



# **NWFPA**

## Energy Roadmap

for Members • 2011

**Northwest Food Processors Association**

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*Established in 1914, Northwest Food Processors Association is a trade association representing over 80 food processors in Idaho, Oregon and Washington with about 150 facilities and about 350 products-and-services suppliers to the food processing industry. NWFPA's mission is to serve as an advocate for the common interests of its members and as a resource to enhance the industry's competitive capabilities.*

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# Introduction

Food processing is a vital part of the U.S. and Northwest economies, with over \$42.5 billion in regional economic impact. Nevertheless, the industry is facing dramatic changes in the cost of production, global competition, regulation and consolidations, forcing critical strategic adjustments in the way business is conducted. In 2006, the Northwest Food Processors Association (NWFPFA) created a Cluster Initiative to promote and support a collaborative approach to competitive advantage: local competitors working collectively in areas that benefit the industry as a whole, while advancing innovation and productivity for individual companies.

One of the keys to the food processing industry's ability to remain competitive will be its ability to use energy efficiently. The Cluster working group echoed this position by identifying energy use as a primary area of focus for industry members. Volatile energy markets, coupled with other factors like climate change, regulation of greenhouse gas emissions, waste and water issues, and growing customer demand for sustainable products create a new urgency for food processors to better manage their energy resources.

In 2008, with energy as a “proxy” for competitive advantage and future industry health and viability, NWFPFA member executives gathered at the NWFPFA Energy Vision Workshop in Skamania, Washington to collectively establish an energy vision and long-term energy goals for the membership. Both the Northwest Energy Efficiency Alliance (NEEA) and the U.S. Department of Energy (US DOE) supported this effort.

Food processing executives recognize that the most effective way to manage energy costs, reduce greenhouse gas emissions, while at the same time increasing the productivity and economic growth of NWFPFA members is by implementing greater energy efficiencies.

## NWFPFA Energy Vision and Goal

The NWFPFA Energy Vision and Goal acknowledges industry member priorities:

**NWFPFA Energy Vision:** To enhance the competitiveness and economic growth of NWFPFA members through development and implementation of a sustainable energy efficiency strategy

NWFPA champions efforts invested by its members in creating the energy vision and goal and implementing energy efficiency measures. Doing so yields additional benefits for members such as technical assistance, funding, regional leadership, and innovation in energy efficient processes and technologies. For example, a five-year partnership with NEEA generates ongoing support for NWFPA programs and assistance with continuous energy improvement and implementation of energy efficiency for NWFPA members. The US DOE is also providing support for Roadmap efforts. The Goal and Roadmap is an outgrowth of these partnerships and will take NWFPA's energy program to the next level.

to increase energy productivity and promote innovation.

**NWFPA Energy Goal:** To accelerate the implementation of energy efficiency strategies to reduce member-wide energy intensity (energy use per unit of output) by 25% in 10 years and through innovation, new technologies and new resources achieve a total reduction of 50% in 20 years.<sup>1</sup>

Following the October 2008 Vision Workshop, more than 75 stakeholders from NWFPA member companies, US DOE, utilities, NEEA, Energy Trust of Oregon, state energy departments and others convened an Energy Roadmap Workshop in Portland, Oregon. The purpose was to identify energy efficiency measures and

strategies that could be included in an energy roadmap that will drive the industry's energy efficiency implementation efforts over the next decade. At the workshop, NWFPA members and others contributed more than 500 ideas to promote energy efficiency and achieve energy intensity reductions.

On January 13, 2009, NWFPA's board of directors officially adopted the Energy Vision and Goal, making NWFPA the first **industry group** in the nation to establish an energy intensity reduction goal. These are aggressive goals, and working to achieve these targets will help ensure that NWFPA member food processors remain competitive.

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<sup>1</sup>The NWFPA energy intensity reduction goal is an industry-wide goal. Voluntary energy intensity reductions of NWFPA member companies will be aggregated to achieve the goal. NWFPA strongly recommends that companies adopt their own energy goals that are consistent with company-specific objectives, and support the industry-wide vision.

## What is the Energy Roadmap?

In support of the members' Energy Vision and Goal, NWFPFA developed an industry-specific energy roadmap. The NWFPFA Energy Roadmap actually consists of two strategic planning documents: the Association Roadmap and the Members' Roadmap. These two roadmaps are interdependent and work in concert to achieve the Energy Vision and Goal. The Association Roadmap charts a strategic path for NWFPFA staff and member activities at the association level, in support of the members and the industry-wide goal. It defines areas for partnerships and collaboration opportunities to catalyze food processors' efforts with the Cluster partners to achieve the Goal.

This document, the Energy Roadmap for Members, charts a suggested path for individual food processors to achieve energy intensity reductions. It is a framework for NWFPFA, partners and trade allies to provide support or resources. NWFPFA Members can use this roadmap as a guide for setting energy intensity goals and for developing a strategic energy management plan.

