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OpenADR 2.0 in Ancillary Services Markets

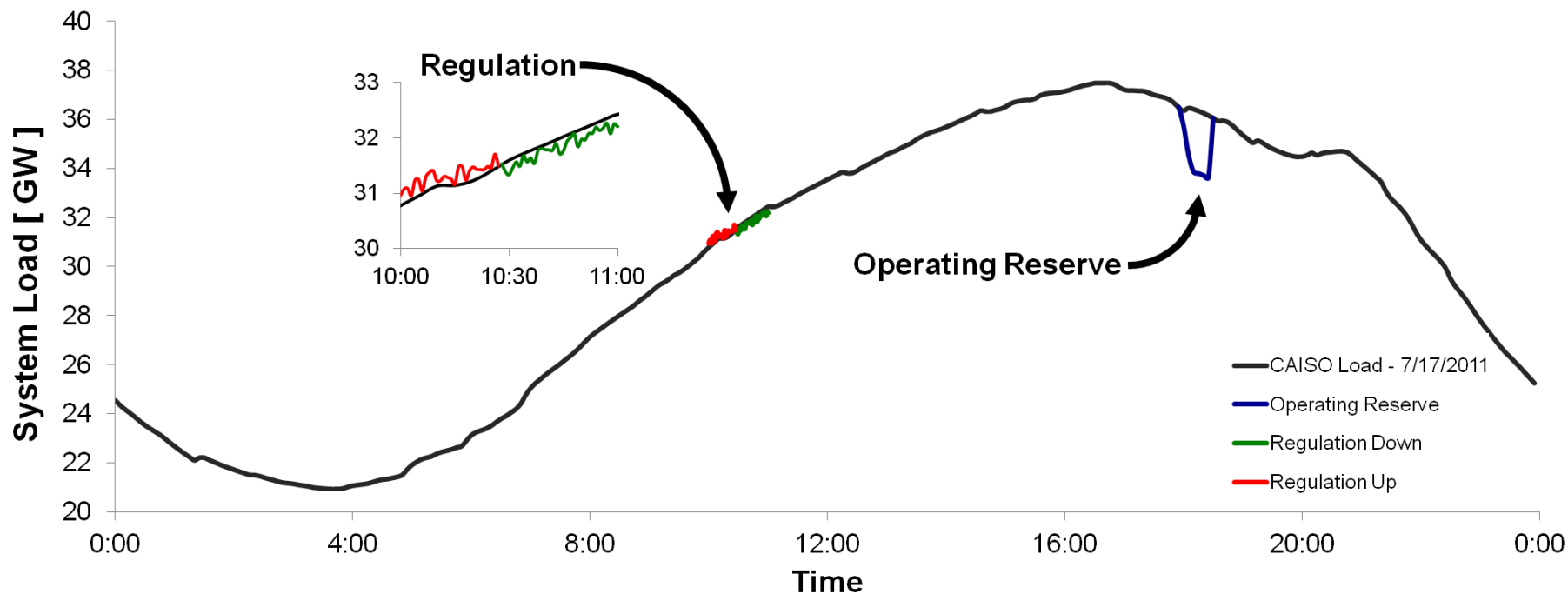
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OpenADR Member Meeting, June 19, 2014

