

# Staples' Experience: Demand Response and Smart Grid

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The Staples logo, consisting of the word "STAPLES" in white, uppercase, sans-serif font, set against a red rectangular background.

that was easy.™

July 14, 2011

# Agenda

- Staples Energy Management Program
- Demand Response with Enabling EMS
- Other Smart Grid: Interval Data Analysis
- What Staples would like to see in Smart Grid

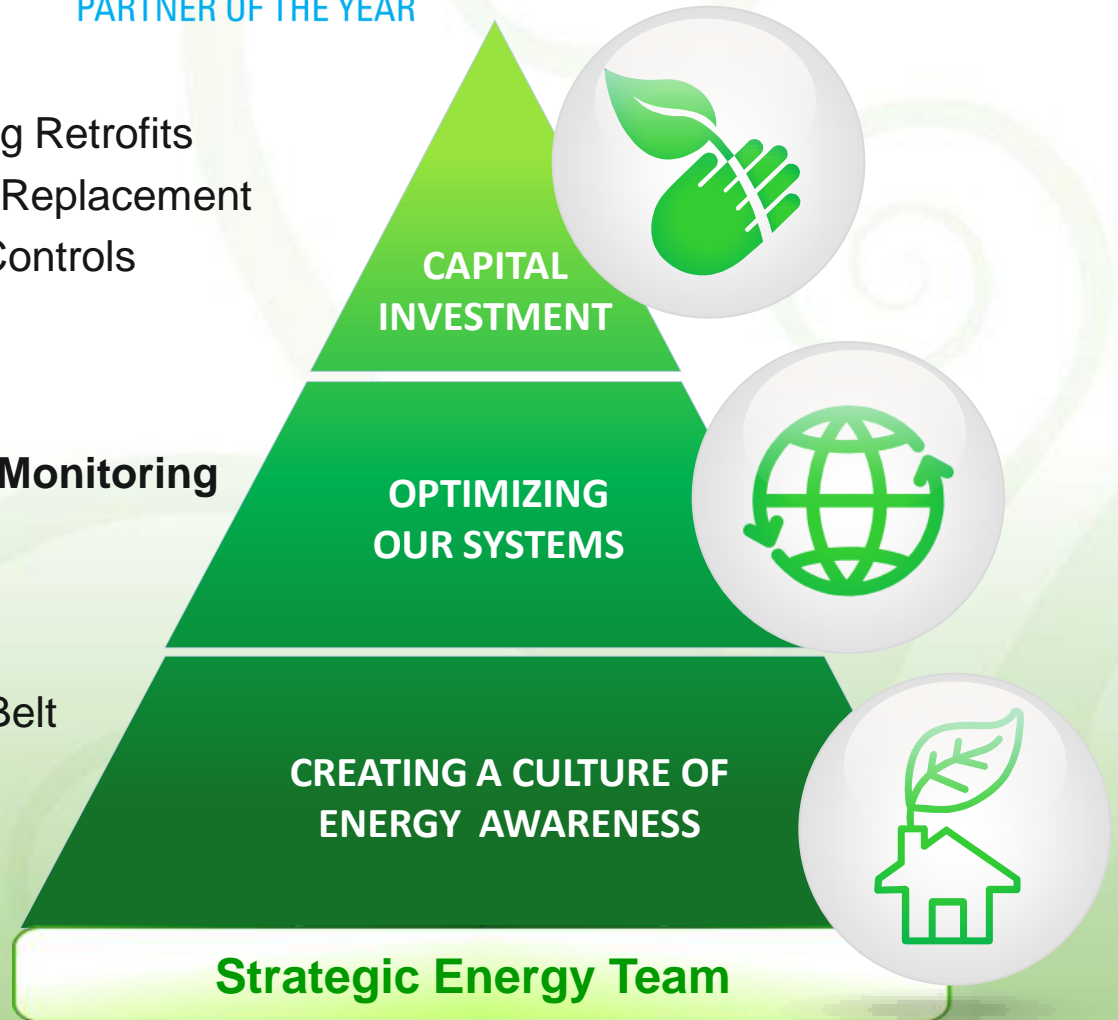
# Staples Energy Management Program



- Lighting Retrofits
- HVAC Replacement
- EMS Controls

- **Recomissioning**
- **Proactive Controls Monitoring**
- ***Demand Response Participation***

