



Distributed Energy Storage White Paper

Smart Grid & Energy Storage
Subcommittee's Joint Effort



DES WP

- **Definition**
 - Energy Storage that is located at or down stream of Distribution Sub Stations
 - Includes Behind the Meter Applications
 - Thermal Energy Storage
 - Micro Grids
- **Scope**
 - Market
 - Regulatory & Interconnect
 - Technology & Applications
 - Benefits
 - Codes & Safety
 - DER Appendix
- **Recommendations**
 - Recommendations to DOE
 - DER WP (Follow-on)



DES WP Authors

- **Thanks to DES Co-Authors**
 - Clark Gellings
 - Paul Roberti
 - Ramteen Sioshansi
 - Tim Mount



Distributed Energy Storage (DES) Projects Map





DES Expert Interviews

DES Expert Interviewee	Affiliation	Interview Completion Date
Willem Fadrhonc	STEM	10/20/2014
Tom Weaver	AEP	11/10/2014
Melicia Charles	CPUC	10/23/2014
Tom Bialek	SDG&E	12/15/2014
Fred Fletcher	Burbank Water and Power	10/30/2014
Dan Ton	DOE	10/9/2014
Imre Gyuk	DOE	10/9/2014
Paul De Martini	Newport Consulting Group	10/9/2014
Erich Gunther	Enernex	10/6/2014
Barry Mather	NREL	10/9/2014
Bob Rudd	Solar City	11/14/2014
Jeff Anderson	CalCEF	1/12/2015

Topics Not Covered in Interviews: Thermal Storage
OEM's Liability Concerns Regarding Using EV Batteries as DES



Proposed Recommendations

- *Access and track lessons learned from projects and market development of DES*
- *Develop advanced market and cost-based market models for DES*
- *Develop advanced modern grid physical models for DES*
- *Develop operational models and verify advanced controls*
- *Assess the applicability of existing utility-scale codes and standards, and DG codes and standards to smaller-scale distributed storage*
- *Further leverage the DOE's unique role as an unbiased arbitrator with technical expertise in the deployment of DES*
- *Assist in the deployment of new standards and codes for DES*
- *Develop technologies that increase the performance, cost effectiveness and safety factor of DES systems*



DES WP – Next Steps

- Recommend Approval of DES WP by EAC
 - Discussion
- Recommend Follow-up WP on DER by EAC