Outline

- Integration with ISO Architectures
- Example Pilots and Projects

Ancillary Services



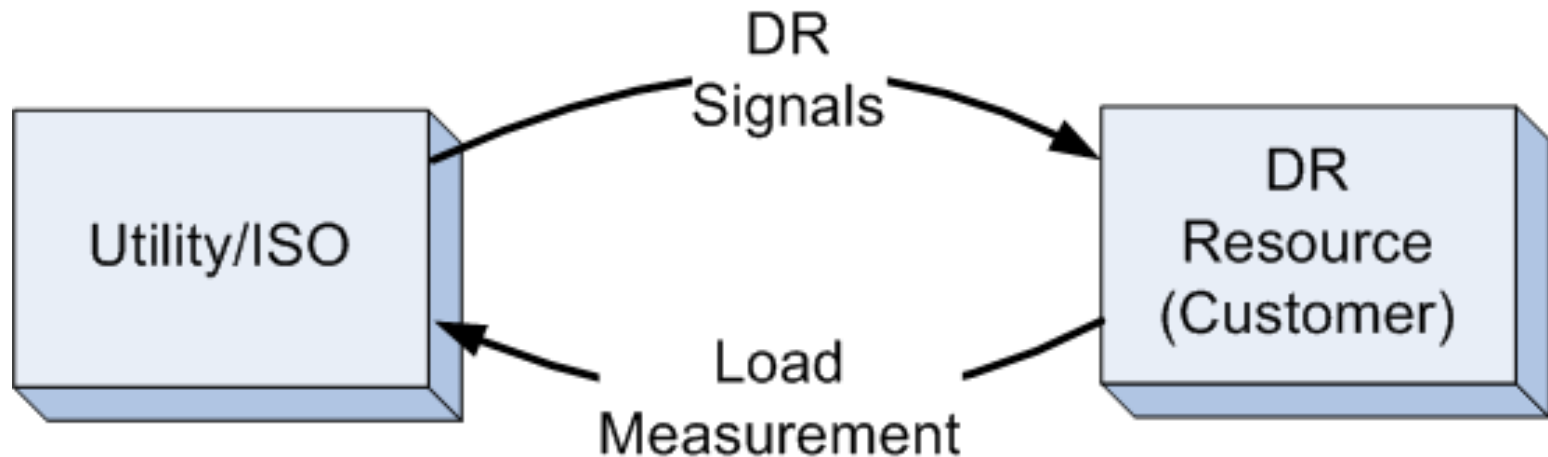
Operating Reserves respond when a contingency event occurs to restore balance.

- respond within 10 minutes
- event duration typically 10-30 minutes

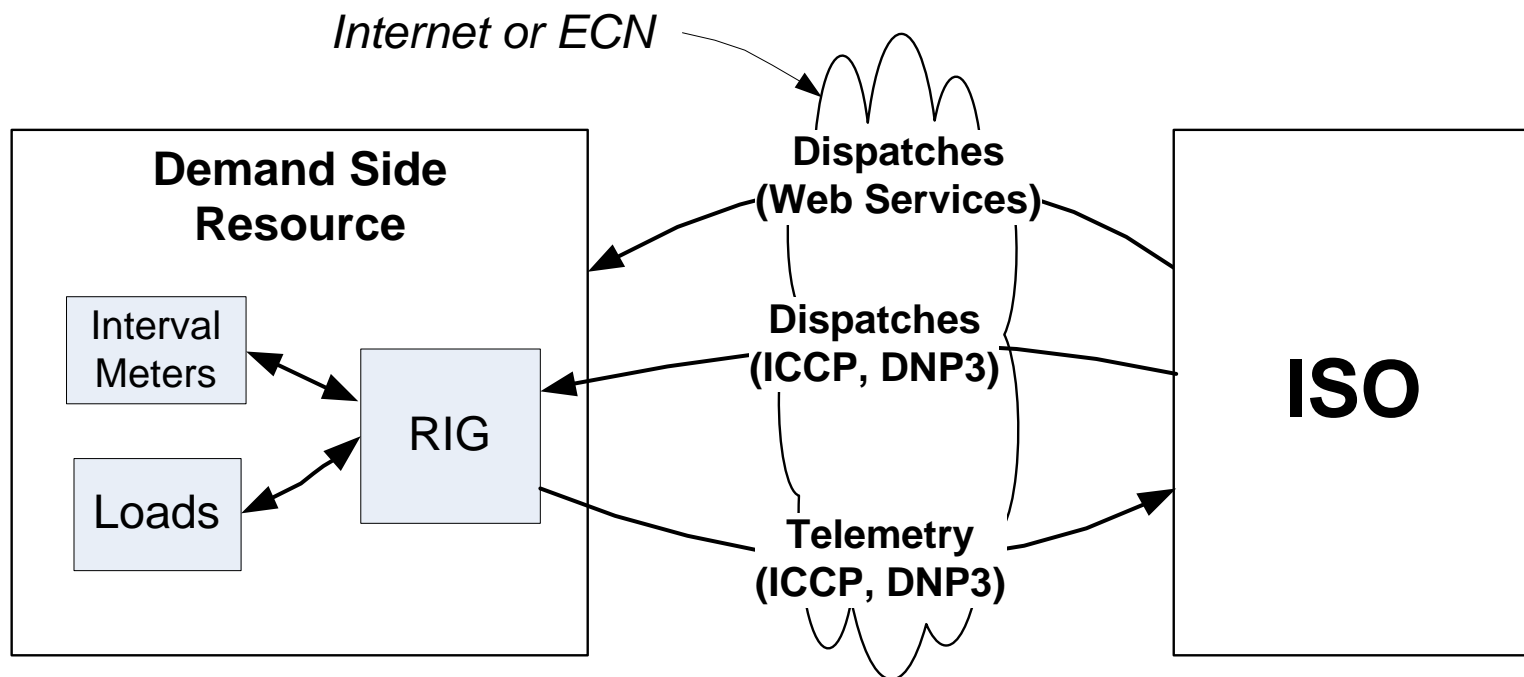
Regulation rectifies small discrepancies between load and 5-minute real time dispatch

