
Solar Energy Technologies Program Annual Review

Session: Solar Market Transformation
APS – Renewable Energy



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Discussion Topics



- APS Renewable Energy Procurement – All Technologies
- APS Solar Procurement
- Looking Forward
- PV and Distributed Energy



APS Renewable Energy Procurement



Since 2005, APS has been actively pursuing the procurement of large scale RE projects.

- 2 RFP's for PPA projects – 2005 & 2007
 - All Renewable Technologies
- 2005 RFP – APS selected 5 projects (no solar)
 - 2 have been completed – Wind & Geothermal
 - 3 major delays or canceled
- 2007 RFP – APS selected 5 projects
 - Includes 280 MW Solar Trough Plant
- 2008 Joint Development Group RFP – CSP focused



APS Renewable Energy Procurement



Major Lessons Learned

- Low price selection is not necessarily best value
 - Major delays or high risk projects are not acceptable - APS regulatory and capacity needs.
 - Counter party capabilities, Technology & Other Project Risks are significant drivers
- Build Valuation Methodologies – Allowed APS to consider higher cost energy from CSP facilities.
 - Capacity and Energy Value – Resource needs for load growth (specifically at Peak) as well as RES.
 - Integration cost



APS Renewable Energy Procurement



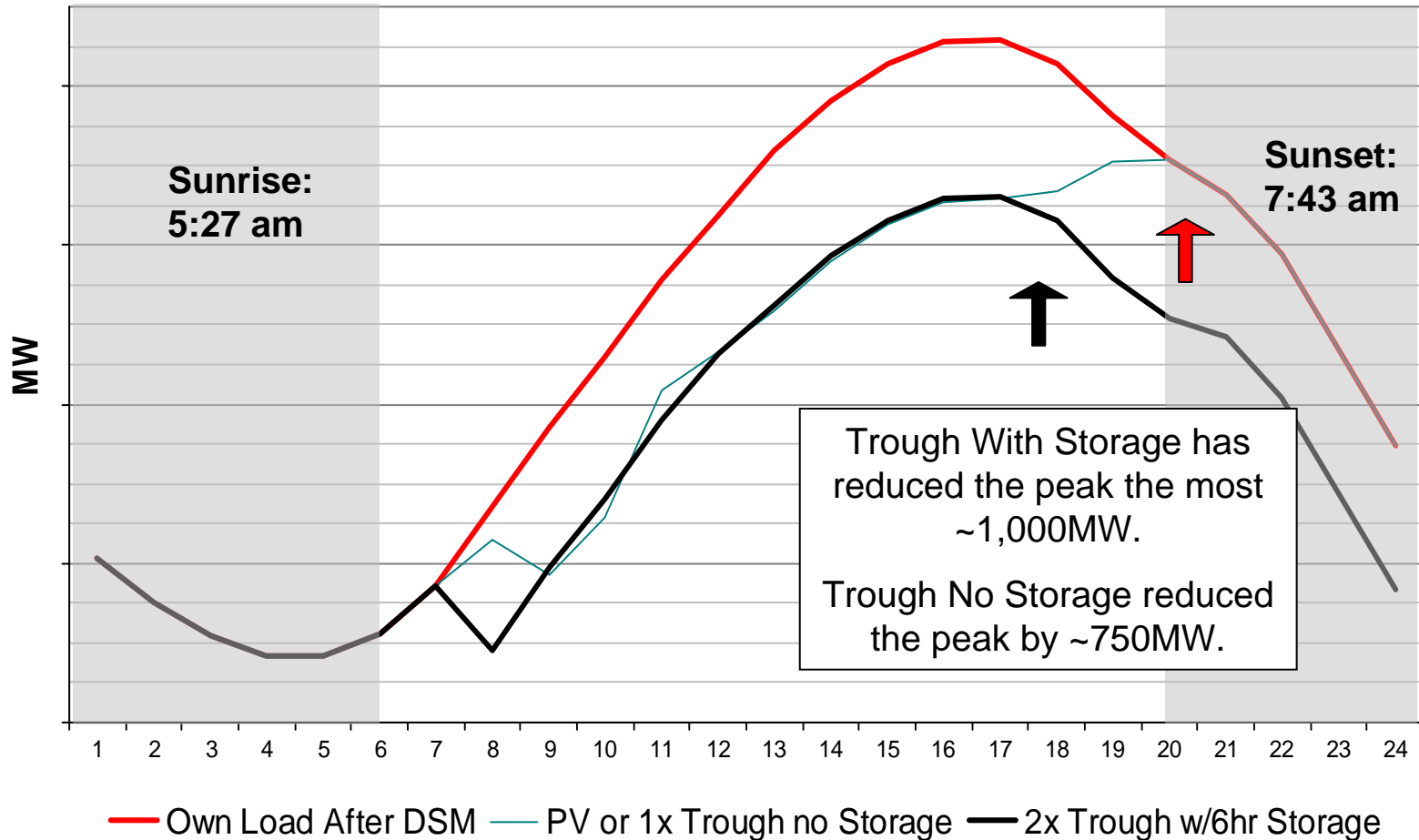
Results of 2007 RFP

Solana Generating Station

- 280 MW CSP with storage (6 hours of potential)
- Storage allowed APS to give the project full capacity value – very important
- Experienced counter party was crucial – APS has significant capacity need in 2011
- Applied lessons learned to maximize the value to APS



APS Renewable Energy Procurement Providing Peak Value



APS Renewable Energy Procurement



Joint Development Group (JDG) – RFP

- Up to 250 MW CSP (storage preferred)
 - Minimum of 100 MW
- Utility partners
 - SRP, TEP, Arizona Electric Power Coop, Xcel Energy and Southern California Public Power Authority
- RFP Filters
 - Proven Technology - 10% of technology in commercial operation for (1) year
 - Experienced counter-party – (5) years of experience in construction management, plant management, project development, etc.





Looking Forward

APS interest in CSP is growing and is being considered as one of the ways to meet the extreme load growth.

- Crucial for ITC to be extended. Long term is better
- Technology and operational advancements
 - Storage – proven and lower cost
 - Forecasting for optimal peak period dispatch
- New storage pilots should be pursued to prove lower cost options
 - Developers of utility dispatch SW like RTSim, Promod and others should be engaged to build new modules which can accommodate CSP with storage





PV and Distributed Energy

APS has significant interest in distributed renewable technologies, specifically PV

- RES requires 30% (of 15%) of renewables to be from distributed renewable technologies
- Current incentives are not strategic to providing value
 - Free market approach
- APS is initiating a Distributed Renewable Energy Valuation study
 - Study will determine the value and operating impacts on the APS system
 - Will address resource, distribution and transmission values as they relate to strategic deployment scenarios



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