### Roadmap Evolution

Many expert sources in combination with real-world experience inform the direction of these documents. Case studies, NWFPFA members'

energy intensity baseline project, and current knowledge of existing and emerging technologies all aid in the formulation of recommendations. Energy Roadmaps are intended to be living documents relying on a 'continuous improvement' methodology supported by NEEA and NWFPFA to accelerate improvements in industrial energy management. As new ideas surface, and industry best practices gain momentum, these documents will be updated to reflect the industry's continuous progress toward the Goal to reduce energy intensity by 25% in 10 years.

### How to Use this Roadmap

The Roadmap defines the basic steps required to develop and implement a strategic energy management plan. It begins with an Energy Efficiency Self-Assessment to help companies gauge their current level of energy efficiency efforts and understand how energy efficiency is viewed. The next section assists with organization of a company's energy efficiency effort. The following section describes the steps for goal setting and for creating an action plan. The final section illustrates how progress toward goals can be measured and suggestions for plan review and adjustment. The appendices include supporting information as well as valuable resource contacts.

The following is an outline of the Roadmap's strategic energy management plan development and implementation process:

## I. Energy Efficiency Self Assessment

## II. Begin the Process

- a. Understand the Business Case
- b. Create an Energy Team
- c. Appoint an Energy Champion
- d. Obtain Resources

## III. Create the Plan

- a. Determine Energy Baseline
- b. Set a Goal
- c. Engage Partnerships
- d. Conduct an Energy Assessment
- e. Create an Action Plan

## IV. Launch the Plan

- a. Set Metrics
- b. Monitor Performance
- c. Assess Progress Toward Goals
- d. Adjust Plan

## V. Appendix



# Energy Efficiency Self-Assessment

Strategic energy management can be a path for your company to meet primary business objectives **and** manage energy as a controllable cost. Demonstrating tangible advantages of energy efficiency as a sustainable and profitable business model requires a strategic plan. Your company can underscore energy performance as a systematic implementation process.

How do you know what needs to be done to capitalize on energy efficiency as part of a sustainable and profitable business model?

Begin with an understanding of how your company defines and acts

on energy resource management. NWFPA has designed a self-rating system to help you assess your company's current approach to energy efficiency.

Below, is a table to use for this assessment. For each practice category in the left hand column, ask yourself which of the statements across that row are true for your company. Circle the statements that are true. This exercise will help you understand your organization's strengths and challenges for implementing an energy management plan.

Energy Efficiency Assessment	Ad Hoc Reactive	Growing	Managed, Measured, Planned
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>Equipment focused: motors, pumps, boilers, refrigerators, process heat</li> <li>Reactive, ad hoc,</li> <li>Just trying to keep factory running</li> </ul>	<ul style="list-style-type: none"> <li>Larger process scope</li> <li>Some processes defined</li> <li>Some plans and goals exist locally or driven by energy champions</li> </ul>	<ul style="list-style-type: none"> <li>Company management is committed to energy efficiency improvement and incorporates KPI's into strategy</li> <li>Plant or company-wide integrated programs in place and creating results</li> </ul>
<b>Gaps</b>	<ul style="list-style-type: none"> <li>No processes</li> <li>No formal goals</li> <li>No proactive management</li> <li>No program plan</li> <li>No proactive maintenance, system tuning</li> </ul>	<ul style="list-style-type: none"> <li>No formal management attention at a plant-wide or company-wide level</li> <li>No formal program with teeth</li> <li>No comprehensive strategy of approach</li> <li>No budgeted approach</li> </ul>	<ul style="list-style-type: none"> <li>No collaboration with suppliers and others outside your company</li> <li>Missing involvement and contribution in regional or peer level industry activities</li> </ul>

Energy Efficiency Assessment			
	Ad Hoc Reactive	Growing	Managed, Measured, Planned
<b>People</b>	<ul style="list-style-type: none"> <li>• Maintenance, technicians, operators</li> <li>• No or limited written energy goals or responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering level</li> <li>• Maintenance manager</li> <li>• Supervisors</li> <li>• Job descriptions and goals include energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Plant management</li> <li>• In-house plans and approaches developed and deployed. All managers have efficiency goals</li> </ul>
<b>Mindset</b>	<ul style="list-style-type: none"> <li>• If it ain't broke, don't fix it</li> <li>• No focus on energy</li> </ul>	<ul style="list-style-type: none"> <li>• Growing awareness of energy efficiency needs and options</li> <li>• Initial management interest in energy efficiency (EE)</li> </ul>	<ul style="list-style-type: none"> <li>• Management responds with budgeted programs</li> <li>• Energy efficiency is a priority and factor in work</li> <li>• Training and support leads to widespread awareness and commitment to EE</li> </ul>
<b>Innovation</b>	<ul style="list-style-type: none"> <li>• None or building clever band-aids.</li> <li>• Buy new equipment for productivity or capacity only</li> </ul>	<ul style="list-style-type: none"> <li>• May use some technology solutions new to your company but not new to industry</li> <li>• Some new process or equipment creation to meet energy goals</li> </ul>	<ul style="list-style-type: none"> <li>• Adoption of energy efficiency technology processes and equipment at a company-wide or plant-wide scale</li> <li>• Systems mgmt tools new to the plant in place</li> </ul>