- receives an operating point instruction and responds within 4 seconds
- Theoretically energy neutral, although not in practice

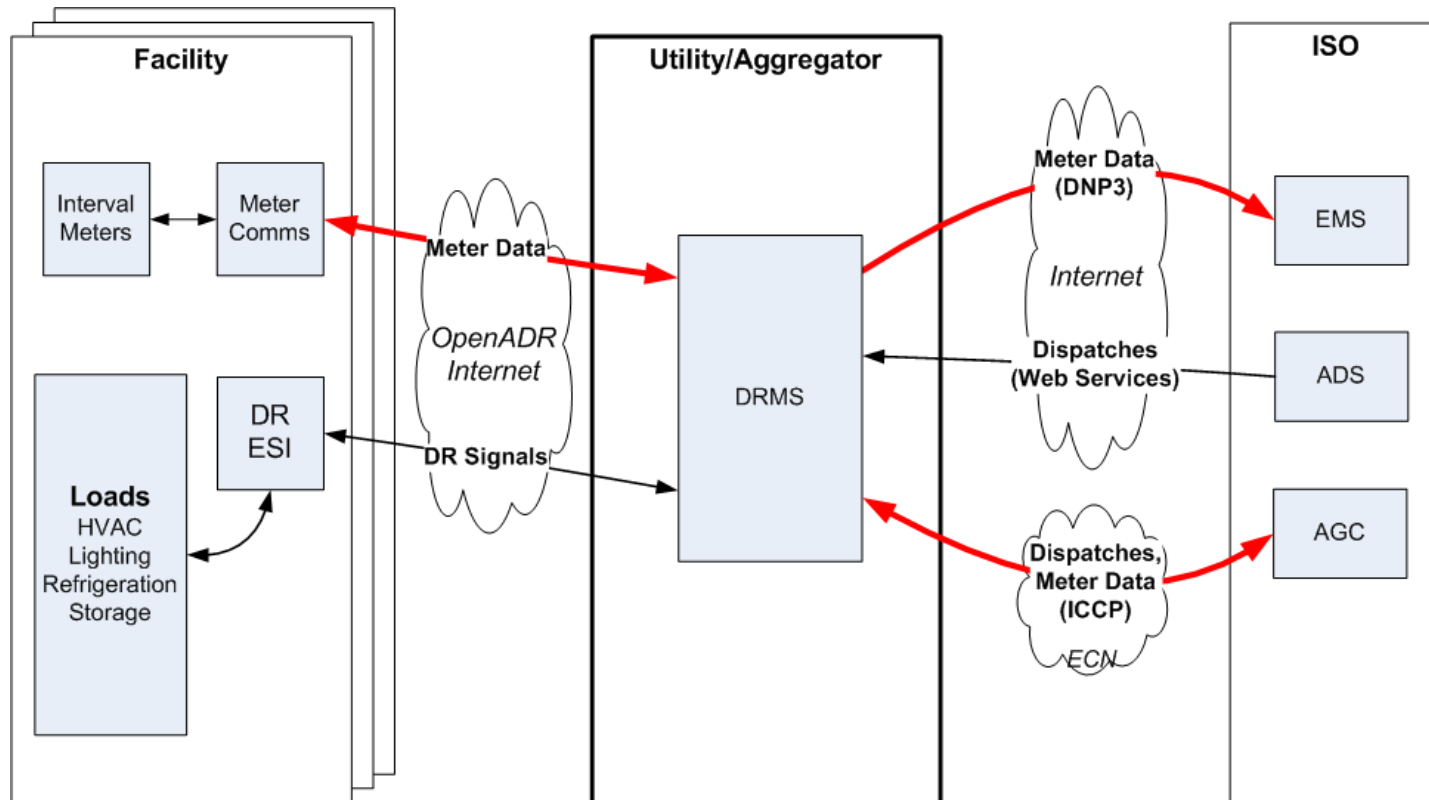
Simple Interaction Model



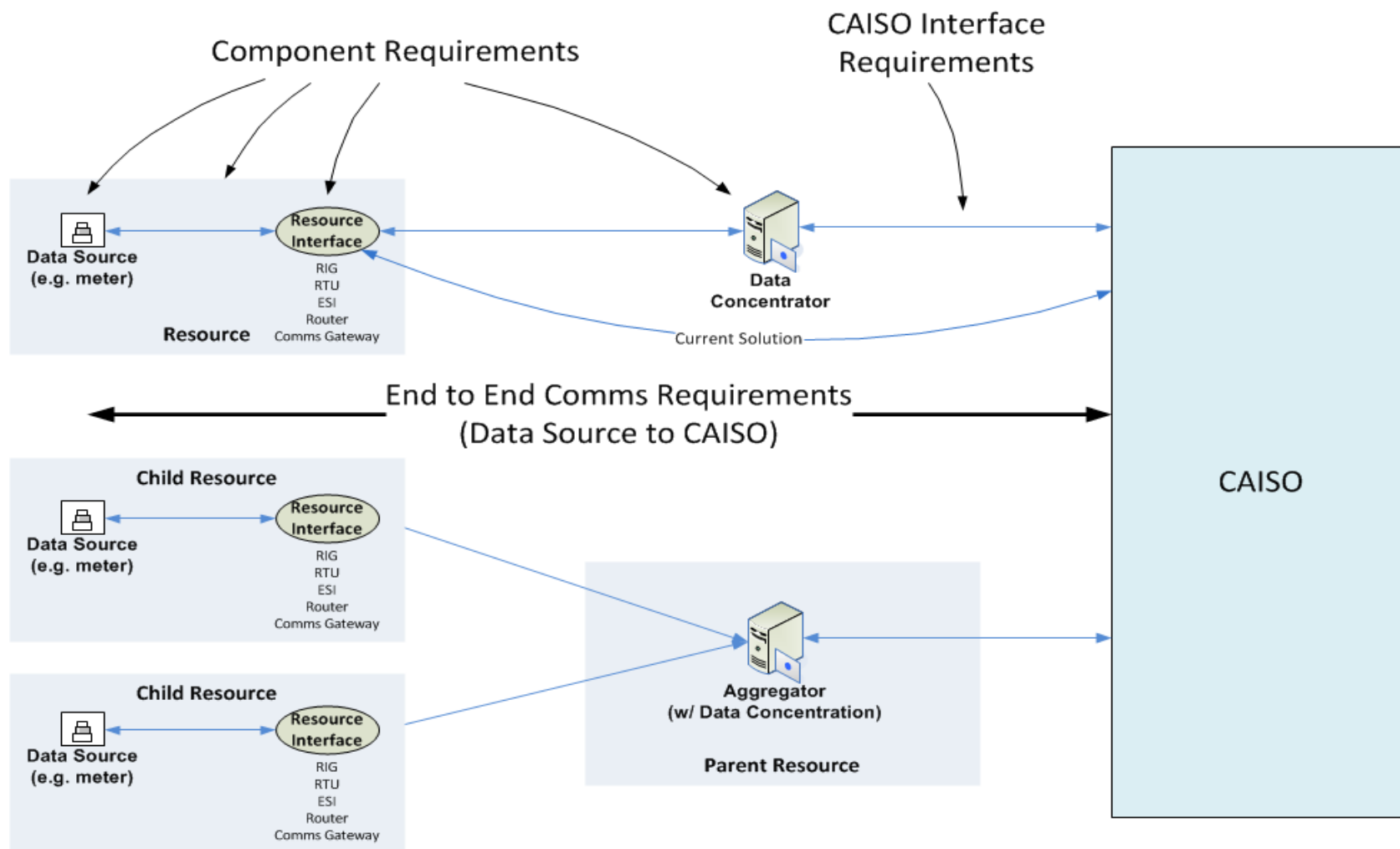
Typical ISO Interactions



