Riding in the Fast Lane

IRC/FERC Discussion Forum On Fast Response Distributed Grid Services

ISO/RTO Council (IRC)

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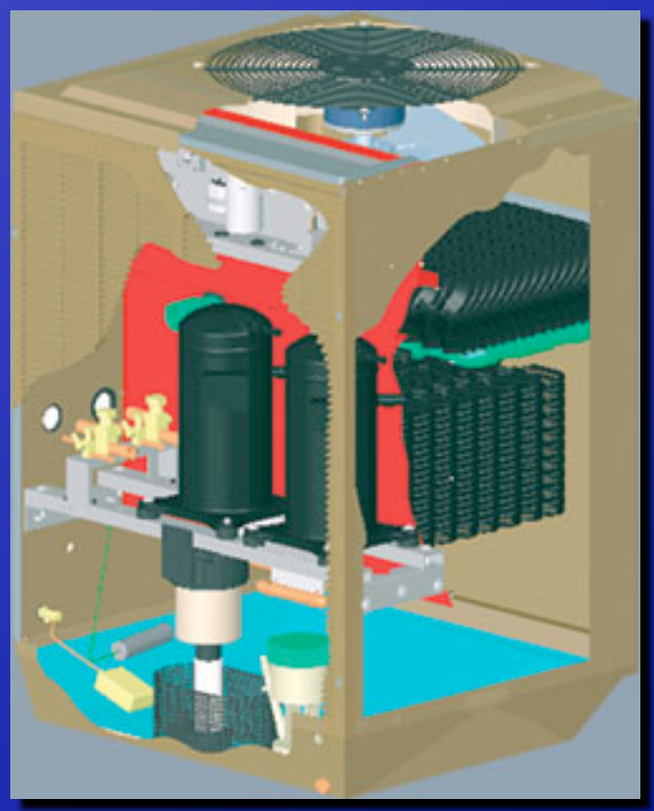
Fast Response Distributed Grid Services

- ★ V_2G & V_1G
- ★ Flywheels
- ★ Batteries
- ★ Demand Response



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Fast Response Distributed Grid Services

Electric System Benefits

- **Efficient Grid Management**
  - Ancillary Services (Fast Regulation & Spinning Reserve)
  - Dispatchable Reactive Power
  - Peak Demand Services (Demand Response)
  - Reduced Operating and Planning Reserves
  - Reduced Line Losses
  - Improved Power Plant Efficiency
  - Improved Load Factor
- **More Efficient Market Operation**
- **Reduced Costs**
- **Reduced Carbon Footprint**
- **Integration of Renewable Resources**

