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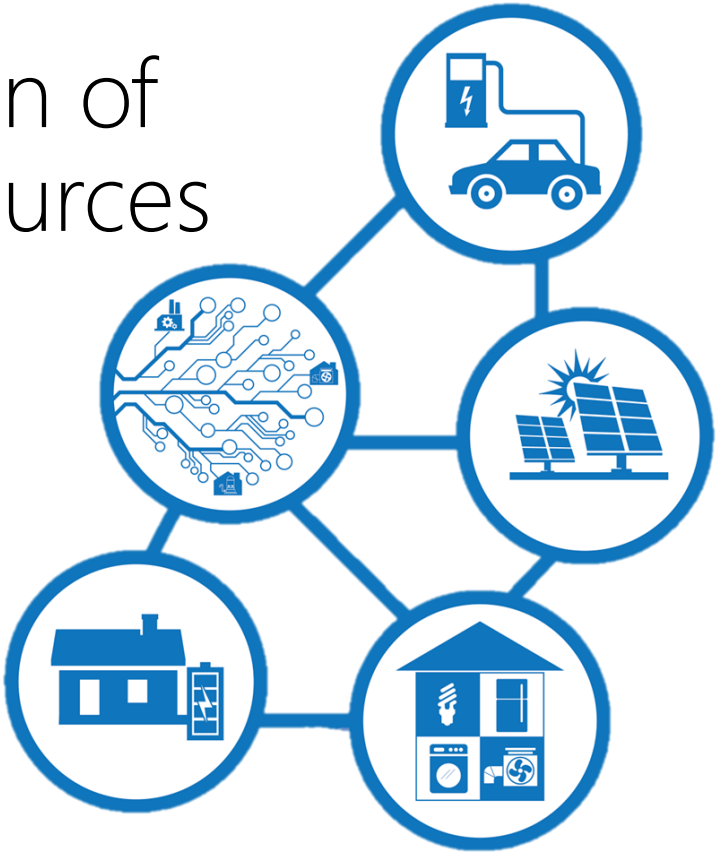
Valuation and Integration of Distributed Energy Resources

DOE EAC

March 17, 2016



Heather Sanders

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Distributed energy resource valuation – California context

- **California Assembly Bill 327**
  - Passed in 2013 required utilities to submit a Distribution Resource Plan (DRP) by July 1, 2015
- **Commission DRP objectives**
  - Modernize the distribution system to accommodate customer choice
  - Enable new technologies and services that reduce emissions and improve reliability
  - Animate opportunities for DERs to realize benefits by providing grid services
- **AB 327 included identifying optimal locations for distributed energy resources**

…"distributed resources" means distributed renewable generation resources, energy efficiency, energy storage, electric vehicles, and demand response technologies.

- AB 327, Section 769.

Distributed energy resource valuation – guiding principles

- **Distribution system value versus comprehensive DER value**
  - Difference between the value of DERs to the electric system and the full value of DERs to customers and society
- **Reduced costs and increased market entry**
  - Utilities identify and share attributes needed to solve local reliability problems
  - Innovative reliability solutions encouraged through competitive processes to meet required attributes
  - Value and reliability achieved through competitive solicitation and utility offer review to construct cost effective portfolios
- **Planning Considerations**
  - Different DER technologies in the same location have different values
  - Same DER technologies in different locations have different values
  - Customers will have a greater reliance on DERs to satisfy reliability, so certain opt-out factors (DR) will need to be considered

DRP LNBA Components
Generation Energy
Losses
Generation Capacity
Ancillary Services
Transmission Capacity
Distribution Capacity
Environment
Avoided Renewable Portfolio Standard energy requirement
Additional Components

Deferral framework and competitive DER procurement produce lowest cost solution for distribution needs

Develop forecasts, assumptions & scenarios

- Load
- Distributed Generation
- Demand Response
- Energy Efficiency
- Electric Vehicles

Perform Distribution Planning Assessment

Locational distribution needs and associated traditional solutions

Screen Projects for DER Deferral Feasibility + **Determine DER Operational Requirements**

- Identify feasible DER alternative locations and associated requirements
- Quantify range of locational deferral benefit
- For locations infeasible for DER alternative, implement original project