Ancillary Services Using Intermediaries



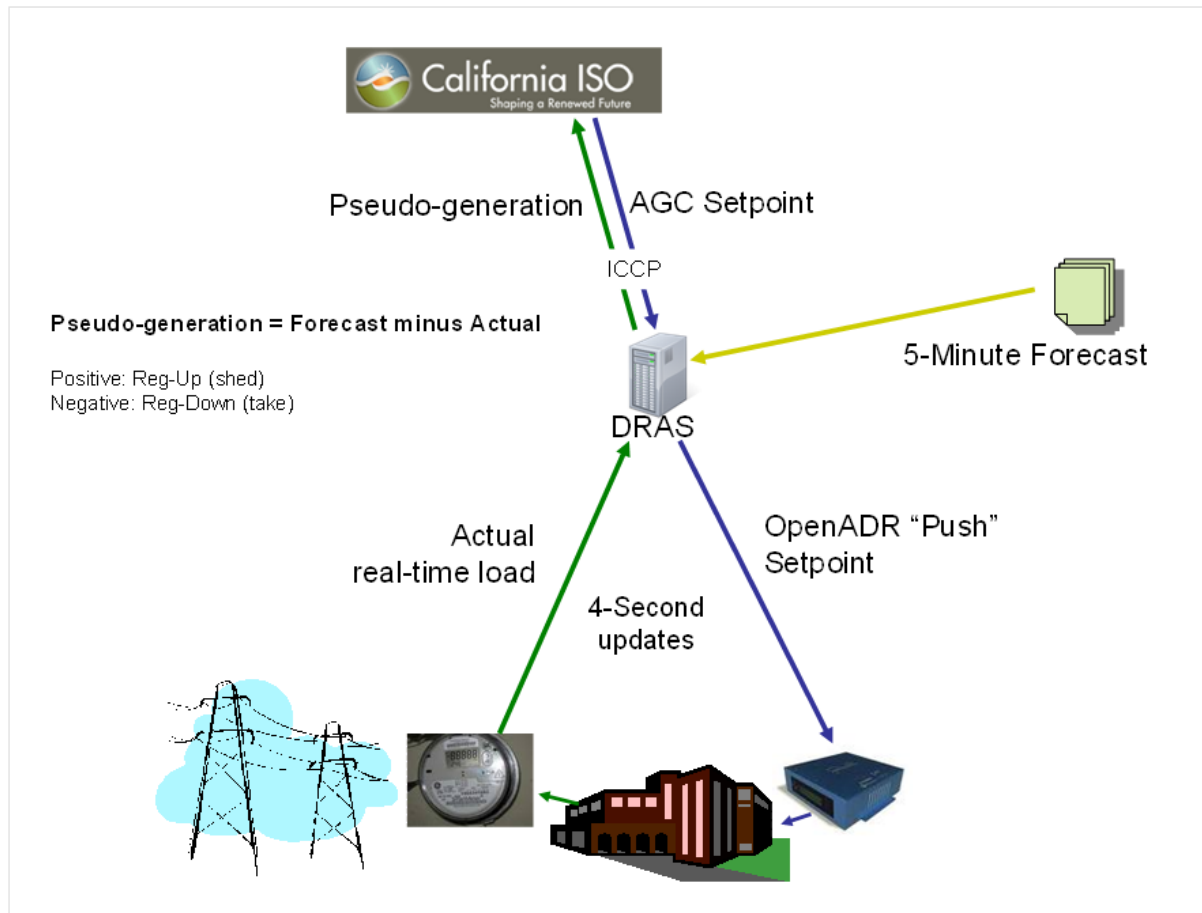
New Proposed CAISO Architectures with Data Concentrator Entities