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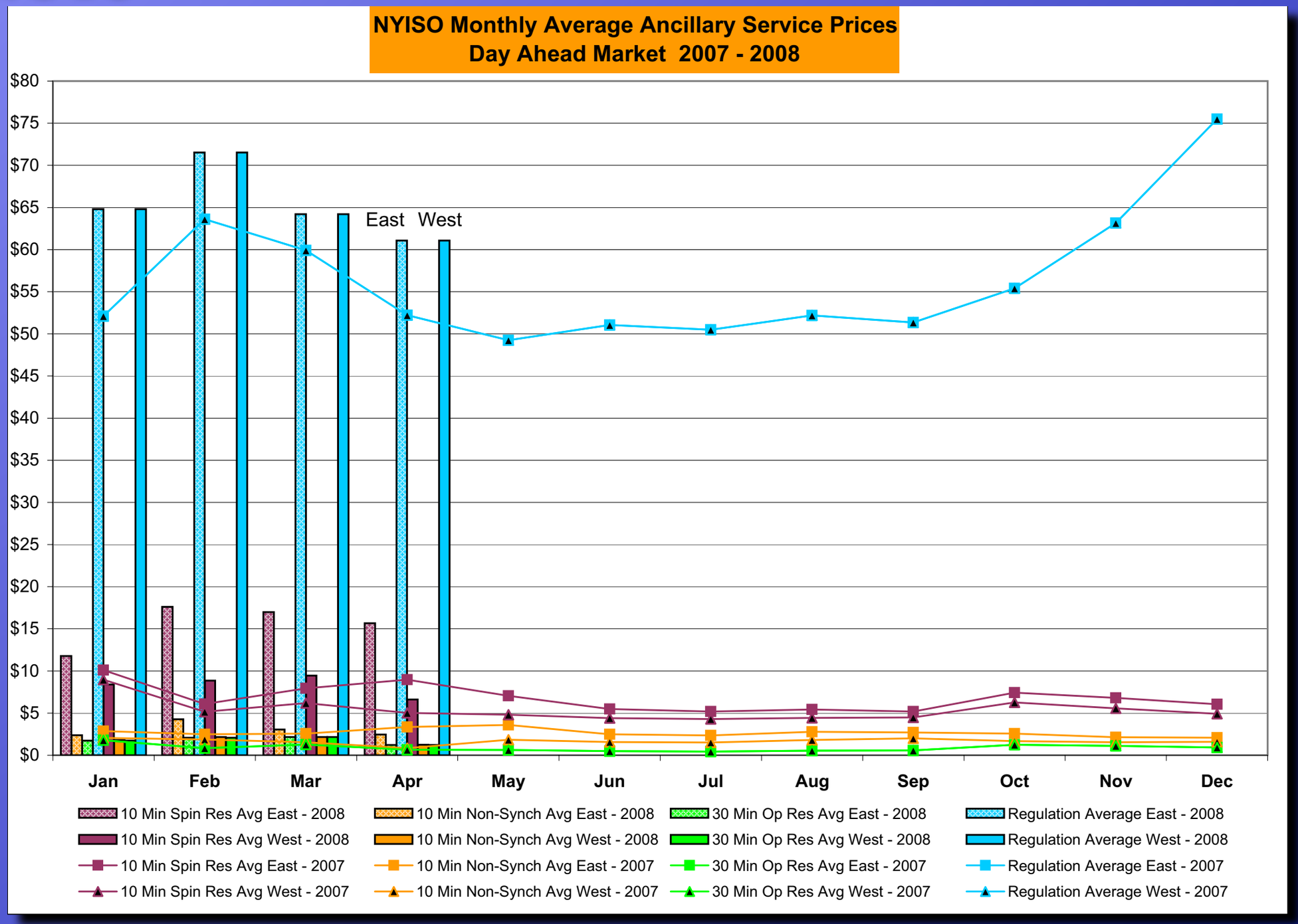
Fast Response Grid Services Are Valuable



