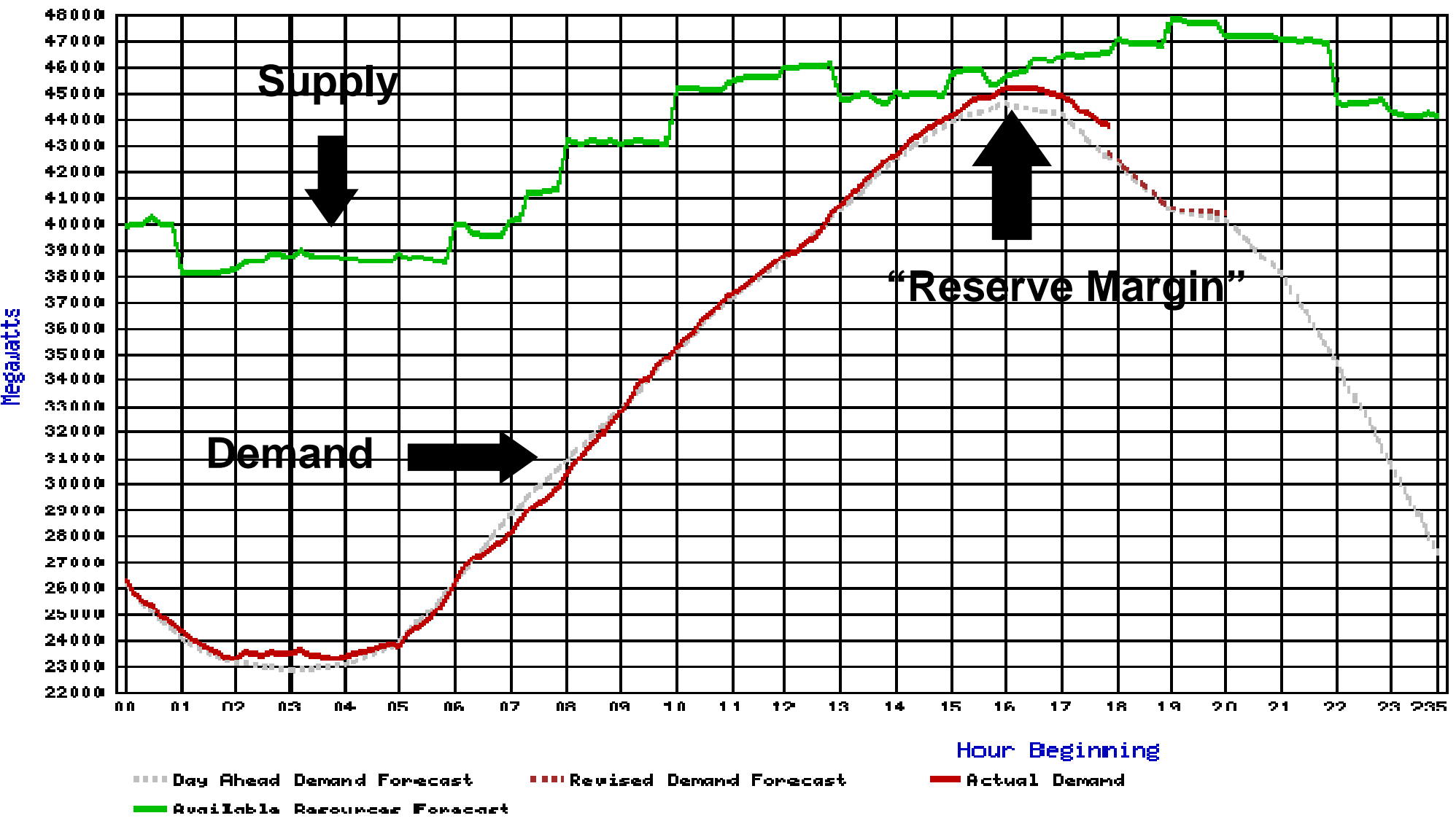


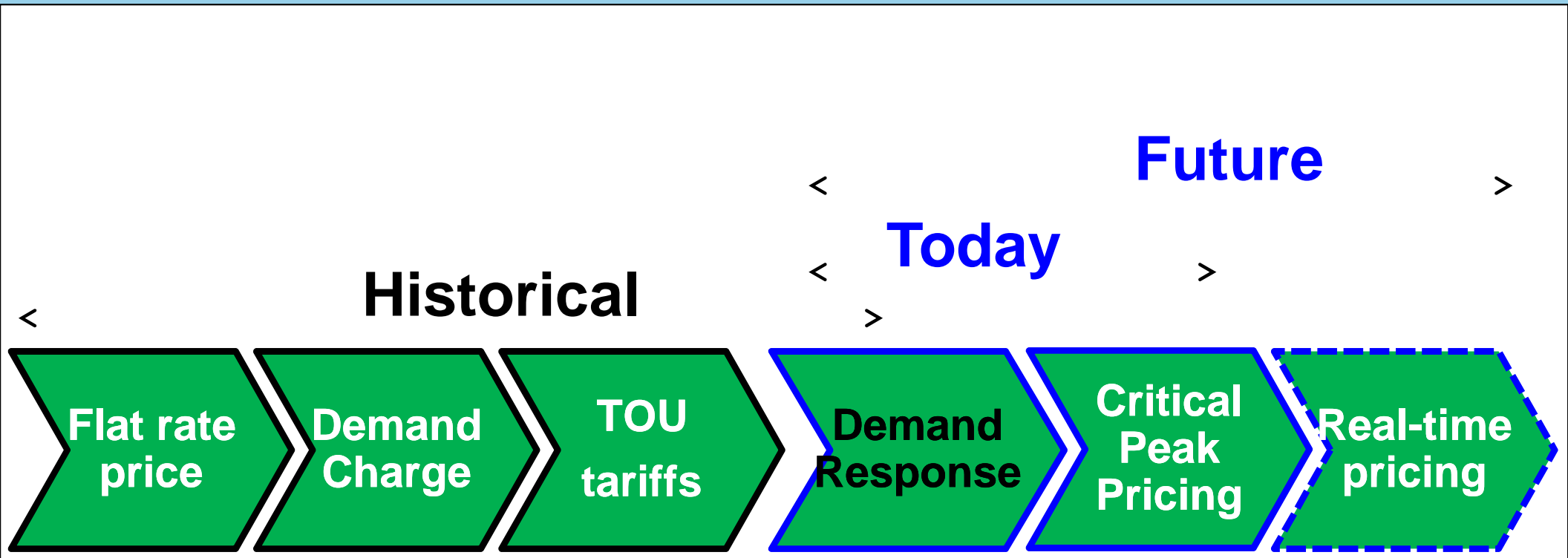
The background of the slide is a light blue color with a network diagram. A central red sphere is connected by white lines to several yellow rectangular blocks. Some of these blocks are further connected to other yellow blocks, creating a web-like structure. Several stylized human figures in business suits are scattered throughout the scene, some standing on yellow blocks and others in motion, suggesting a dynamic and interconnected environment.

Automating and Optimizing Demand Response to Solve Peak Load Management Problems - by using existing Buildings & Systems

David Olson, P.E.
BuildingIQ



* Typical California (Cal-ISO) Summer Day Grid



Prices will increase



Historical: “Demand Response”