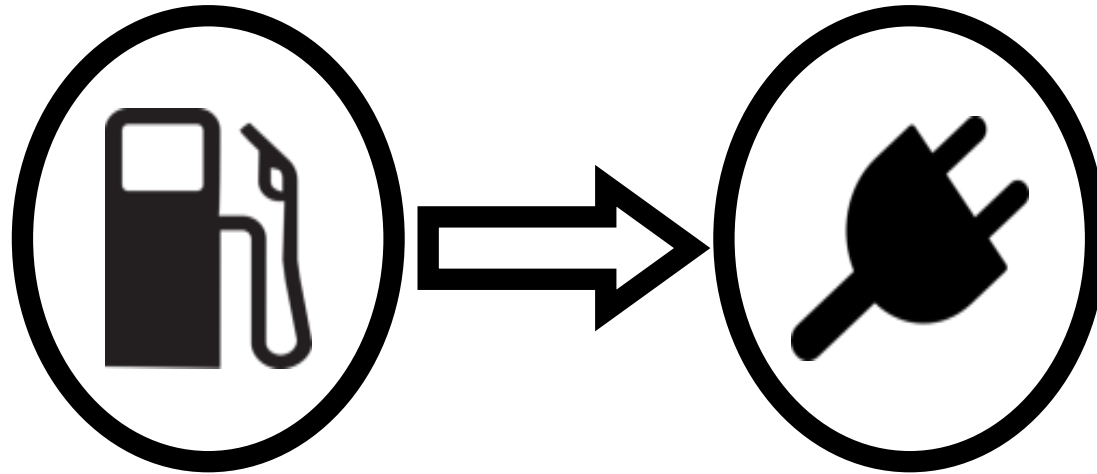
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PGE Intermittent Renewable Resources Pilot (regulation ancillary services)



LAAFB - Regulation Ancillary Services



- Manage 41 vehicle PEV fleet dispatch and charging
- Ensure sufficient charge to meet mobility needs
- Charge PEVs under cost-minimizing schedules
- Optimize participation in grid service markets to generate revenue
- Determine extent to which PEV fleet cost gap can be narrowed

The Team



Optimization / Real-Time Charging Control

Grid Integration Group – Berkeley Lab

Sila Kiliccote (PI), Nicholas DeForest, Terry Chan, Jason MacDonald, Doug Black, Michael Stadler



