



For Businesses



For Homes



Renewable Energy



For Trade Allies



About Us

EnergyTrust of Oregon

Pacific NW Pollution Prevention Resources Center - Industrial Energy Efficiency Resources

Jan. 13, 2009



Agenda

- Energy Trust background
- Financial and non-energy related benefits of an energy efficient facility
- Energy Trust current industrial program
 - Resources
 - How to participate
 - Case studies
- Potential new efficiency resources – next steps

Energy Trust of Oregon, Inc.

Who are we?

- Independent non-profit organization with Oregon Public Utility Commission (PUC) oversight
- Product of 1999 Oregon electric utility restructuring legislation

Who do we serve?

- Industrial, retail, hospital, offices, governmental, commercial, agricultural facilities and residential programs
- Renewables Programs
- PGE or Pacific Power customers in Oregon
- Separate arrangements to serve customers of NW Natural, Cascade and Avista gas utilities residential and commercial (~\$11M/year)

Energy Trust of Oregon, Inc.

Mission: To change how Oregonians produce and use energy by investing in efficient technologies and renewable resources

HOW??

- Recipient of the majority of 3% public purpose fund collected from Oregon customers of Portland General Electric and Pacific Power (\$50.4M in 2008)

Energy Trust of Oregon, Inc.

Results:

2002- forecasted 2007:

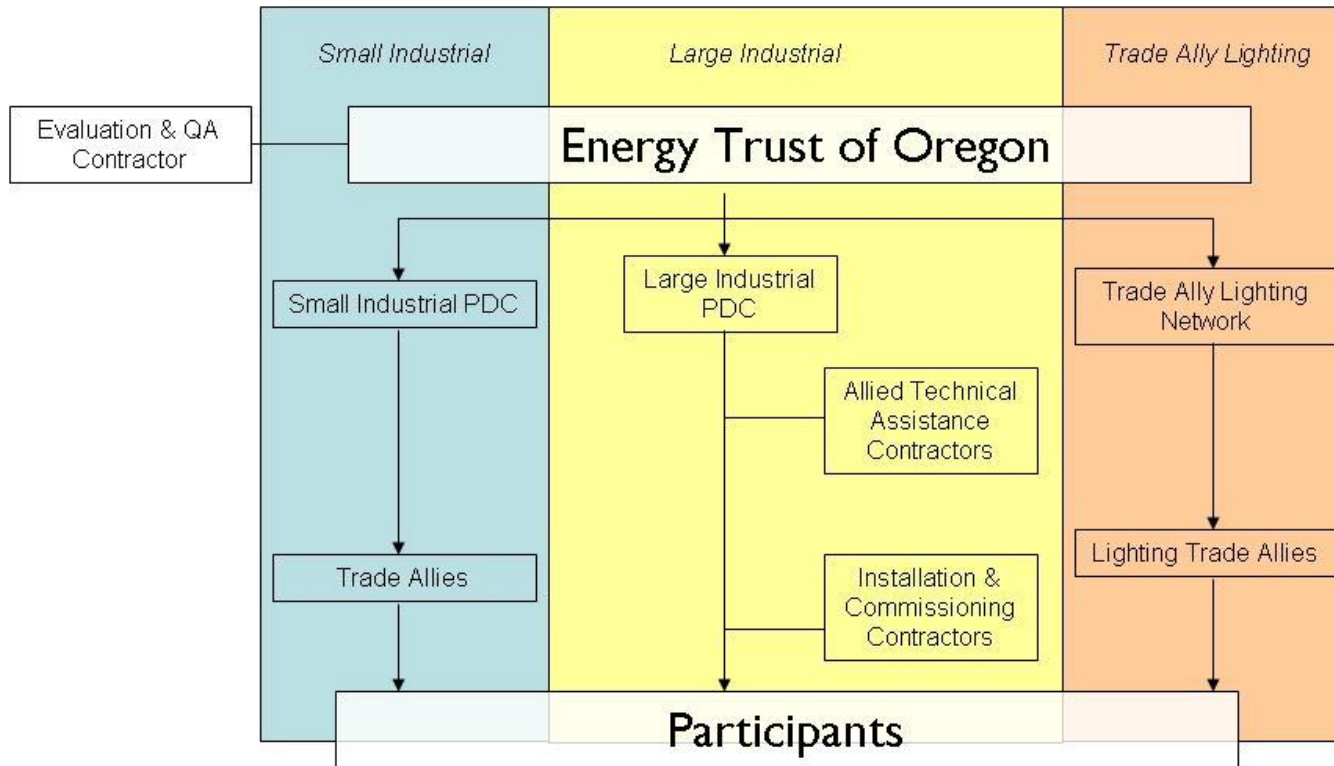
- 156 aMW of electric energy saved
- 7.1 million annual therms of natural gas saved
- 57 aMW acquired in renewable energy generation through 2006

