How to Lower Energy Costs at Your Brewery

Dave Whitmore
Energy Trust of Oregon

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What I Hope to Accomplish Today

- Have you walk away with new ideas for energy efficiency projects
- Explain how Energy Trust of Oregon can help you achieve energy savings

- Get to know you better and learn about your project ideas

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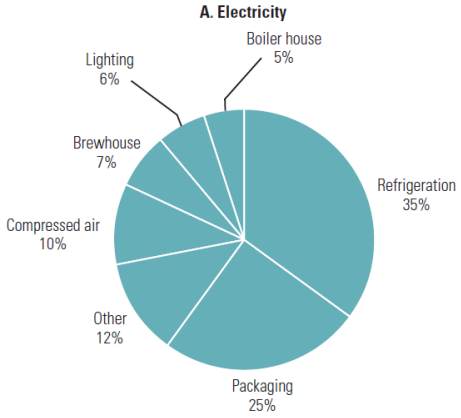
Energy Consumption in Breweries



Refrigeration, packaging, and compressed air account for 70% of electrical energy use.

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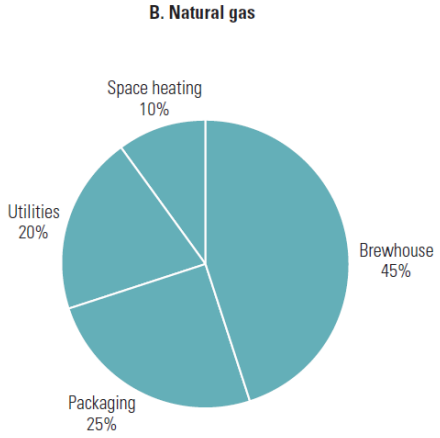
Energy Consumption in Breweries



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Energy Trust of Oregon – What is it?

- Independent, nonprofit organization
- Helps utility customers save energy and generate renewable energy
- Over $1 billion saved on energy bills
- Customers of Portland General Electric, Pacific Power, NW Natural, and Cascade Natural Gas

Energy Trust – How Can it Help You?

Production Efficiency Program

Incentives

- Cash incentives based on annual energy savings and project cost

Technical Assistance

- Scoping to identify opportunities
- Technical studies
- Cost? FREE!

Capital Projects

Typical Capital Projects - Electric

Variable speed air compressor with cycling refrigerated dryer

Lighting upgrades

- T5s or T8s
- Motion sensors

Incentives $0.25/kWh up to 50% of project cost

Typical payback 1-4 years

Opportunity – Throttled Pumps

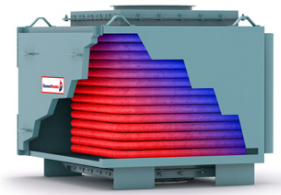
Solution? Trim impellor or install VFD.

Consider this for your glycol pumps.

Typical Capital Projects – Natural Gas

Natural Gas Projects

- Stack economizer
- Blowdown heat recovery
- Efficient boiler



Incentives $2.00/therm up to 50% of project cost

Typical payback 1-5 years

Widmer Brothers Brewing
Refrigeration Project

New refrigeration system installed to handle production increase

Energy efficiency measures:
1. Compressor VFD
2. Condenser Fan VFDs
3. Refrigeration Control

Energy savings = 29,272 kWh/yr
Cost savings = $1,734
Cost = $21,183
Incentive = $8,782
Final payback = 7.1 years

Ninkasi Brewing Co.
Boiler Project

Measures being implemented:
1. High Efficiency Boilers
2. Blowdown Heat Exchanger

Projected economics:
Energy savings = 108,582 therms/yr
Cost savings = $60,806
Cost = $82,969
Incentive = $41,484

Final payback = 0.7 years

Operations and Maintenance (O&M) Projects

Operations and Maintenance (O&M)

Typical Measures

- Compressed air leak repair
- Condenser cleaning
- Fan cycling
- Equipment shutdown
- Changes to production schedule

Incentives $0.08/kWh or $0.40/therm, up to 90% of project cost

Payback often less than 1 year

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O&M - Compressed Air Leak Repair

***Leak load is often 20-40%* of compressed air energy use**

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O&M Opportunity

"I'm not getting enough flow from my pump"

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Strategic Energy Management (SEM)

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- Year long support by Energy Trust
- Form energy team
- Implement low cost measures
- Cohort based approach
- Model energy intensity (BTU/BBL)
- 5-10% facility savings common

Opportunities at Widmer Brothers Brewing

- Condenser cleaning
- Compressed air leak repairs
- Reduction in air compressor discharge pressure
- Fan cycling
- Conveyor shutdown
- Refrigeration control system setpoint changes

Incentives $0.02/kWh or $0.20/therm

Payback often less than 1 year

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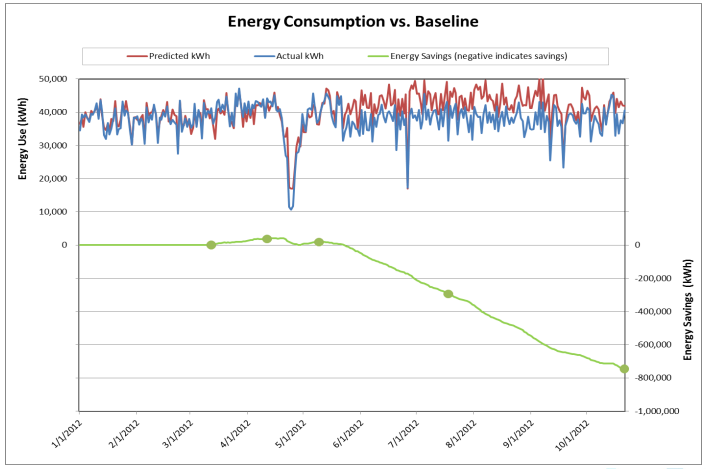
Strategic Energy Management (SEM)



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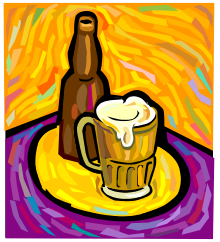
Summary

- I hope I've got you thinking about new projects at your brewery.
- Energy efficiency should be a key component of your sustainability effort.
  - Aside from being "green," the cost savings have a direct impact on your bottom line.
- Don't let barriers get in the way!
  - Staffing shortage?
    >>> Take advantage of technical support
  - Financial constraints?
    >>> Incentives can help justify projects



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