An Alternative Approach to Demand Response

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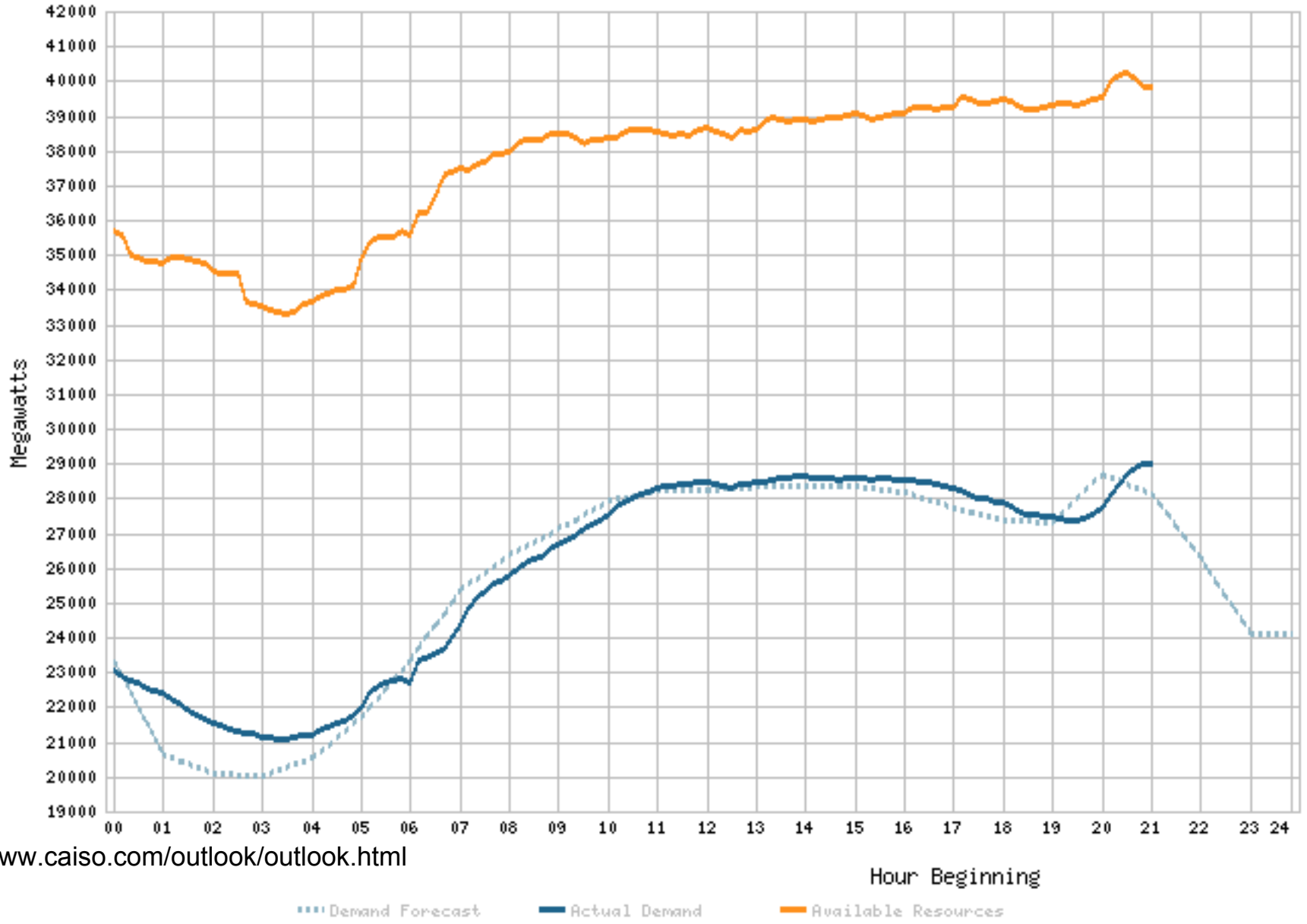
Balancing the Load

CA Electricity Demand Profile (06/07/2011 9:00 pm)

