon capture, utilization, and storage ("CCUS") systems, including retrofits to gas generation in California, Calpine strongly supports the inclusion of gas generation utilizing point-source capture technology among firm zero carbon resources. Encouraging the development of gas generation with point source capture supports system and local reliability, aligns with state policy, and addresses emissions in the electricity sector. The inclusion of CCUS as a firm zero carbon resource in the Report would acknowledge the commercial readiness and wide-ranging benefits of this essential technology in the future resource mix.

Calpine is an independent power producer and owns battery storage, natural gas-powered generation, and geothermal facilities in California. In addition, Calpine is developing and has partnered with the U.S. Department of Energy on projects designed to advance transformative and innovative CCUS projects. In California, Calpine is hosting two CCUS demonstration projects at its Los Medanos Energy Center facility,¹ designing a CCUS retrofit for its Delta Energy Center facility,² and working with the Sacramento Municipal Utility District ("SMUD") to retrofit the Sutter Energy Center with CCUS technology.³ Decisions to pursue CCUS are the result of over five years of systematic evaluation to determine how best to decarbonize the existing natural gas combined cycle power plants within Calpine's fleet nationwide.

Calpine generally supports the characterization of CCUS at the workshop – in particular, allowing for partial counting of carbon capture resources with less than 100% capture rates is important in both

¹ These include hosting Project Enterprise, a carbon capture demonstration project (<https://www.ioncleanenergy.com/news-post/ion-clean-energy-and-calpine-announce-first-of-its-kind-carbon-capture-pilot-project>), and transforming flue gas into construction materials with Blue Planet Systems (<https://www.sfbayaggregates.com/>).

² <https://calpineactsonclimate.com/doe-invests-45-million-to-decarbonize-the-natural-gas-power-and-industrial-sectors-using-carbon-capture-and-storage/>

³ <https://smud.granicus.com/player/clip/2622?&redirect=true&h=e07c20138de6d684e6023152e003e942>

achieving the goals of the State and recognizing the technical limitations of presently commercially-available technologies. This inclusion of CCUS is also consistent with the intent of SB 423.⁴ From what was shared during the Workshop, the representations of costs, performance, and technology readiness appear to accurately reflect the available literature on CCUS and other technologies.

One area for refinement is the characterization of the role of carbon capture in providing local reliability benefits. Calpine operates gas generation in multiple Local Capacity Areas, including the previously cited Los Medanos Energy Center and Delta Energy Center in the Greater Bay Area local area. Retrofitting these units with CCUS would provide critical local reliability benefits while addressing the State's decarbonization goals. The Report should note this fact, especially considering the difficulties in interconnecting new resources in a timely fashion.

Calpine looks forward to providing further input throughout the SB 423 Report process.



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Calpine Corporation

⁴ Senator Becker asked for, and was granted, unanimous consent that the following excerpt from Senator Stern be included in the September 10, 2021 Senate Daily Journal: "In authoring SB 423, it is not my intention to preclude the California Energy Commission, the Public Utilities Commission, or the California Independent System Operator from considering carbon capture technologies in the state's planning process."