Benefits of Energy Efficiency

Why??

- Lower energy bills, life cycle cost reduction
- Non-energy related benefits
 - Increase in production, decrease in energy intensity of production
 - Reduced maintenance costs
 - Reduction in material waste
 - Increase in employee comfort
- Displace need for power generation from traditional sources
 - **Decrease emissions (CO₂, NO_x, SO₂, Hg, particulates) and cooling water needs**
 - **~1.13 lb CO₂ emitted / kWh – per PGE website**
 - Lowest cost generation resource ~ 25c/kWh levelized vs.45c/kWh gas combined cycle
- Good for the local economy
 - Job creation in energy efficient equipment installation, technical assistance, keeps \$ local 6

Production Efficiency Program



Production Efficiency – Resources for Industry

Program Delivery Contractors (PDC's):

1.) Project Identification

- Facility Assessments – walk through
- Identify areas/ equipment for energy efficiency

2.) Planning and Analysis

- Project Application and Documentation
- Work with third parties for a Technical Analysis Study
- State of Oregon Business Energy Tax Credit
 - 35% of Eligible Project Costs Over 5-Years
 - Pass-Through Option

3.) Post- Inspection =Cash Incentives for completed projects

- Custom Incentives – \$0.20/kWh up to 50% of project cost
- \$10/hp for NEMA Premium Motors up to 200 hp
- Lighting Equipment Retrofits & Replacements

Allied Technical Assistance Contractors: (ATAC)