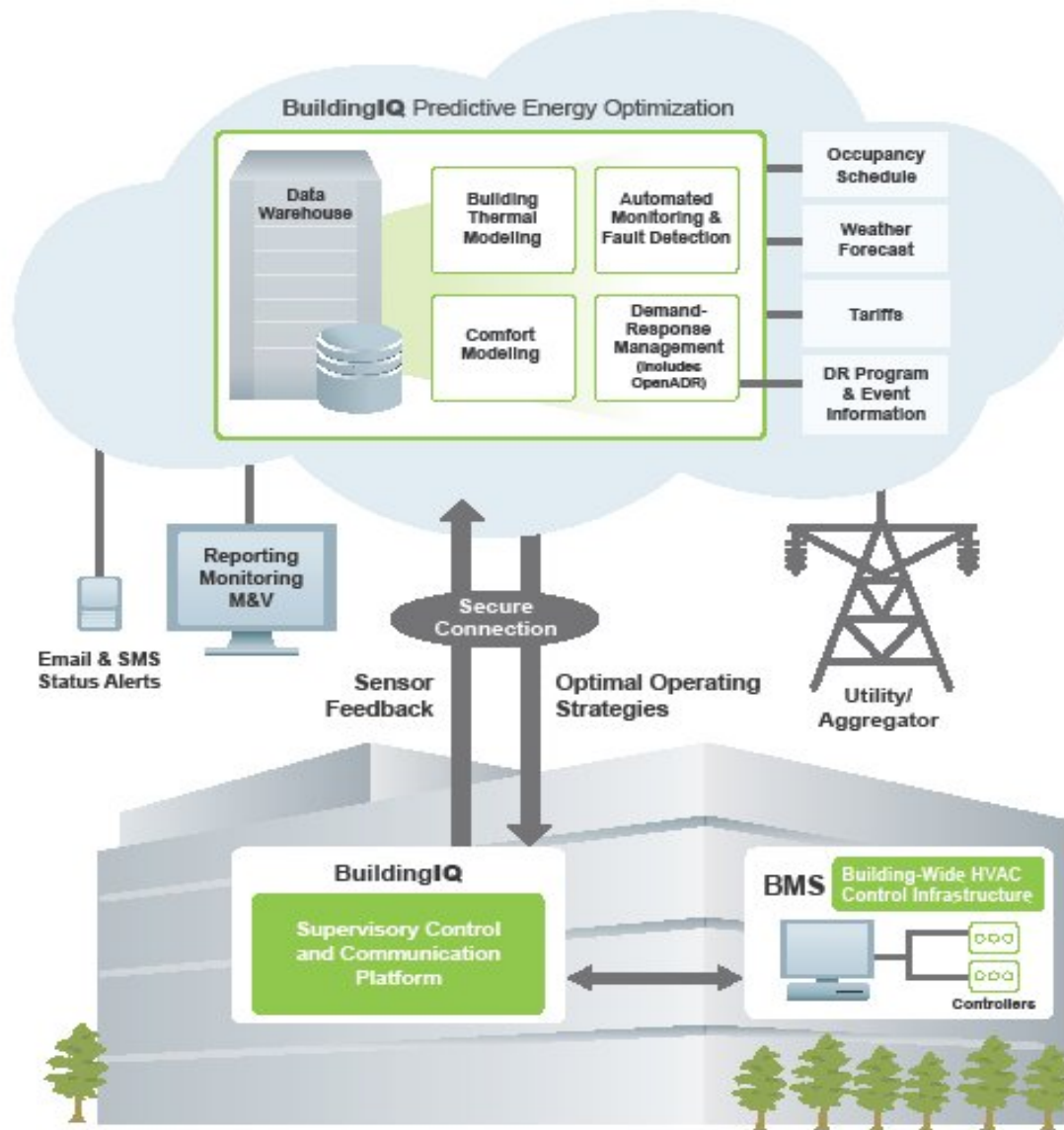
- Text, email or phone call to building mgr.
- Manual control of building load
- “Best guess” at results/participation
- Can’t calculate comfort impact

Now: “AutoDR”

- Electronic signal to BMS or EMS
- Pre-programmed, standardized controls strategies to shift building load
- Results based on pre-calculated settings in BMS
- Limited provisions for comfort
- Participation in DR event still ?’able

