Managing Energy Use with Energy Efficiency

Presented by Dave Waller
Hawaii Conservation Alliance Conference
July 29, 2008
Presentation Outline

- Current Energy Use
- Energy Efficiency Programs
- Demand Response
- Renewable Energy
Troublesome Energy Future

- Oil prices at record levels
- Energy security in question
- Universal climate change concerns
- Pathway to sustainable energy future not clear
Petroleum Products

51,262,000 Barrels of Crude Per Year

- 3% LIQUIFIED PETROLEUM GAS
- 27% JET FUEL
- 11% NAPTHA
- 18% GASOLINE
- 12% DIESEL
- 28% LOW SULFUR FUEL OIL OR RESIDUAL OIL
- 1% ASPHALT
State Petroleum Consumption

- Transport - Aviation: 32%
- Ground Transport: 31%
- Electric Power: 27%
- Other: 10%
- Ground & Water: 10%
WTI NYMEX Daily Close

July 25, 2008
Hawaii Gasoline Prices and Volumes

12 Month Moving Averages

![Graph showing 12 month moving averages of Hawaii gasoline prices and volumes. The graph includes lines for EIA Price, HI Tax Dept Volume, and EIA Volume. The x-axis represents the years from 2001 to 2007, and the y-axis represents the price in cents per gallon and monthly volume in millions of gallons. The graph shows a general increase in both price and volume over the years.]
A recent study found the average American walks about 900 miles per year.

Another study found Americans drink, on average, 22 gallons of beer a year.

Therefore, on average, Americans get about 41 miles to the gallon.
Electricity Production

*Fuel Sources*

- **Oil - HECO**: 60%
- **Oil - IPP**: 18%
- **Coal - IPP**: 18%
- **Solid Waste - IPP**: 4%
Use Declines While Electricity Prices Continue To Rise

- **Residential Price (¢/kWh)**
- **Average Residential kWh Per Customer (12 Month Moving Average)**

[Graph showing the trends in residential price and average residential kWh per customer over time.]
Creating Customer Choice

Energy Efficiency and Load Management Programs

- Efficiency Rebates and Assistance
- Load Management Incentives for Homes & Businesses
- Expanded Time of Use Rate Offerings
Impact of Energy Efficiency Programs
HECO, HELCO, MECO

- Reduces demand by more than 152 MW, the size of a power plant
- Saves over 1.2 million barrels of oil each year
- Reduces CO\textsubscript{2} emissions by over 664,700 tons a year
CFL Campaign (Number of Bulbs Sold)

- **State:**
  - 2005: 100,000
  - 2006: 140,000

- **Oahu only:**
  - 2007: 700,000
Annualized DSM Energy Savings

Incremental Energy Savings (GWH, Gross Gen Level, Net of Freeriders)

- 1996: 8
- 1997: 26
- 1998: 33
- 1999: 30
- 2000: 24
- 2001: 27
- 2002: 25
- 2003: 26
- 2004: 30
- 2005: 35
- 2006: 38
- 2007: 92
DSM Load Management Program
Demand Savings*

* At year-end

Demand Reduction (MW, Gross Gen Level, Net of Freeriders)


Values:
- 1996: 0
- 1997: 5
- 1998: 10
- 1999: 15
- 2000: 20
- 2001: 25
- 2002: 30
- 2003: 35
- 2004: 6.2
- 2005: 15.3
- 2006: 34.2
- 2007: 34.2

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How Demand Response Works

EnergyScout For Business

Back-up Generators

Interruptible Loads

• Heat Pumps
• Chillers
• Pumps
• Lights
• Industrial Processes

Incentives:

Demand Reduction $5-$10/kW

Energy Reduction $0.50/kWh
Advanced Metering Infrastructure

For “Smart Grid” and New Pricing Options

- Price Response
- Demand Response
- Meter Reading and Web Display
- Distributed Generation Control
- Enhanced Customer Functionality
- Smart Grid
## Renewable Portfolio Standard Status

### Year End 2007

<table>
<thead>
<tr>
<th>Source</th>
<th>GWh</th>
<th>%</th>
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<tbody>
<tr>
<td>Biodiesel</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Biomass &amp; Hydro</td>
<td>437</td>
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<tr>
<td>Geothermal</td>
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<tr>
<td>Photovoltaic Systems</td>
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<td>7</td>
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<tr>
<td>Wind</td>
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</tr>
<tr>
<td><strong>Renewable Generation Subtotal</strong></td>
<td>917</td>
<td>56.5%</td>
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<tr>
<td>Savings from Solar Water Heating</td>
<td>109</td>
<td>6.7%</td>
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<tr>
<td><strong>Savings from Energy Efficiency Programs</strong></td>
<td>598</td>
<td>36.8%</td>
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<tr>
<td><strong>Total Renewable (GWh)</strong></td>
<td>1,624</td>
<td>100.0%</td>
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<tr>
<td><strong>Total Sales (GWh)</strong></td>
<td>10,118</td>
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</tbody>
</table>

**RPS PERCENTAGE**: 16.1%
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