Real-Time Charging Control

UC Berkeley

Duncan Callaway, Matias Negrete-Pincetic, Frederik Juul



Grid Communication using OpenADR

Akuacom Honeywell

Thorsten Bach, Ed Koch

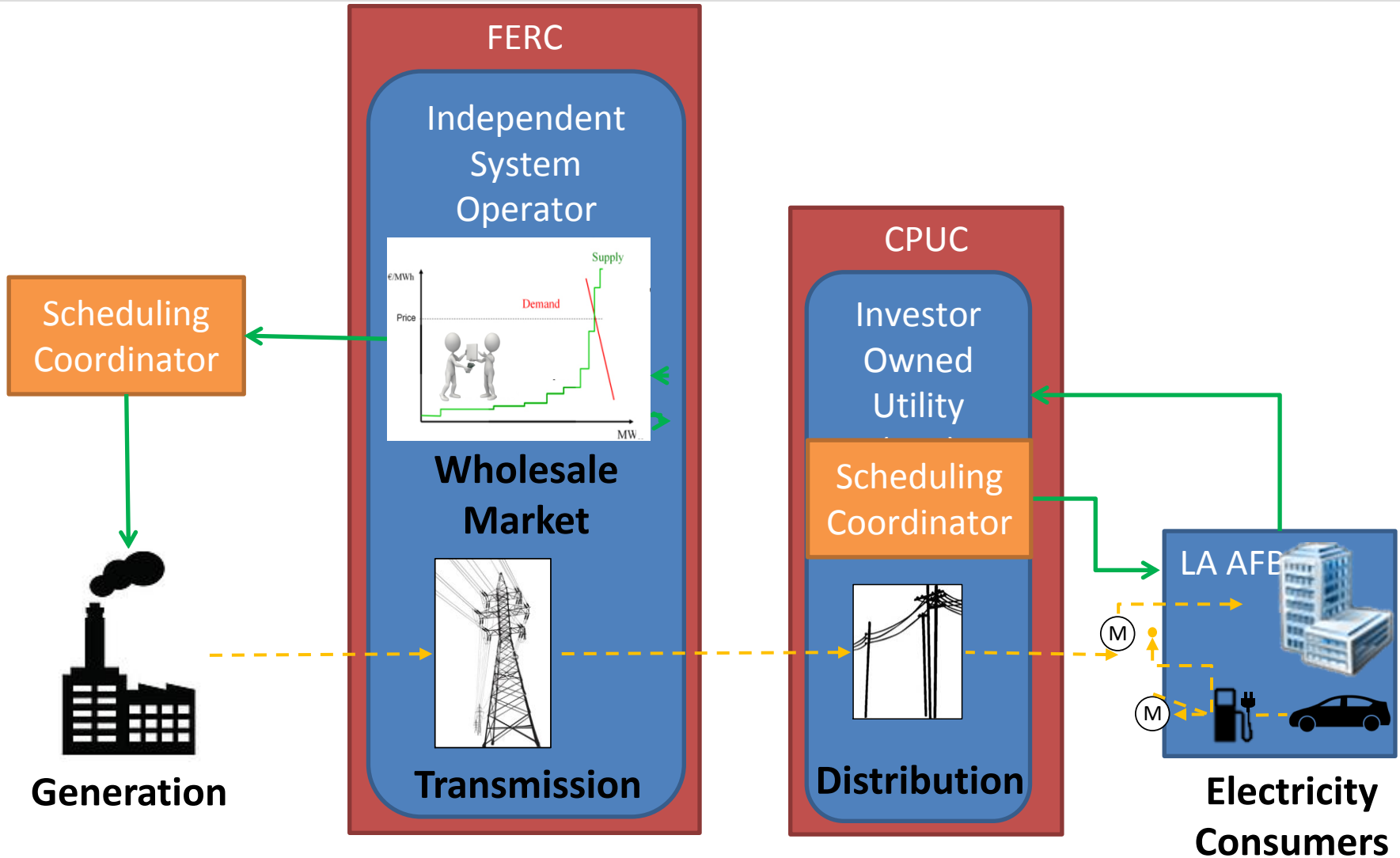


Fleet Management / EVSE Network OS / Integration

Kisensum

Clay Collier, Paul Lipkin, Alan White

The Business Environment



Architecture