The Future: Optimized DR

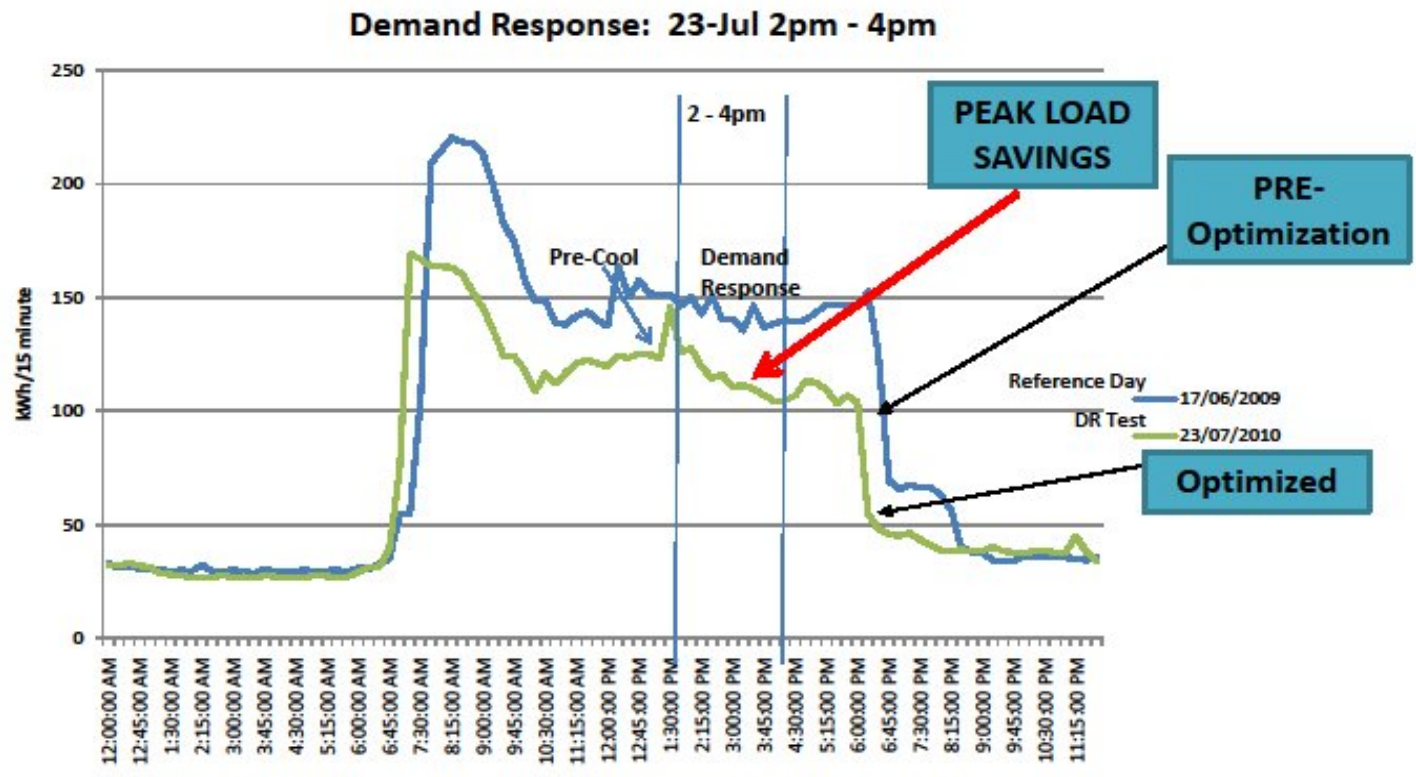
- Electronic signal: DR event incorporated into optimization parameters
- Predictive Energy Optimization plans response tailored to building, weather and specific DR structure;
- System adapts in real-time to changes in conditions
- Results calculated to precise DR program;
- Comfort parameters incorporated into response
- Real-time tracking of impact and results