Market Monitoring
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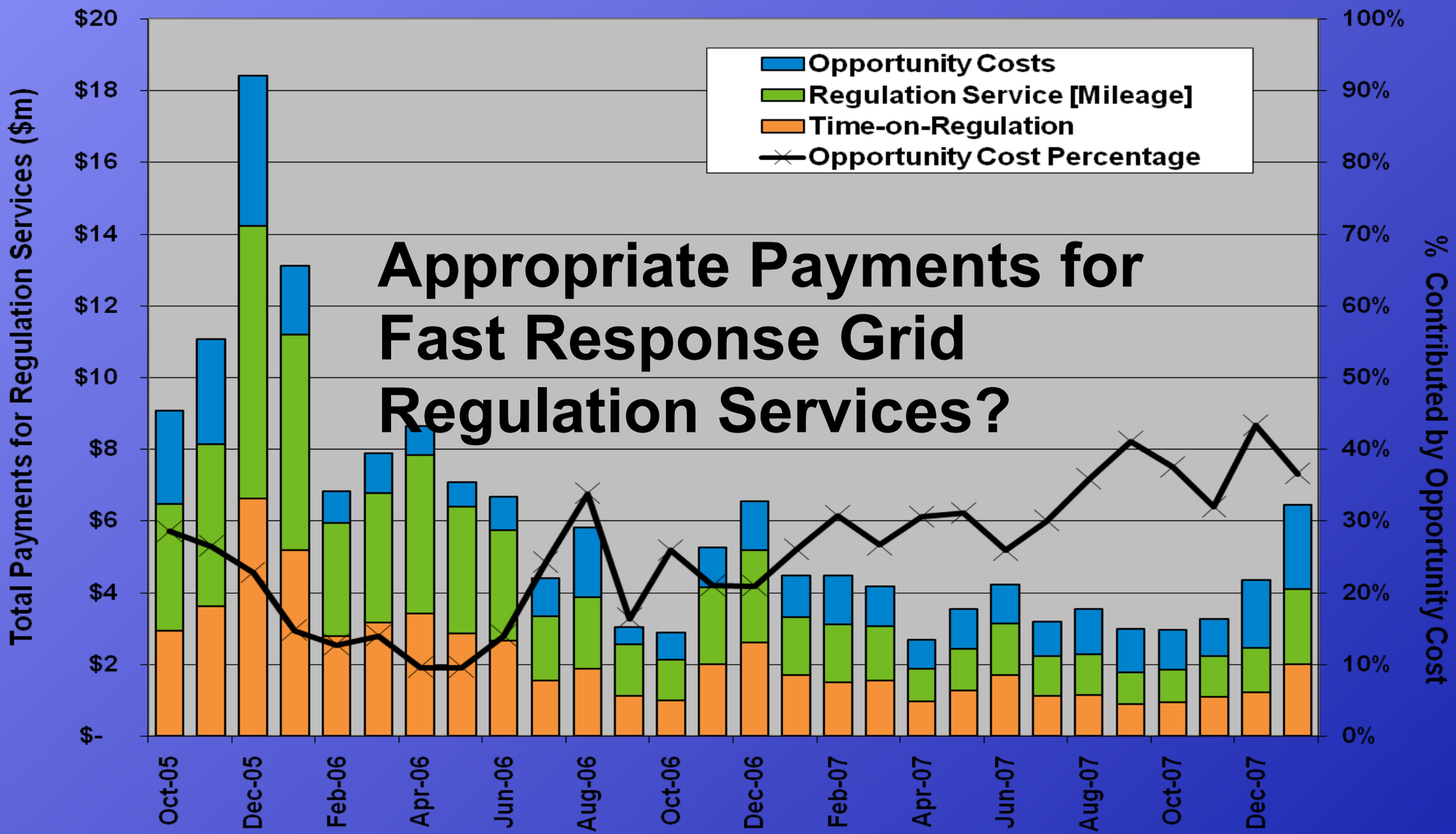
ISO-NE Regulation Service Payment Components