## Energy Efficiency Self-Assessment Results

Now that you have identified the statements that are true for your company, which of the columns most closely describes your current level of effort:

- Reactive
- Growing
- Managed, Measured, Planned

NWFPA member companies demonstrate a broad and diverse range of energy efficiency efforts. Some organizations are just beginning to prioritize and account for energy resources, while others have devoted significant time and infrastructure in a comprehensive plan to address

(and reduce) energy use. To that end, NWFPA identifies different levels of energy efficiency and associated characteristics to help companies determine their 'proficiency,' and to help gauge how and where to advance to the next level.

Energy management is a priority for this industry, and NWFPA is developing specific activities and resources to help move member companies toward operating at the "Managed, Measured, Planned" energy efficiency level. Operating at this level will provide significant energy savings as well as other operational efficiencies, greenhouse gas emissions reductions, contribute to sustainability and

reduce regulatory risks. It is also key to achieving NWFPFA's industry-wide goal to reduce energy intensity by 25% in 10 years.

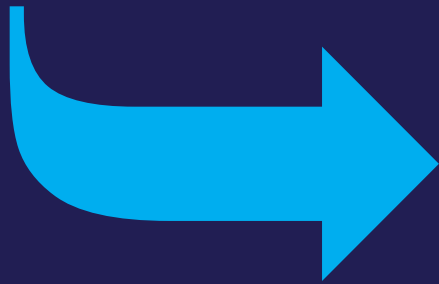
NWFPFA applauds companies operating at the "Managed, Measured, Planned" level and encourages them to consider helping other companies and industries achieve greater

efficiencies through collaboration and leadership. *See Appendix A for the full Energy Efficiency Assessment Table.*

NWFPFA's Cluster Initiative recognizes that working together toward a common goal benefits both individual companies and the industry as a whole.



# Begin the Process



## Goals

1. Understand the Business Case
2. Create an Energy Team
3. Appoint an Energy Champion
4. Obtain resources

In today's economy, productivity and competitiveness frequently hinge on how efficiently your company manages complex industrial processes. For most companies, management systems cover safety, quality and/or environmental protocols. To gauge whether your company has an effective management system in place, ask yourself three questions:

1. *Has your company set a goal related to an energy program?*
2. *Does senior management dedicate resources to help achieve the goal?*
3. *Is progress toward the goal regularly reported to senior management?*

If you answered “yes” to all three questions, you’re likely managing key organizational performance indicators with a management system and have embedded *the threshold of a system*

within your organization. By addressing organizational energy behaviors and management practices, strategic energy management can deliver reliable, persistent energy savings.<sup>2</sup>

### A management system for energy

If energy is viewed only as a monthly utility bill to be paid, you may be missing a critical opportunity to improve company productivity and the bottom line. When energy is treated as a resource to manage — in the same way other inputs, like labor or raw materials are managed — it becomes a *controllable* expense. A management system for energy provides a framework to put those controls in place:

- Begin with an energy efficiency goal and commitment to achieve it

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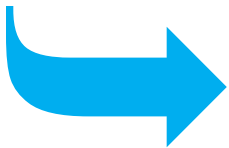
<sup>2</sup> ACEEE The Evolution of Continuous Energy Improvement Programs in the Northwest

- Proceed with a plan to achieve the goal
- Establish metrics that measure progress toward the goal
- Implement and evolve your energy management plan
- Review the effectiveness of the plan – and revise as needed

- Repeat this cycle for continuous energy improvement

Sound familiar? Maybe you know it as the Deming Cycle; Plan, Do, Check, Act; or Continuous Improvement?

This is **Strategic Energy Management**.