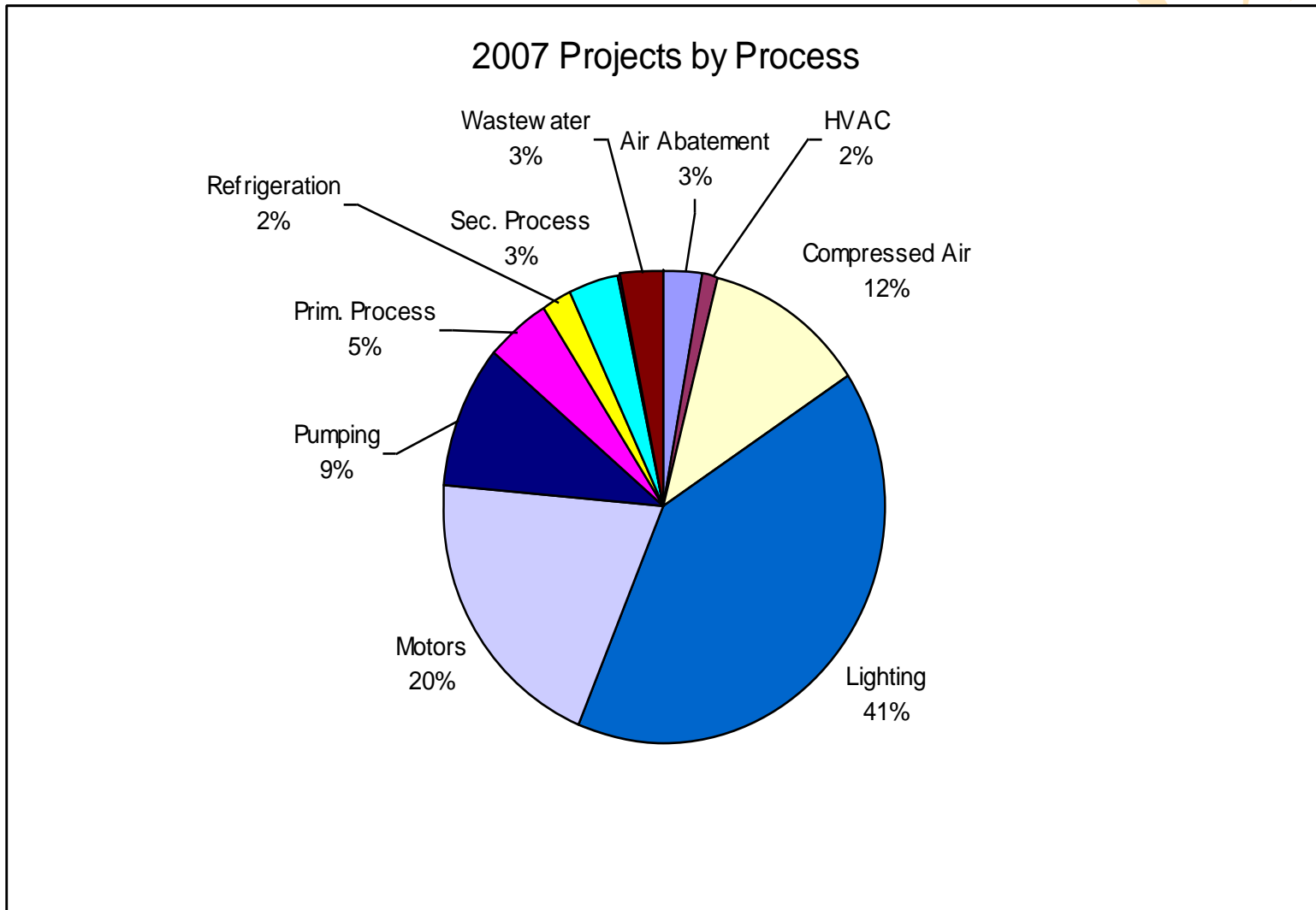
1.) Perform Technical Analysis Studies

- Data metering
- Data analysis from participant systems
- Formal report in Energy Trust format

For additional ATAC information visit:

http://energytrust.org/pe/forms/ATAC_PE_Prog_Guide.pdf

Typical energy efficiency opportunities



1st Step: Facility Walk Through

- Discussion of customers goals
- Define major energy uses at a site
- Look for opportunities for energy savings
- List low cost/no cost changes
- Identify potential capital projects for more detailed study
- Discuss energy management practices, training opportunities, answer questions

2nd Step: Technical Analysis Study

- Energy Trust fully funds cost of detailed study
- Identifies annual estimated energy savings
- Provides project cost estimate
- Reviews financial summary of project
 - Payback with and without incentives and BETC
 - Defines and often can quantify non energy benefits
- Basis for project incentive offer from Energy Trust

Production Efficiency: Pilot Programs

Energy Trust new programs for 2009:

- **IEI Pilot – Industrial Energy Improvement**
 - Similar to Continuous Improvement efforts
- **Kaizen Blitz Effort (pilot)**
 - Pilot on Food processing
 - Target low cost improvements in refrigeration
- **Compressed Air pilot**
 - O&M improvements
- **Lean Manufacturing partnership with OMEP**

Introduction – Case Examples

Doug Findlay:

Doug is a mechanical engineer and has been involved in delivering energy efficiency programs for over 15 years. He has been on the PDC team for the Energy Trust for 5 years and delivered PGE utility programs for commercial and industrial customers prior to that. Over the last 15 years, Doug has been in most all PGE industrial customer facilities and has been involved in most all of the technologies associated with those activities. Doug has worked with large and small customers alike and knows how to relate to all levels of customer personnel. He is a registered Professional Engineer and a graduate of the University of Washington.