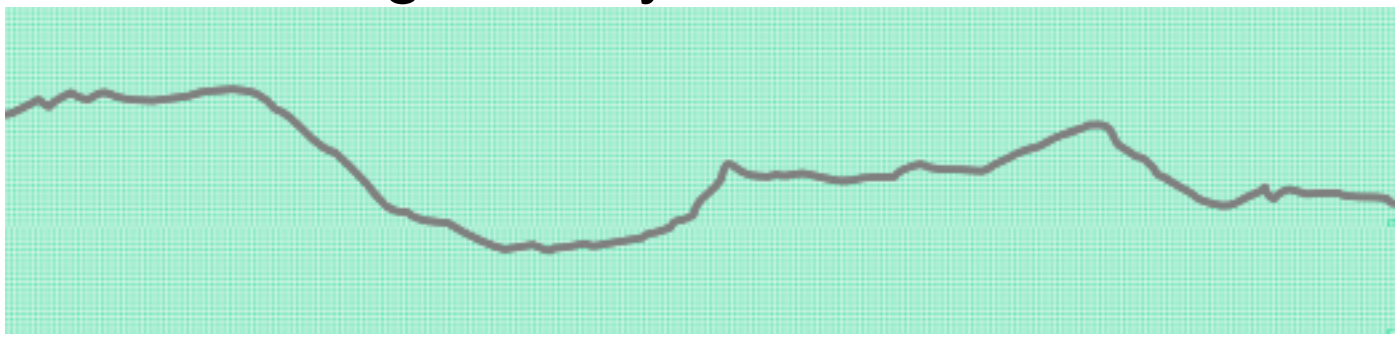


http://www.caiso.com/outlook/outlook.html

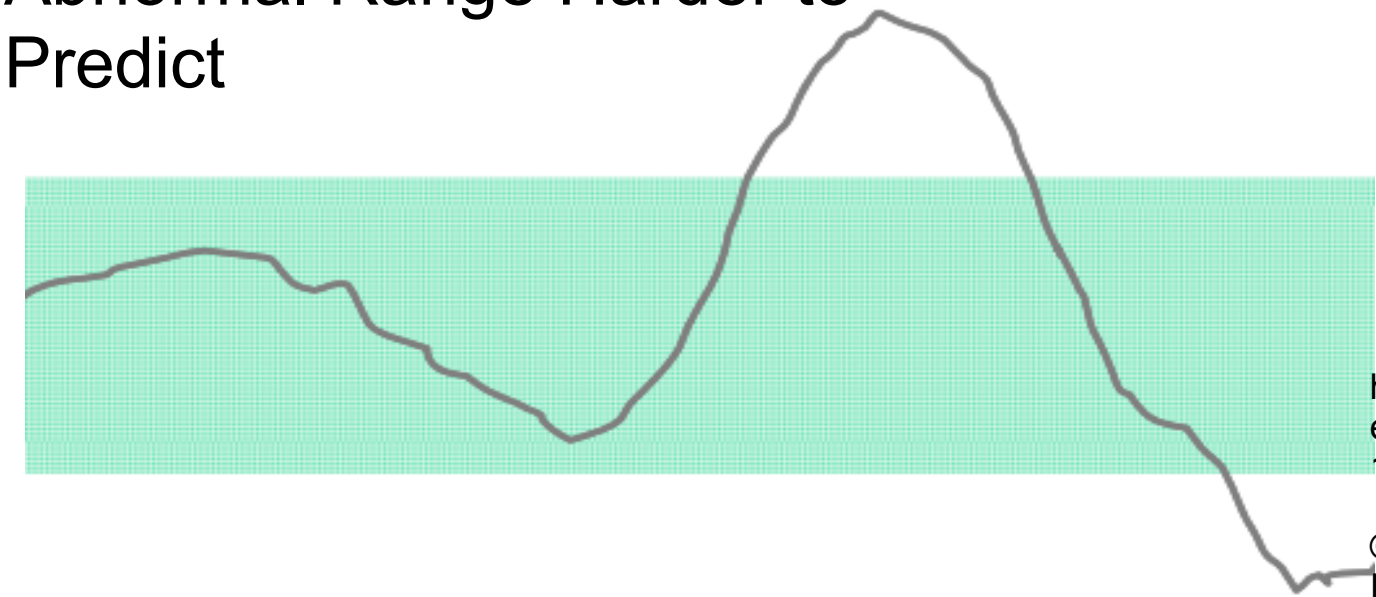
Abilitity to Limit Range

Limiting the load can prevent abnormal behavior in our load line.

