Springfield Utility Board and Oregon Military Department
Behavior Based Energy Efficiency Study

Study conducted at Oregon National Guard’s
Lane Readiness Center

Lane Readiness Center
Located in Springfield, OR
Approx 160,000SF
260 FTE
800 Drilling Guard and Reserve Soldiers
• Overview

  – Springfield Utility Board (SUB) worked with the Oregon Military Department to develop a behavior based study at the Lane Readiness Center

    • Study Design: Strategic Energy Group (SEG)
    • Study Implementation: SEG and Northwest Water and Energy Education Institute at Lane Community College (NWEEI)
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• Government Facility
  – Federal Tenants:
    • U. S. Forest Service (USFS)
    • Department of Interior
      – Bureau of Land Management (BLM)
    • U.S. Marine Reserve
    • U.S. Navy Reserve
    • Oregon National Guard
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• Net Zero Energy 2020
  - Oregon National Guard participated in Net Zero Energy 2020 pilot with Department of the Army
  - Behavior and Culture is one of the aspects to implement the energy reduction goals.
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• Study Objective
  – Achieve a 10% reduction in energy consumption
  – Increase awareness of Federal energy reduction goals and actions to reduce energy waste
    • EPACT 2005
    • EISA 2007
    • EO13423 2007
    • EO 13514 2009

The Alphabet Soup of Energy Reduction Goals!
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• Study Approach
  – Operator Behavior
    • Engage Facility Operator on Best Practices for Energy Management
  – Occupant Behavior
    • Engage Facility Occupants to Reduce Energy Waste
  – Measurement and Verification
    • Monitoring, Tracking and Reporting Tool
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• Study Design
  – Operational Assessment and Operator Engagement
  – Occupant Outreach and Awareness Engagement
  – Measurement and Verification
• **Operator Behavior**
  – Facility operational hours vs occupied hours
  – Equipment optimization
  – Fine tune building automated control

• **Occupant Behavior**
  – Increased knowledge of mandates to reduce energy waste
  – Actions to reduce energy waste
    • Examples: Turn off and unplug electronic peripherals, dress for the season, reduce extra hours outside operational hours
Study Results:

Documented Energy Savings

Greater Occupant Awareness

<table>
<thead>
<tr>
<th>Electric Account</th>
<th>Electric Meter</th>
<th>Annual Consumption (kWh)</th>
<th>Natural Gas Account</th>
<th>Natural Gas Meter</th>
<th>Annual Consumption (Therm)</th>
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<td>05031108 &amp; 12050009</td>
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<td>2003231-4</td>
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<tr>
<td>Total Annual Electrical Consumption (pre-program)</td>
<td>949,520</td>
<td>Total Annual Gas Consumption (pre-program)</td>
<td>30,385</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electric Data Source: Monthly use was obtained through the customer utility records.

Natural Gas Data Source: Monthly use was obtained through the customer utility records.

Independent Variable: Holidays and mission shutdown days were provided by the customer's energy manager.

Measured Electric Savings (kWh) to date: 1/22/2016, 14,948 kWh, 1.6%

Projected Annual Electrical Savings: 29,777 kWh, 3.1%

Measured Natural Gas Savings (Therm) to date: 1/29/2016, 1,045 Therms, 3.4%

Projected Annual Gas Savings: 1,758 Therms, 5.8%
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- Study Results
  - From Monitoring, Tracking and Reporting Tool (MT&R)

kWh Savings to date 14,800 / Therms Savings to date 1045
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• Study Results

- kWh Savings to date 14,800
- Therms Savings to date 1045
The goal of the Energy Challenge was to increase the awareness of the need to reduce energy waste at the facility.
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Awareness Newsletters:
Informed and developed occupants as participants in Energy Challenge

Desk Audits provided additional messaging opportunities
Desk Audit Messaging

If it's on, Turn it off
- Items like the coffee maker and water cooler are not in regular use.
- Task lights, monitors & computers (if powered)
- Any equipment which is not in use is a waste of energy.

Choose Less Energy not More
- Portable electronics use less than half the energy of a desktop computer.
- Make low energy consumption a criteria when purchasing new products.

Change Your Habits
- Don't be the last one to leave the office.
- Occupancy sensors are waiting for you to turn off large sections of lights and equipment. Remember, it's a waste of energy to train them to be inefficient.
- Wear light clothing in summer and keep warm clothing in winter. You'll be comfortable and help save energy by not needing to raise or lower the thermostat.
- Need more air? Your high-performance building features beautiful windows that you can control. Open and close them when the outside air temperature is mild, then close them when it's too cold.

Chocolates were left as a motivator!

Perhaps we missed something but it appears you’re using a lot more energy than your neighbors.

Changing the way you do things isn’t always easy but check out what others are doing and you might get some ideas.

Good Job.
Your usage is about average with others and overall - that’s pretty darn good!

Want to do more?
Check out the list below.

Want Us Of Powerstrip
- Monitor On Standby
- Monitor Off (or switched)
- Misc. Equipment Off
- Task light Off
- Cabinet Light Off

Use Of Powerstrip
- No Personal Fridge
- No Personal Coffee
- No Personal Printer
- No Space Heater

Let’s Face it, You’re Just Awesome!

Keep up the great work.

People can depend on you for inspiration and a trendsetter.

[Checklist]
- Computers Off
- Monitor On Standby
- Monitor Off (or switched)
- Misc. Equipment Off
- Task light Off
- Cabinet Light Off

[Checklist]
- Use Of Powerstrip
- No Personal Fridge
- No Personal Coffee
- No Personal Printer
- No Space Heater
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• Findings-Operator Behavior
  – Significant Savings Opportunity: OMD will continue to work to implement improvements to scheduling, set points and air volume
  – Controls: Older American AutoMatrix system is not intuitive, it is difficult to review or modify
    • Results in slow implementation of operational improvements
  – Operations & Management: High turnover results in loss of institutional knowledge of facility operations
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• Findings- Occupant Behavior
  – Address occupant comfort issues as part of engagement strategy
  – Multi agency facility creates difficulty with occupant engagement. Stronger executive support would be beneficial.
  – Timing of study coincided with high seasonal operational tempo for agencies
  – Communication: No centralized communication, applied a low tech approach with messaging in central areas for daily traffic.
Applicability of Study Approach:

Operator Engagement: Maximizing Operator Engagement and Training will help ensure long term energy savings.

Occupant Engagement: Increasing awareness and participation of occupants in attaining energy reduction goals helps utilize a highly trained resource—your employees!
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• Next Steps:

Oregon Military Department will:

– Continue with Operation Improvements as indicated in BBEE Operational Plan for Lane County Readiness Center

– Continue Occupant Engagement: Activities are being developed for Earth Day in April and Department of Army’s Energy Awareness Month in October.

– Continue M&V of energy reduction
The Oregon Military Department wishes to thank the following:

Springfield Utility Board, for its support of the BBEE study at Lane Readiness Center

Bonneville Power Administration for its support of the BBEE study and input in the study design and implementation

All the dedicated federal and state workers at the Lane Readiness Center for participating in our Energy Challenge!

Questions?
Energy Manager, Oregon Military Department