Lighting – Typical Energy Savers

- Switching from 400w metal halide or High pressure sodium lights to 4 lamp T-5 or T-8s with electronic ballasts can reduce energy use approximately 50%
- Occupancy sensors can save 25%-50%

Lighting – Pacific Foods

Financial Analysis

- \$56,300 incentives from Energy Trust of Oregon
- \$63,900 Oregon Business Energy Tax Credit
- \$45,700 estimated annual energy cost savings
- \$182,000 total project cost
- Net payback of 1.4 years

Project Benefits

- Reduced energy costs
- Better lighting control
- Estimated annual savings 704,000 kWh

“This lighting upgrade has really set the tone for the company’s commitment to efficiency. Employees responded right away to the better light and the installation of the sensors is a great model for how employees can take these practices back to their homes. Improving our energy efficiency speaks to who we are as a company.”

Jon Gehrs

President/Packaged Products Division



Refrigeration – Typical Energy Savers

- If compressor suction temperature can be increased 1 degree F, you can potentially save 2% energy consumption
- If compressor entering condensing temperature can be decreased by 1 degree F, you can potentially save 1.5% on energy consumption
- Occupancy sensors on lighting in refrigerated areas save on lighting costs and refrigeration energy cost

Refrigeration - YoCream International, Inc

Equipment Installed

- VFDs for condenser fans & low and high temp compressors
- Centralized controls
- Efficient condensers and evaporators
- Heat exchanger recovers compressor heat discharge now used for under floor heating

Financial Analysis

- \$105,000 incentives from Energy Trust
- 35% project cost Oregon Business Energy Tax Credits
- Less than two year payback



Project Benefits

- Consistent temperature control
- Lower operating and energy costs
- Estimated annual savings 1,072,000 kWh
- Increased freezer capacity, improved product quality

Compressed Air – Typical Energy Savers

- A variable frequency drive can save more energy than a load/unload or modulation controlled unit
- A 2psi reduction in supply air pressure can save up to 1% energy cost
- A ¼” hole in an air line can cost up to \$10,000 each year – stopping leaks is worth the effort.

Compressed Air – Erickson Air Crane

Equipment Installed

- 150 hp high efficiency compressor with VFD
- Cycling refrigerated dryer

Financial Analysis

- \$43,400 incentives from Energy Trust
- 35% project cost Oregon Business Energy Tax Credit
- Less than one year net payback



Project Benefits

- Cleaner, dryer air with fewer impurities
- Reduced maintenance costs
- Estimated annual savings 586,000 kWh

Chillers – Typical Energy Savers

- Chiller efficiency increases by 2% for each 1 degree F reduction in condenser water temperature
- Chillers gain efficiency when the chilled water temperature is increased
- VFDs often result in energy savings by matching load to need
- Replacing an old chiller with a new energy efficient chiller can often cut consumption in half

Cooling Tower VFD - Novellus

Equipment Installed

- Variable frequency drive (VFD) a cooling tower fan for a chilled water system
- High efficiency motors
- Control software to optimize loading



Project Analysis

- \$26,900 incentives from Energy Trust
- Eligible for 35% project cost Oregon Business Energy Tax Credits
- 1.6 year net payback
- Estimated annual savings 265,700 kWh

How to Contact us

Contact your Program Delivery Contractor

PGE customers: Doug Findlay (503) 464 7696

Pacific Power customers: Rob Morton (503) 928 3202

Contact Energy Trust

Program Manager: Elaine Prause 503 459 4076

Technical Manager: Tricia McGuire 503 459 4062

production@energytrust.org