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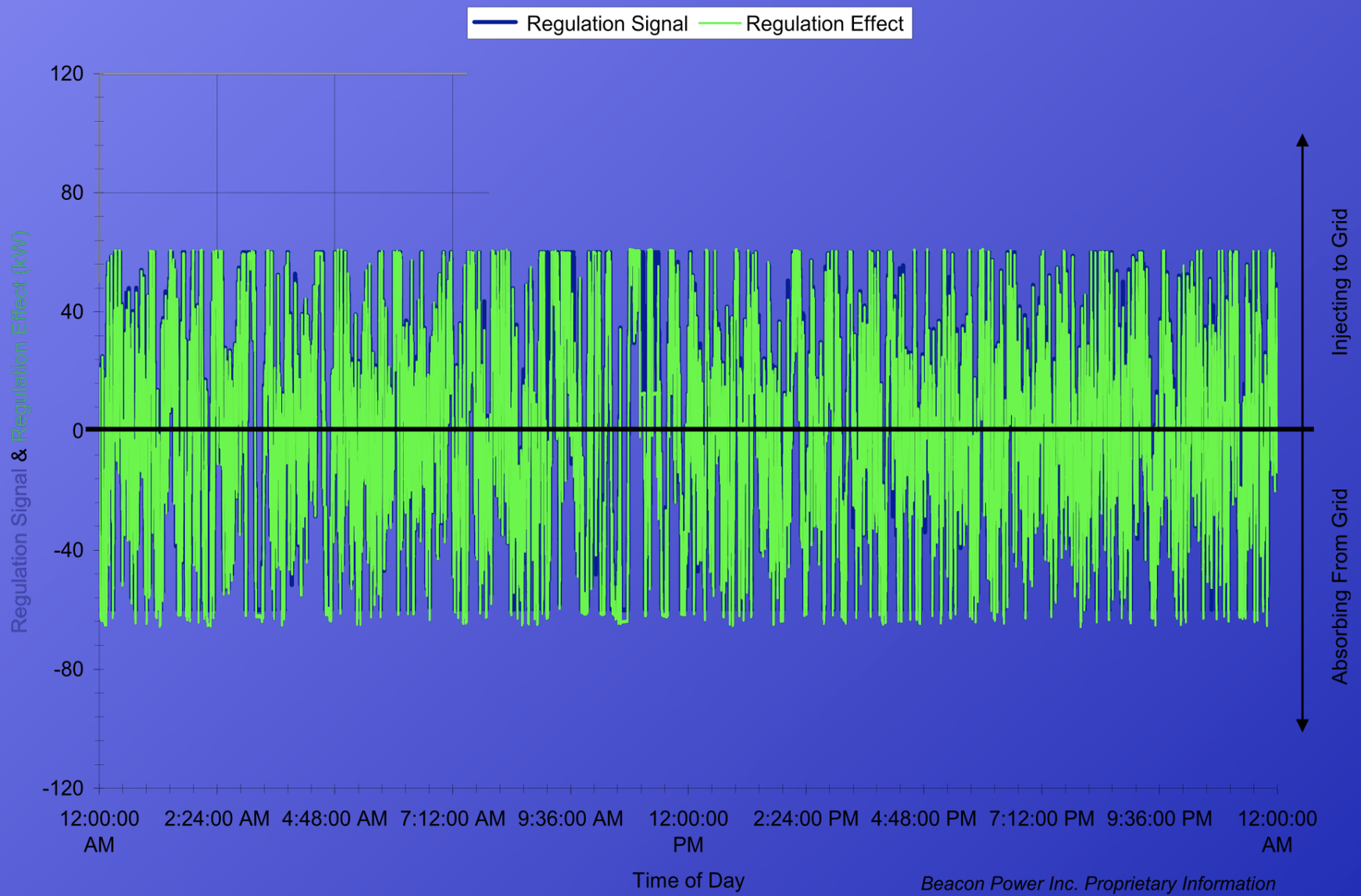
Flywheel Fast Response Grid Regulation Services