- Automated Control
- Real Time Modeling
- Self- Learning
- DG & Storage Inputs
- Adaptive (load & weather)
- Price responsive
- kW and kWh focused
- Paid for from savings

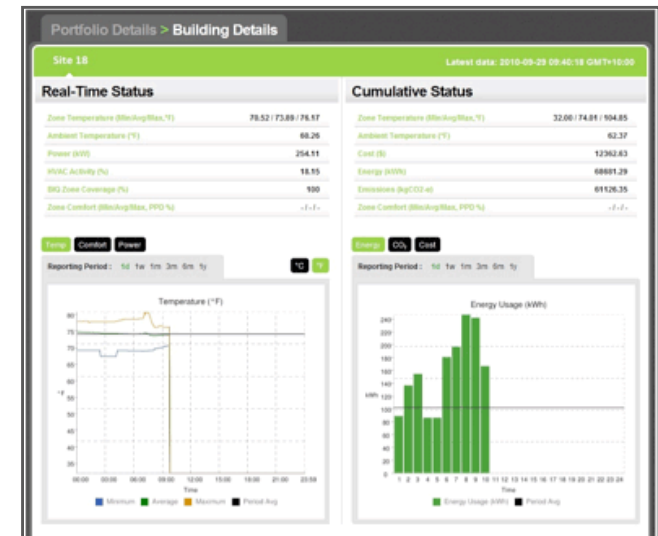
Optimized for cost, consumption/comfort

Predictive, adaptive, continuous optimization of building energy usage



Perth Council House:

Heritage Listed
 100,000 Sq Ft
 Limited maintenance/ mgmt
 Chilled Water Plant/ DDC
 Pneumatic Zones
 Siemens System 600 BMS
 No Upgrades since 1999



Building Optimization w/ AutoDR

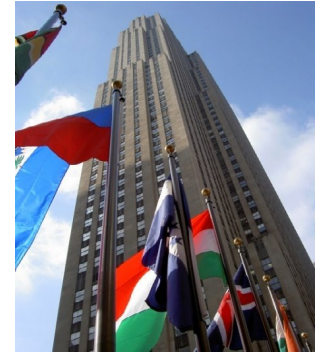
- 12% energy savings
- 15-30% load drop
- 3x ROI on costs
- No impact on comfort



“BuildingIQ significantly reduced energy costs in one of Perth’s historic buildings without any change to tenant comfort.”

Glenn Britton, Manager
 Property Management Services,
 City of Perth

Predictive modeling/control tools (used in with existing BMS) are:



- **An effective tool for integrating C/I/I Buildings into DR programs & increased participation**
- **Provide insight for utilities into available customer resources at the “Edge of the SmartGrid”**
- **A strong value proposition for building owners**



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