

DOCKETED

Docket Number:	17-EPIC-01
Project Title:	Development of the California Energy Commission Electric Program Investment Charge 2018 â€“ 2020 Triennial Investment Plan
TN #:	215756
Document Title:	Cara Comments: Concentrating Solar Power with Thermal Energy Storage
Description:	N/A
Filer:	System
Organization:	Cara
Submitter Role:	Public
Submission Date:	2/3/2017 10:02:02 AM
Docketed Date:	2/3/2017

Comment Received From: Cara

Submitted On: 2/3/2017

Docket Number: 17-EPIC-01

Concentrating Solar Power with Thermal Energy Storage

Concentrating solar power (CSP) with integrated thermal energy storage is a renewable generation source that can provide flexible, carbon-free energy to the grid. It can be developed as a baseload, intermediate or peaking power resource. Ten years ago CSP was more cost effective than solar photovoltaics (PV), but due to investment in PV technology by the Chinese government and others, followed by massive deployment, costs came down dramatically. Studies by the National Renewable Energy Laboratory (NREL) and others indicate the potential for the same level of cost reduction for CSP. Research investment, along with deployment of commercial projects, is required to optimize the design and construction of CSP plants, develop higher temperature power cycles that will boost efficiency, and reduce capital costs. A cost-competitive CSP technology could offer great potential benefits to the grid. In addition to supplying carbon-free solar energy, CSP plants can be dispatched in the afternoon to mitigate the duck curve problem, thus enabling higher penetrations of PV. The cost and lifetime of batteries is still highly uncertain, and batteries are limited in their ability to shift large amounts of energy. The performance of batteries also decreases over time. As a synchronous generation source, CSP with thermal energy storage has the capability to ramp quickly and provide regulation and spinning reserves in response to load changes. Performance is very consistent over the 25-30 year lifetime of the CSP plant. As California aims to reduce the use of carbon-generating technologies, while increasing deployment of variable renewable sources, such as PV and wind, CSP offers a potential solution.