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CALIFORNIA'S SOLAR EXPERIENCE

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Methods of Procuring Solar Energy

- California Solar Initiative (CSI) Program (established in 2006) aims to install and bring over 3,000 megawatts of solar capacity online by the end of 2016
- Solar PV Program mandates that utilities procure over 1,000 MWs of roof- and ground-mounted solar PV
- Annual Renewables Portfolio solicitations of each utility contract for large projects of all technologies, including solar PV and solar thermal
- Both the Feed-in Tariff and Renewable Auction Mechanism contract for large amounts of solar
- Net Energy Metering allows for solar installations sized to fit customer's load behind the meter



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Solar Statistics in California

- The three biggest utilities in California (which serve 78% of state load) have 1,029 MWs of solar PV and 5 MWs of solar thermal currently online
- 5,179 MWs of solar PV and 2,000 MW of solar thermal are currently in development
- By 2020, almost half of California's renewable energy resource mix will be solar
 - about $\frac{3}{4}$ of that will be PV and the remainder solar thermal





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Solar Pricing Structures

- **California Solar Initiative**
 - Customers choose between receiving a rebate for every kWh generated in the first five years (the performance-based rebate) or an upfront rebate for every watt installed (the expected performance-based buydown)
- **Feed-in Tariff (ReMAT in California)**
 - Standard contract price will adjust every month based on the level of subscription in the technology category
- **Renewable Auction Mechanism**
 - Price is the market clearing price established within each biannual solicitation
- **Solicited or bilateral contracts**
 - Price is set by the negotiations between the developer and utility



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Solar Pricing Trends

- Prices of solar panels have lowered dramatically since the global recession. Some estimate they have decreased by more than 50%
 - Other parts of solar installations such as inverters have not experienced such dramatic price decreases
- This downward trend may be temporary:
 - China has been subsidizing its solar panel production industry and depressing worldwide prices
 - Global recession has ended
 - “Green rush” has slowed in California and, reportedly, in Italy and Spain



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Issues With Solar Procurement

- Plurality of programs and pricing structures creates an opportunity for developers to “forum shop” for the best price
- Intermittence of the solar resource, especially the PV technology, creates need for backup generation that is hard to estimate
- After years of efforts, the California Independent System Operator still does not have a final estimate of the system need created by renewable intermittence
- Interconnection: small facilities that qualify can use expedited interconnection procedures under Rule 21