Energy Efficiency And SmartGrid
Discussion Topics

Dan Sheflin, CTO, Honeywell ACS / Chairman NIST Smart Grid Federal Advisory Council
Jeremy Eaton, VP, Honeywell Energy Solutions
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Nearly 50% of Honeywell’s product portfolio is linked to energy efficiency. The U.S. could reduce their energy consumption by 15 – 20% simply by immediately & comprehensively adopting existing Honeywell technologies.
Honeywell

Automation and Control Solutions

~$13.6 Billion in Sales in 2010E 60,000 Global Employees

What We Do...

- Safety
- Security
- Comfort
- Convenience
- Productivity
- Energy Efficiency
- Homes
- Buildings
- Industrial

Positioned To Capitalize On Key Trends
Energy Efficiency Across ACS

- Innovative, Game-changing Products and Solutions
- Clinton Climate Initiative
- Energy Performance Contracts
- Smart Grid Wins
- Major Energy Savings and Emissions Reductions for Homes, Buildings, and Industrial Applications

60% of Products & Services Related to Energy Efficiency

Global Leader In Delivery Of Energy Efficiency
Building Automation Can Control 66% Of Energy Consumption In Homes And Buildings
Recent Highlights

• **Strong Results**
  - Orders and Op Profit Growth
  - Traction on Energy and Smart Grid projects
  - Increased backlog by 15% in 2009/2010

• **Rising Energy Services Demand**

• **Great Wins Around the Globe**
  - Florida Power and Electric
  - Biosciences Research Centre
  - Kennedy Space Center
  - Marina Bay Sands Integrated Resort
  - Vancouver Olympics Perimeter Security

• **Recent Smart Grid Acquisitions**
  - Akuacom
  - E-Mon

*Outperforming The Market*
### Business Case For Energy Conservation

<table>
<thead>
<tr>
<th></th>
<th>Payback Period</th>
<th>Benefits Availability</th>
<th>Green?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>10-15 Years</td>
<td>2-3 Years</td>
<td>Not Optimal</td>
</tr>
<tr>
<td>Nuclear</td>
<td>20+ Years</td>
<td>5+ Years</td>
<td>OK</td>
</tr>
<tr>
<td>Renewables (e.g. Solar)</td>
<td>Exceeds Useful Life of Asset</td>
<td>Varies</td>
<td>Good</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>3-5 Years</td>
<td>Immediate</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

- Energy Efficiency Is the Cheapest Source of Clean Power
- Demand Response Is an Essential Prerequisite
- Honeywell Products Leverage Existing Infrastructure

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**Efficiency Is The “First Fuel”**
Solving Today’s Smart Grid Problem

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Original Load Shape

Energy Efficiency

Demand Response

Solutions With A Clear Business Case

MW
Current Smart Grid Business

- **HON Manages 6 GW of Commercial Load and 1 GW of Demand Response (DR)**
  - HON controls manage energy in 30% of all NA Buildings
  - 20-25% energy efficiency and 10-20% peak load reduction

- **Over 1 Million Load Control Devices Installed**
  - BG&E 450,000 load control devices being installed

- **Major Smart Grid Wins with DOE and EU**
  - Commercial DR – SoCal Ed 80MW, Robust International Pipeline
  - Research in Residential Energy Optimization, High Efficiency Combustion and Cyber Security

- **Combining Energy Efficiency and DR**
  - Tallahassee – 17MW Commercial DR, Residential DR, Meters, Energy Efficiency

*Honeywell Delivering Solutions Today*
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Commercial Auto Demand Response

**Honeywell**
- Program development
- Customer enrollment
- Customer site optimization
- Program management
- Monitoring and reporting

**DR Automation Server**
- Event Control
- Utility Dashboard

**SmartGrid Controller**
- Compatible with 99+% of BAS systems
- Customer Dashboard

**Utility Benefits**
- Maintain system integrity
- Drive energy conservation
- Promote dynamic pricing
- Enable behavior change
- Real time reporting

**Customer Benefits**
- Turnkey energy cost savings
- Automated participation
- Self funding opportunities
- Monitoring / reporting of results

Attractive Adjacency Builds On Our Legacy
New Utility Problems Drive ACS Growth

Utility Problem

- For most consumers, the price of electricity does not reflect its scarcity

How HON Solves It

- Variable pricing coupled with automated controls
- Incentives that support both Energy Efficiency as well as DR and renewable generation

Solutions For Utilities And Consumers

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New Utility Problems Drive ACS Growth

**Problem To Be Solved**
- Need to integrate highly intermittent large-scale renewable energy

**How To Solve It**
- Automated Demand Response (ADR) to respond to renewable intermittency
- FAST ADR to access demand-side resources in grid balancing

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### Wind Power Generated

<table>
<thead>
<tr>
<th>Days</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</tbody>
</table>

### 100 Facilities
- Hotels – 5
- Hospitals – 3
- Real Estate – 5
- Commercial - 87

### ADR Impact
- Hotels – 15-20%
- Hospitals – 7-15%
- Real Estate – 10-15%
- Commercial – 15-20%

### Load Leveling
- 50 MW

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**Virtual Power Plants At A Fraction Of The Cost**
Robust ACS Smart Grid Offering

- Coverage across transmission, distribution, home/building and distributed generation
- Connecting key data nodes across the grid and controlling the loads

- WebStat
- Tridium Controllers with OpenADR, JACE
- DRAS, Demand Response Automation Server
- Novar’s Opus with OpenADR
- Home Energy Manager
- UtilityPRO
- In-Home Energy Display

Growing In Attractive New Markets

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## Fast Automated Demand Control

<table>
<thead>
<tr>
<th>ISO Program</th>
<th>Advance Notice</th>
<th>Price Paid per KW</th>
<th>DSR</th>
<th>2008 $(M)</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Capacity DR</td>
<td>2 – 24 hours</td>
<td>$40 – 60</td>
<td>✓</td>
<td>$592</td>
<td>Primarily served by aggregators</td>
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<tr>
<td>Non-Spinning Reserve</td>
<td>30 mins.</td>
<td>$20 – 40</td>
<td>✓</td>
<td>$53</td>
<td>Contingency Operations</td>
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<tr>
<td>Spinning Reserve</td>
<td>10 – 30 mins.</td>
<td>$70 – 100</td>
<td>✓</td>
<td>$468</td>
<td>Contingency Operations</td>
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<tr>
<td>Regulation Reserve</td>
<td>1 – 5 mins.</td>
<td>$150 – 500</td>
<td></td>
<td>$841</td>
<td>Normal operations, ADR allows direct participation</td>
</tr>
</tbody>
</table>

- **New Resources For Grid Stability**

- Primarily served by aggregators
- Contingency Operations
- ADR allows direct participation
- Normal operations
- ISO direct load control
Summary

• Leading Global Franchise
  - Extensive Reach
  - Portfolio Aligned to Macro Trends (Energy, SmartGrid)

• Investing for Growth
  - Globalization
  - Innovation Leadership
  - SmartGrid Technologies

• Comprehensive Solution Set
  - Focused “Energy” Consultants
  - Differentiated Capabilities

More Efficient, More Secure, More Comfortable