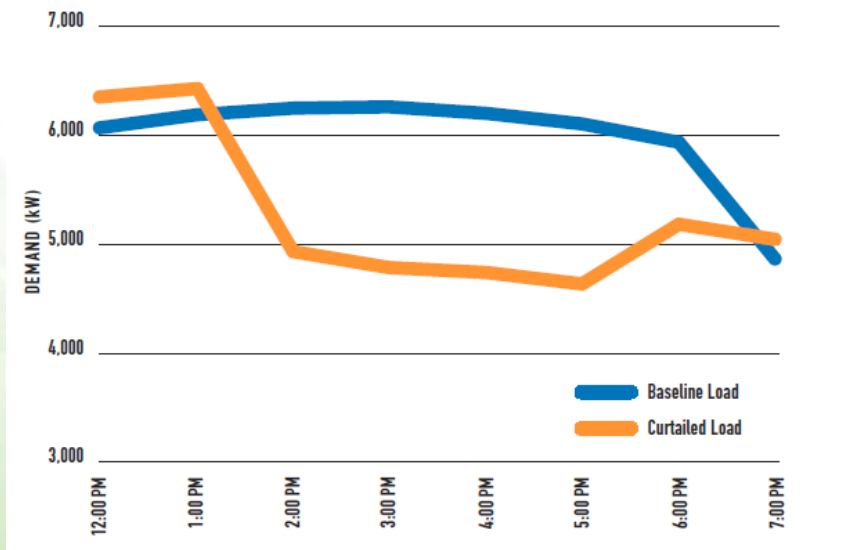
- Setting the Challenge – Black Belt
- Poster Programs and Training
- Energy Performance Reporting



# Staples History of Demand Response

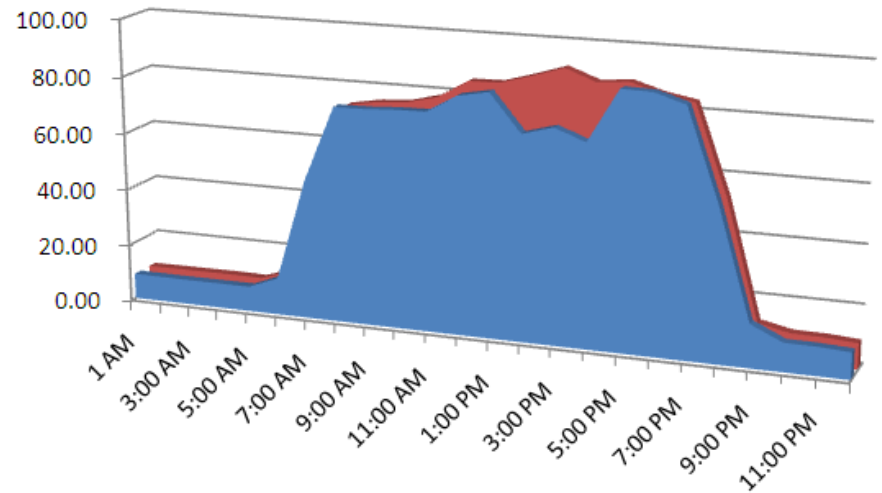
- Early Leader in the CAISO program
- California - 2001
  - 119 stores / 2.8 MW
  - Enabled via Auto-DR via pager-based Dispatch
  - 50% lighting levels
  - Enabling rebates were important
- Turned into efficiency improvements: Looked more closely at lighting levels