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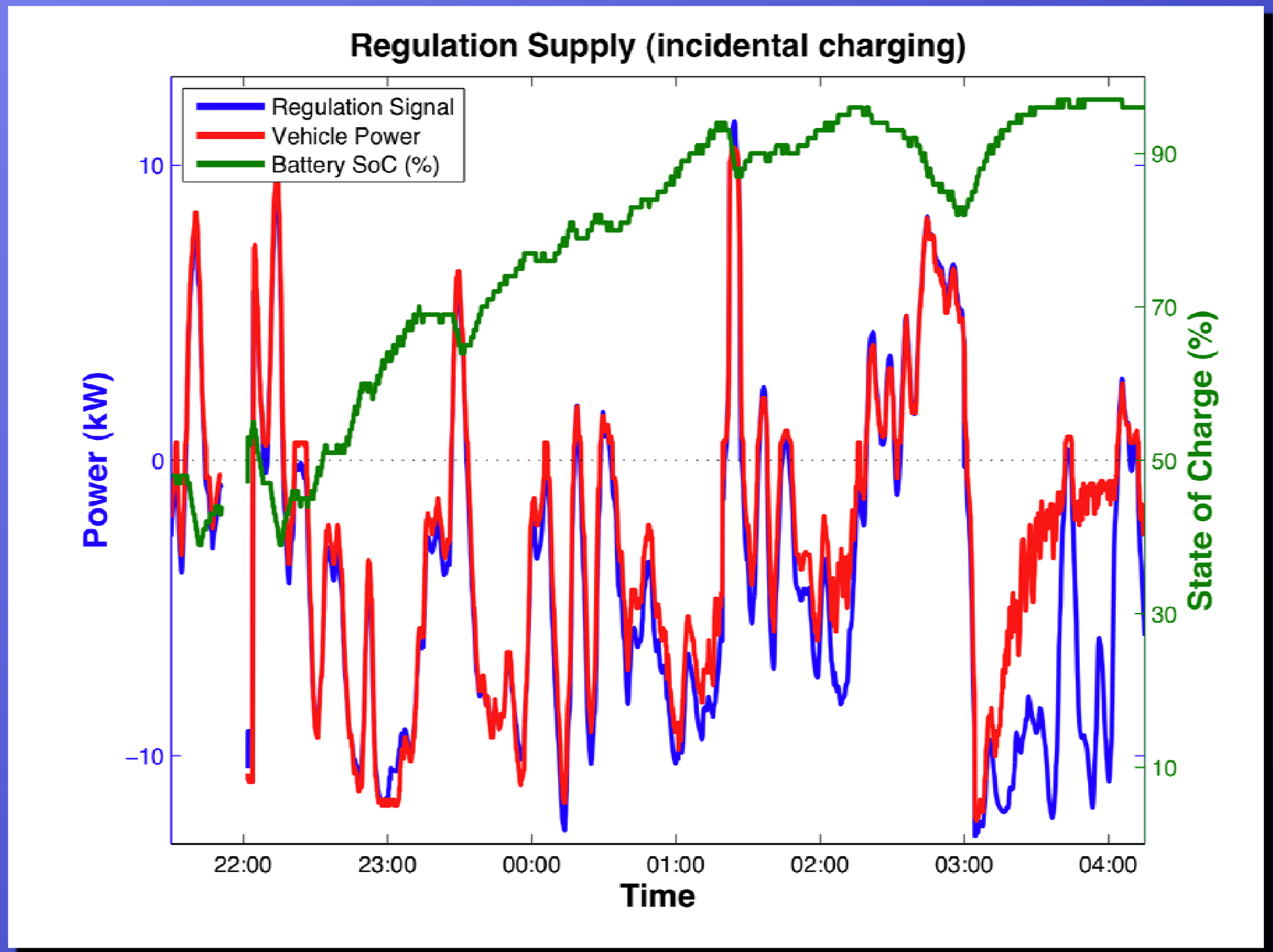
V_2G Fast Response Grid Regulation Services



