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Distributed Energy Resources and OpenADR

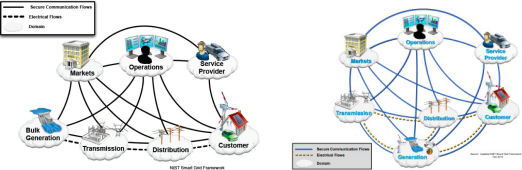
Rish Ghatikar; LBNL Grid Integration Group

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<http://gig.lbl.gov>

Evolution of a Decentralized Energy Ecosystem

- Electricity System is evolving from a centrally planned generation to a decentralized energy eco system



NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0

DRAFT NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 3.0

The real question – what will be the utility of future look like, not the future of the utility (DOE Secretary Moniz at US-India Energy Dialogue, March 2014.)

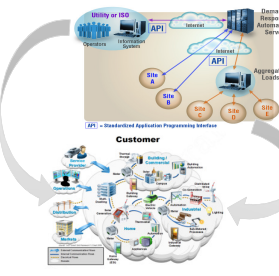
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Linking Grid with Customer-Side Distributed Resources

Distribution Grid, Operations, Market, and Provider Challenges:

1. Large and variable generation, decentralized energy resources (roof-top PVs, on-site and co-gen)
2. Diversity of electricity markets, technology, and services
3. Cost, cyber security, metering, communications interoperability
4. New options: storage, EVs

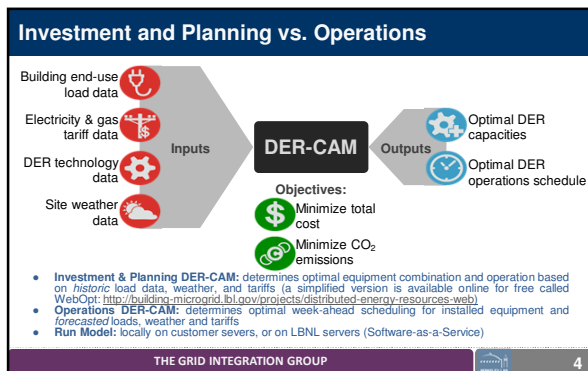


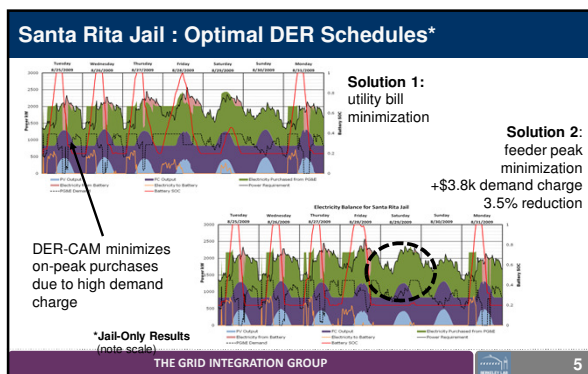
Customer Challenges:

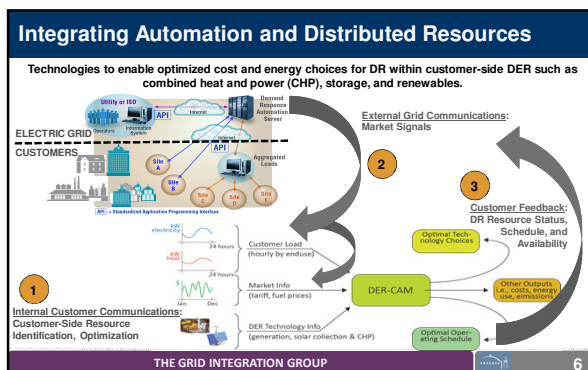
1. Different brand of equipment, distributed energy resources
2. Ease of adoption and cost effectiveness
3. Grid services requirements
4. Optimized use of DER (e.g., Microgrids)

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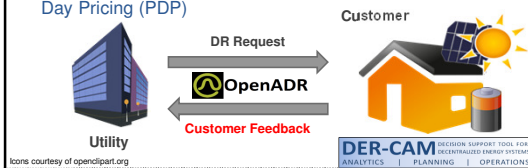






DER-CAM and DR Programs

- Methods currently under development to enable Demand Response (DR) within customer-side DER, controlled by DER-CAM
- The Utility and the customer's DER-CAM based controller interact through OpenADR signals, e.g. Real Time Pricing (RTP) and Peak Day Pricing (PDP)



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Web References:

- <http://www.lbl.gov/>
- <http://gig.lbl.gov/>
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