Baseline versus Curtailed Load at 70 Staples Stores



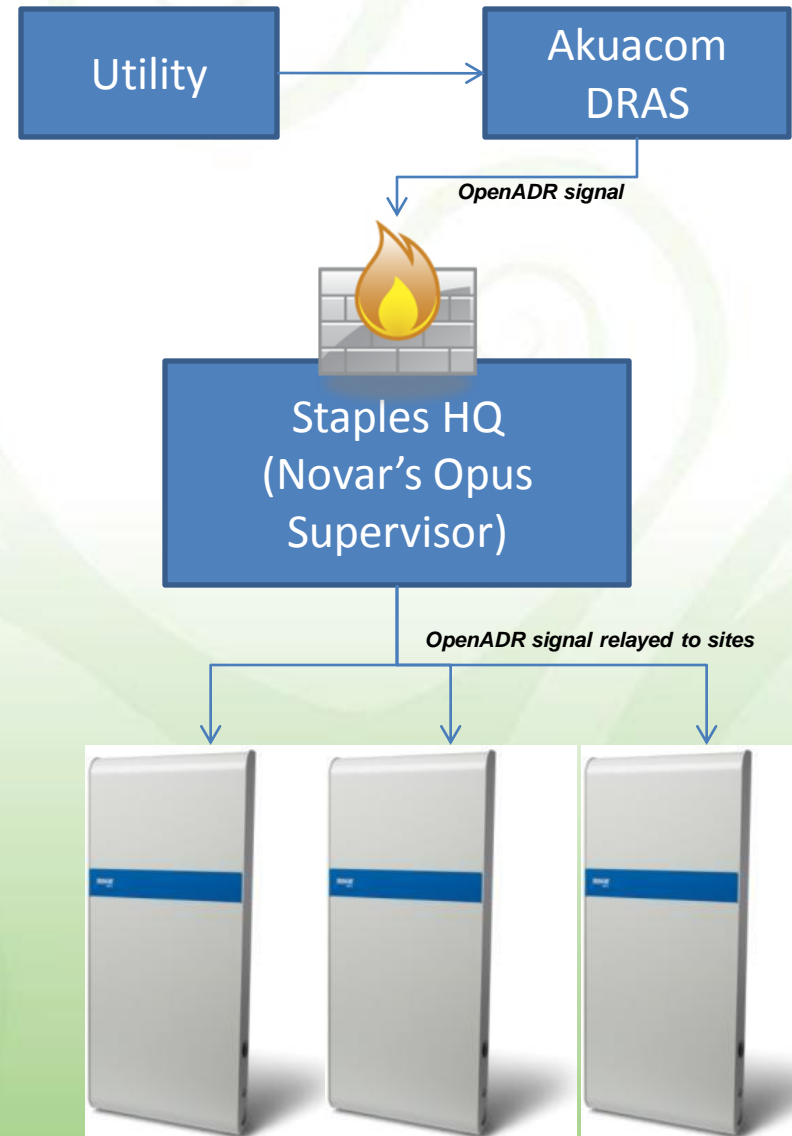
# Today's Load Response Strategies

- Load response mostly through HVAC strategies
  - Set-points: 75/76
  - Fans – Auto mode
  - Compressors
- Enabled via centralized command push to Novar controllers – somewhat manual
- PJM/NYISO/CAISO: HVAC strategy delivers 15kW/store → 6.5 MW of load
- Lighting – early-stage rollout of dimnable ballast system → additional 8-10kW/store



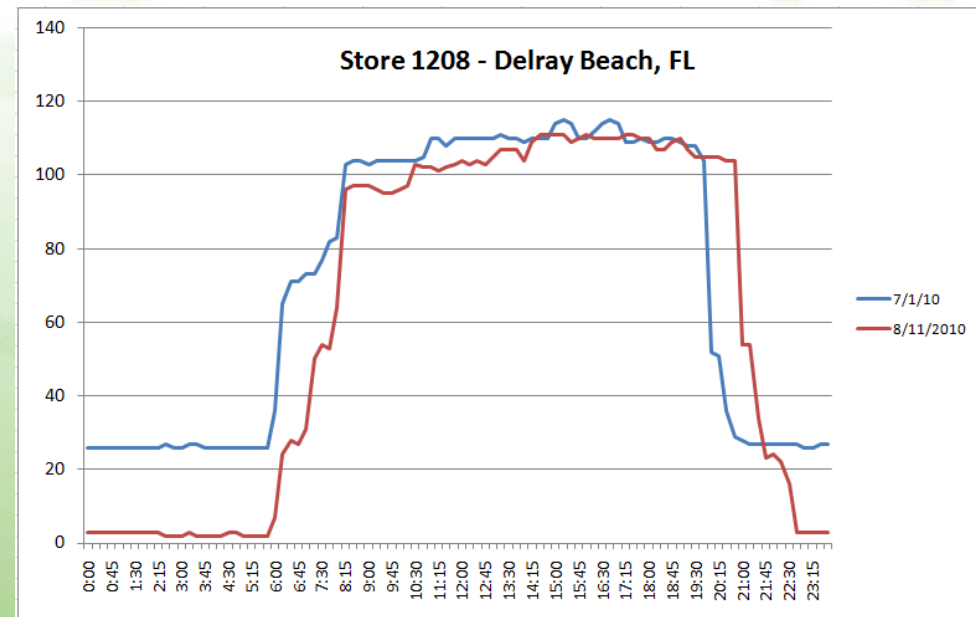
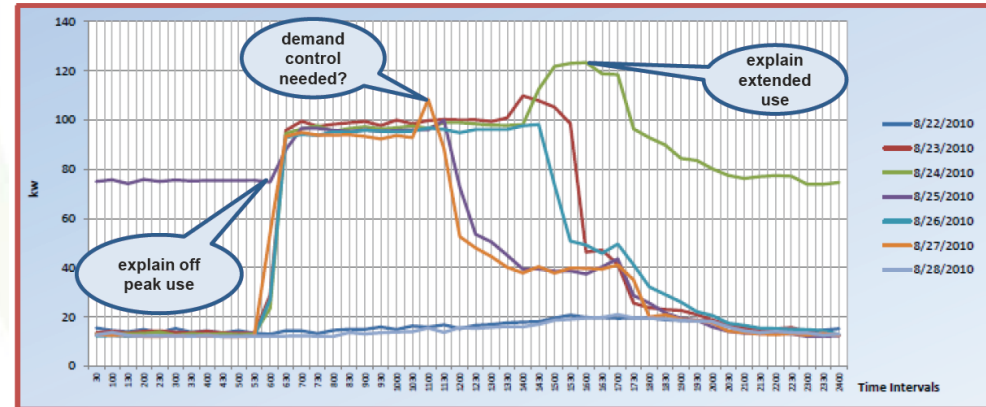
# Next Generation Strategy: OpenADR Rollout

- Demand response integrated with energy management system
- No additional hardware to install
- Upgrade to the latest energy management technology (OPUS)
- Leverage existing store infrastructure
- Fully automated using OpenADR (5 minute or less response time)
- Novar Opus implementation meets Staples security requirements



# Leveraging Smart Grid/Demand Response Tools

- Load Response brings technology and insight that saves Staples money the rest of the year!
- Education of Employees
  - Load data is a powerful tool to bring energy management strategies to life
  - Working with local utilities on variety of ways to retrieve data
- Troubleshooting stores
  - 3am report
  - Validation of retrofits



## What Staples Would Like to See

- More focus on commercial, multi-site customers
- Common formats and platforms among utility applications
- Greater web-enabled access to the interval data
- Consistent tie-in to onsite EMS systems