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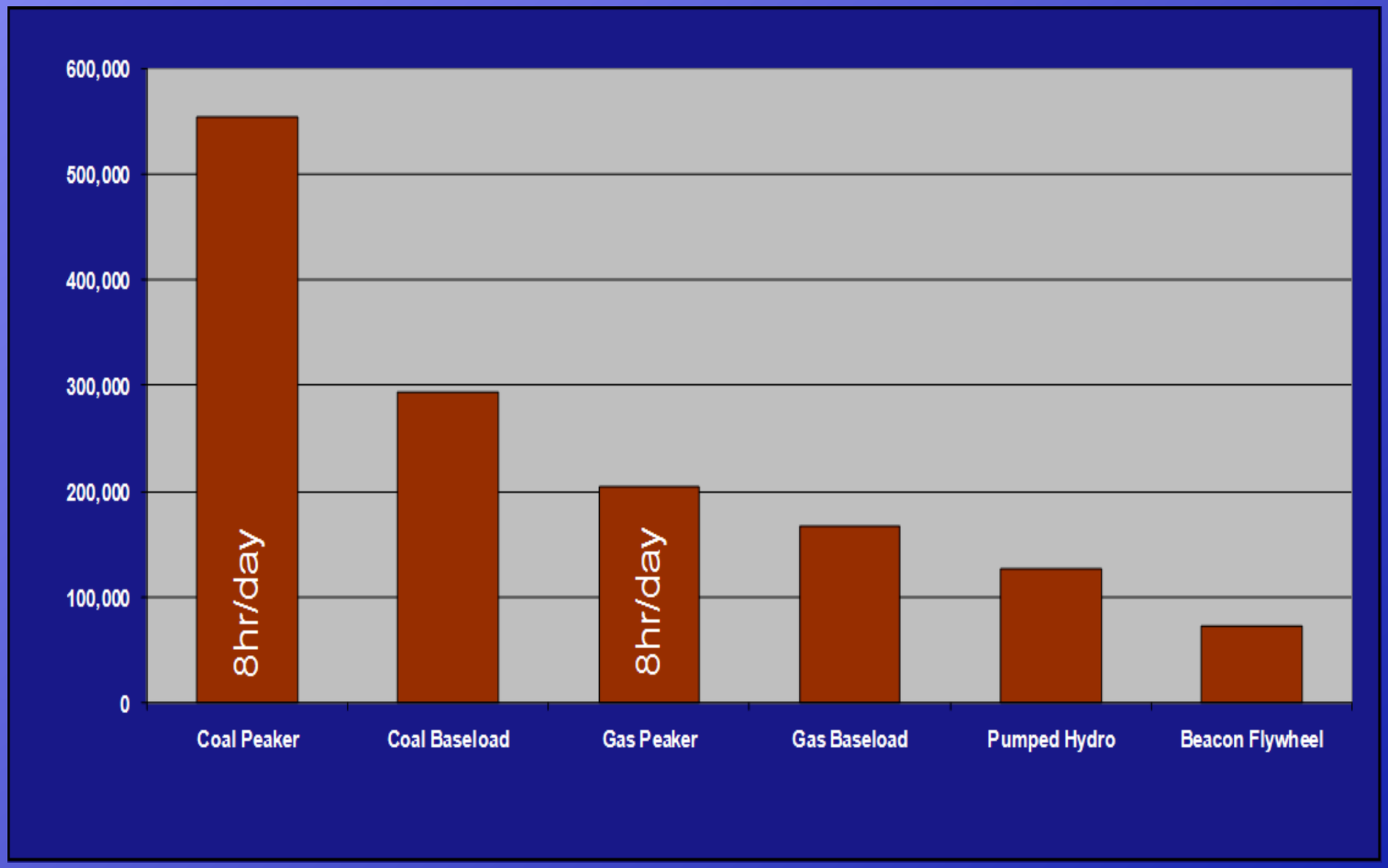
CO_2 Benefits of Fast Regulation Service