Competitive Sourcing for DER Deferrals

- Existing hosting capacity
- Feasible DER distribution deferral locations
- Operational requirements
- Other relevant information

DRP LNBA Components
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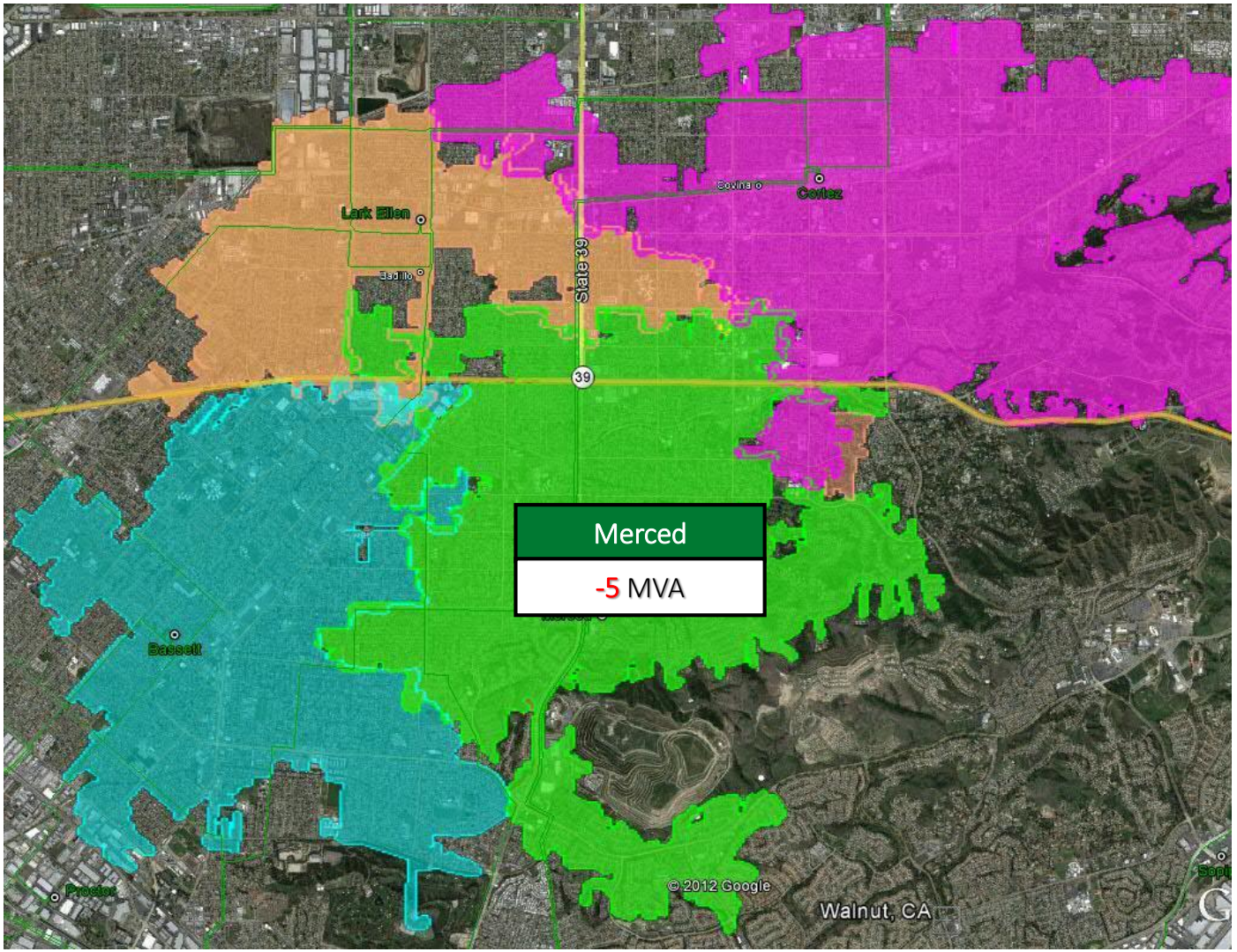
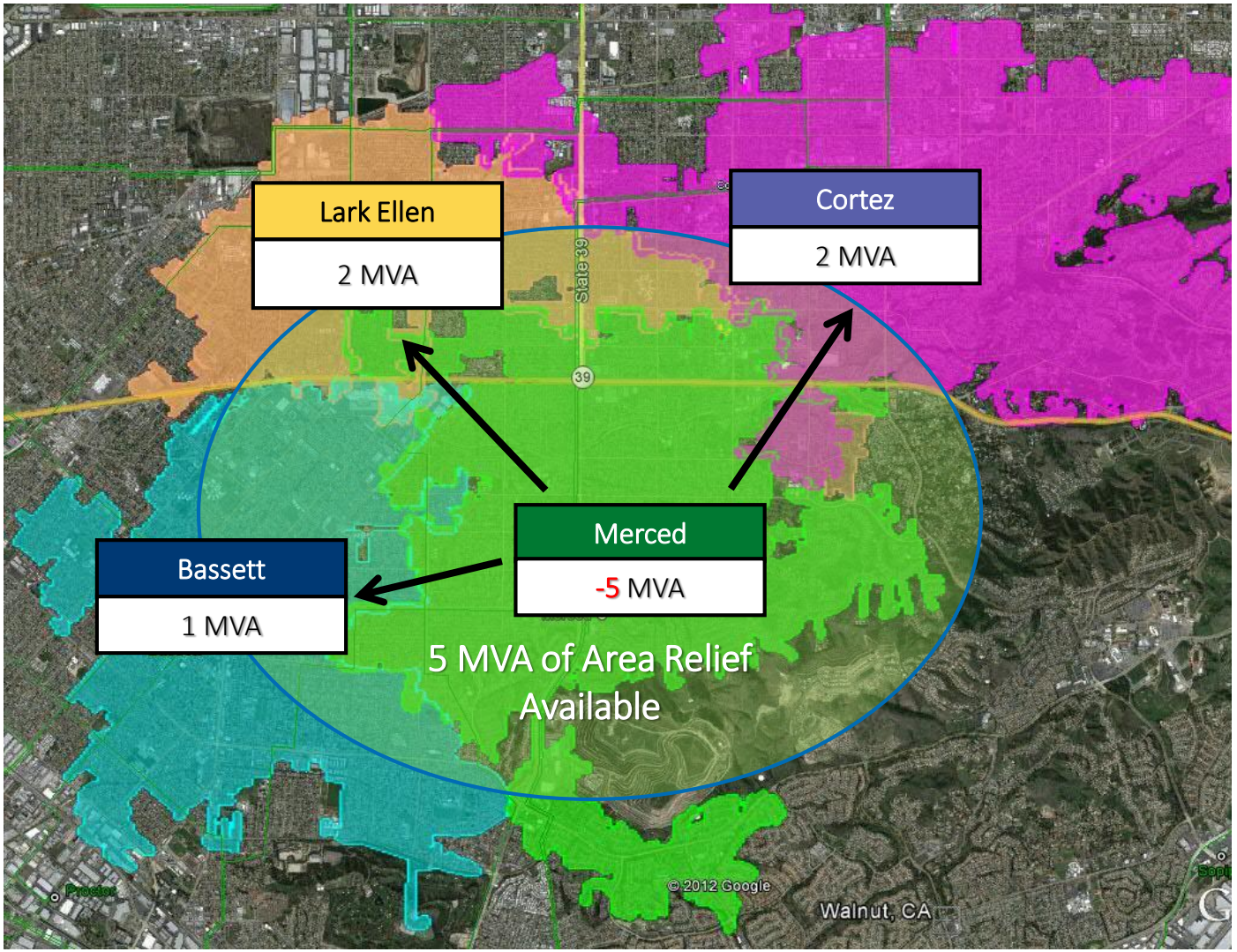
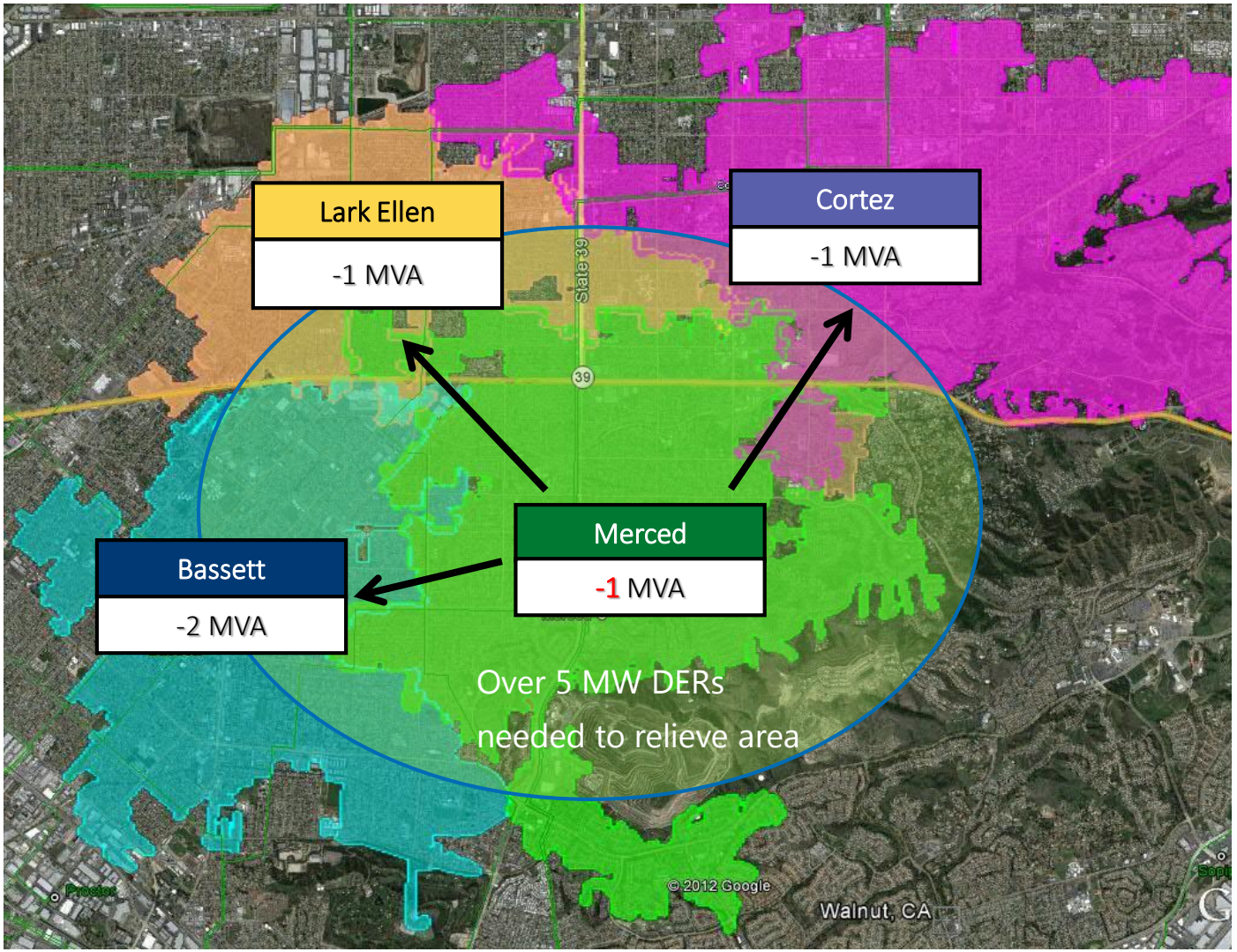
Distribution Planning Assessment – need identification



Distribution Planning Assessment – operational mitigation



Distribution Planning Assessment – future needs



Net value: compare total costs of DER solution with cost of traditional infrastructure solution

Locational Benefits → Understanding range of potential benefits

Needs and Attributes → Innovative solutions to meet reliability

Cost minimization → Competitive efficient portfolio

Achieving maximum value for customers

Requires performance of distribution system and DERs

Thank you.

To access SCE's Distribution Resources Plan (DRP), SCE's Distributed Energy Resources Interconnection Map (DERiM), and additional information, please visit the CPUC's DRP website at: http://www.cpuc.ca.gov/PUC/energy/drp/