Normal Range Easily Predictable



Abnormal Range Harder to Predict



http://www.stanford.edu/class/ee392n/Lectures/EE392n_Lecture10monitor.pdf

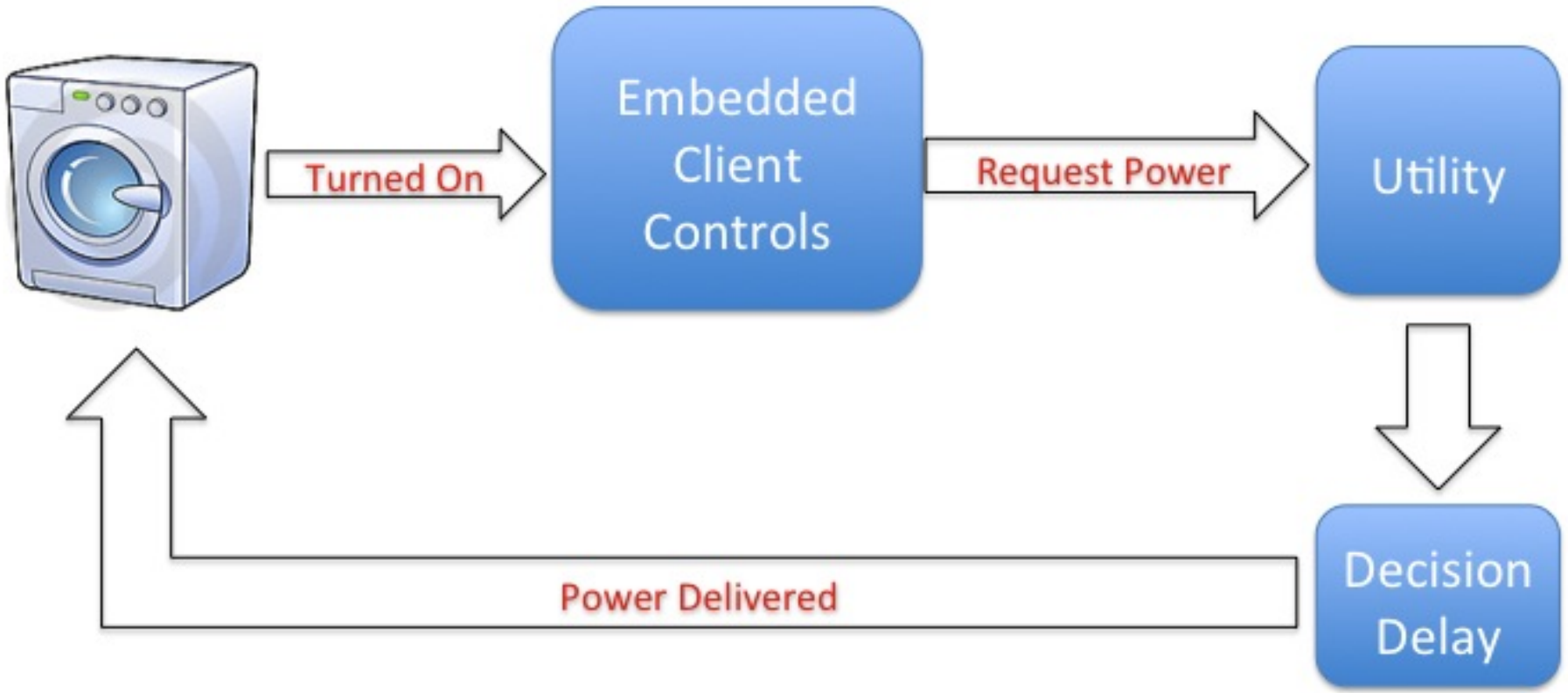
Drawbacks to Current Approaches

- High overhead
  - Sensor design and installation
- Complexity
- Prediction of Demand Response
- System overhaul

Our approach

Explicit power requests for power-hungry, response time-insensitive devices.

Washer machines, not light bulbs



Why does this help?

- Reduces complexity to a manageable level
  - Requires only simple request-reply protocol and network access
  - Quick deployment
- Reduces deployment cost
  - No sensors, limited/no installation in actual homes
  - Can install this feature directly into devices
- Aimed at power-hungry devices for maximum effect
- Easily enhanced
  - Reservation scheduling based on cost

Critical Areas for Future Research

Timing - How long does it take to fulfill requests and balance the load

Designing Network - How to manage requests and creating the data networks.

Developing request systems and installation systems for load heavy applications

http://www.lcdtv-stands.com/a-flat-screen-tv/

Q&A ?