From KEMA study: 20 MW of Regulation over 20-year operating life



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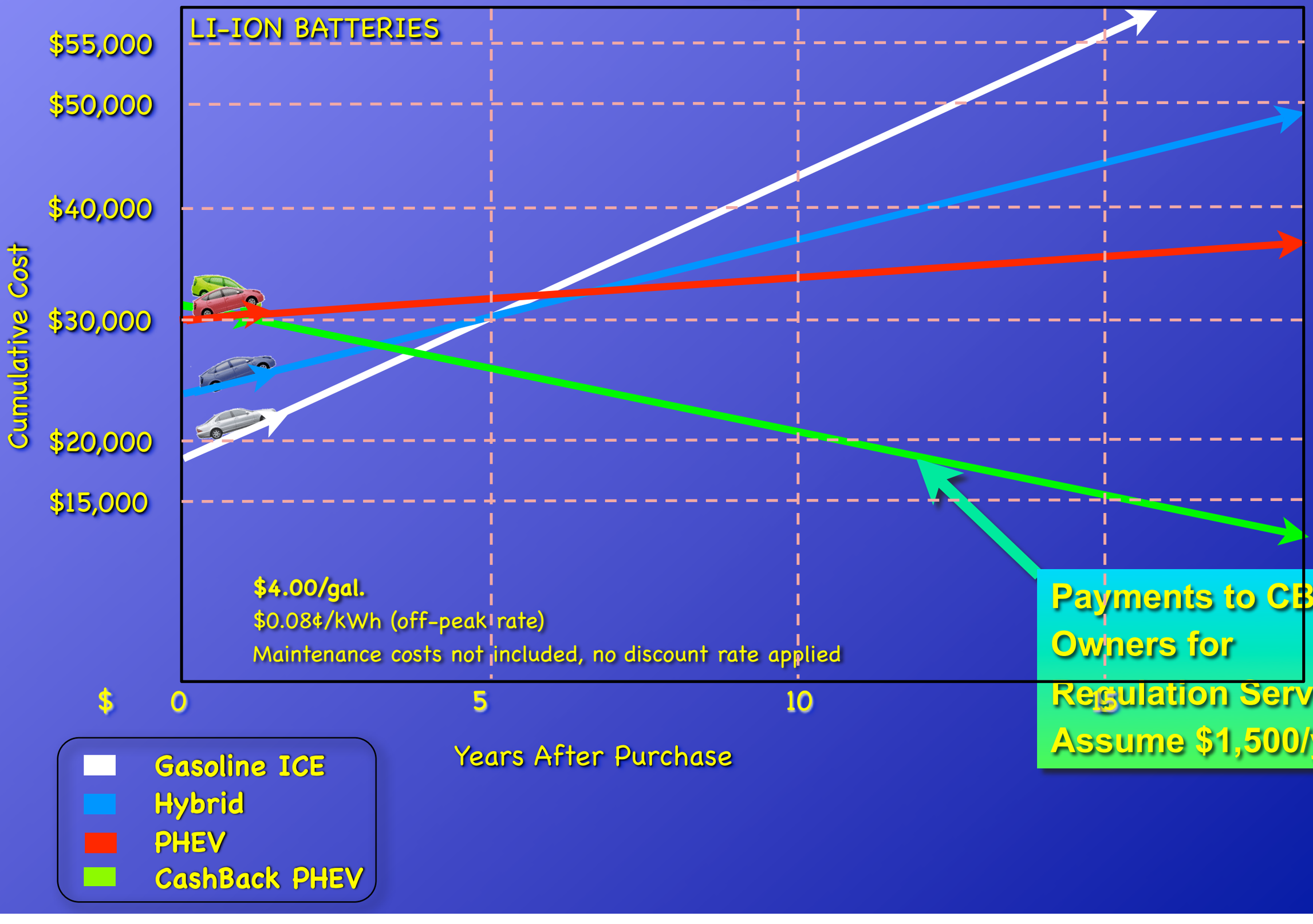
Benefits of V_2G Payments to PHEV Owners from Fast Regulation Services



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CAISO Integration Grid Storage Timetable

- 5/29/08 –Web Cast Identify Issues w/Stakeholders
- 6/2-10/08–Rewrite White Paper Describe Issues
- 6/17/08 –(Tentative) Stakeholder Meeting At ISO
- 6/18-30/08 –Write Paper on Proposed Solutions
- 7/08 –Perform Analytical Studies
- 7-8/08 –2nd Stakeholder Meeting Discuss Proposals
- 8-9/08–Description of Recommendations & Alternatives
- 9/08 –Post for Comments
- 10/08 –Respond to Comments & Revise Proposal

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Possible IRC Approach to Integration of Fast Response Distributed Grid Services

- **Form IRC Working Group**
  - **Organization, Objectives, Deliverables**
  - **Participants (Internal/External/Consultants)**
  - **Plan**
  - **Resources**
  - **Timeline**
- **WG Report Deliverables to IRC**
- **Discuss & Implement w/Stakeholders**

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Thank You!

Questions?

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