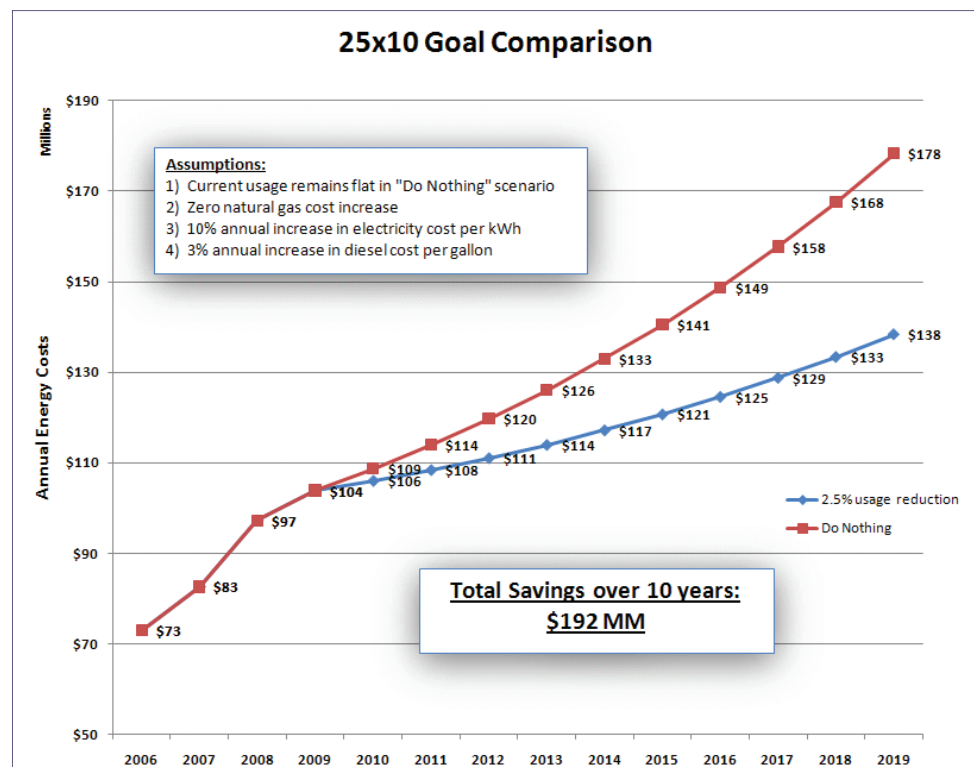


## 1. Understand the Business Case for Energy Efficiency

As an NWFPFA member, you recognize that energy efficiency is more than the technologies and operating procedures necessary to reduce the amount of energy used. Addressing energy systematically and as a controllable cost will also improve productivity, bottom line performance,

and indirectly enhance reliability, improve safety, reduce turnover, and increase morale. Energy efficiency can contribute to varied business outcomes and should be integrated into other company efforts. Appendix F shows a table linking energy efficiency to business outcomes.

*This graph shows an example of the energy savings benefits of adopting an energy goal and implementing a strategic energy management plan.*



While the cost of energy may be relatively small when compared to the costs of other production inputs, it can be a company's single largest uncontrolled expense. Energy prices, especially electricity, are increasing. It makes good business sense to control energy costs by managing energy use. Additionally, energy accounts for 90% or more of a plant's greenhouse gas emissions. Energy efficiency can reduce emission levels and mitigate financial risks of future penalties or taxes on emissions. And, if these are not sufficient reasons, some customers are requiring - and many others are requesting - "green" or "sustainable" products. Energy efficiency plays a key role in any sustainability initiative.

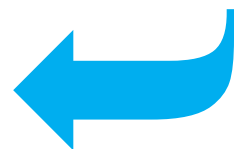
The Save Energy Now EnSavings Calculator developed by J.R. Simplot Company and Oakridge National Laboratory can be used to demonstrate your company's cost of doing

nothing versus the cost with energy savings produced by setting a goal and implementing a plan to achieve that goal. It can also help you in making the business case for energy efficiency to company executives. Screen shots from the calculator are shown at Appendix B. To use the calculator, access the NWFPA website at <http://www.nwfpa.org/energy-roadmap>.

Recognition of the business case for energy intensity reduction goes hand-in-hand with executive level commitment to an energy program. These two key factors, along with ongoing employee communication and engagement will ensure the right infrastructure is in place to champion and maintain energy efficiency improvements. The objective is to create an 'energy culture' – or a common set of experiences, unified approach and commitment within the company to capture energy savings.

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## 2. Create an Energy Team

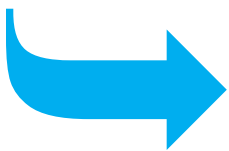


Good engagement practices begin with the creation of a diverse team that will establish energy goals supported by senior leadership, managers and plant leaders. The team aligns energy efficiency improvements and projects with all levels of the company – ensuring they are well understood at every step of the

way. As in safety or quality assurance initiatives, the Energy Team emphasizes energy management and energy efficiency improvements as a cornerstone to bottom line performance and ensures energy is managed with a long-term vision rather than just isolated or 'quick-fix' projects.

### Attributes of a successful Energy Team:

- ❑ **Leadership** - Identify a charismatic and passionate Energy Champion.
- ❑ **Diversity** - Include broad functional representation such as production engineers, operators, financial representatives, procurement, marketing, etc.
- ❑ **Knowledge** - Ensure team members have a clear understanding of the role energy plays in creating bottom-line advantage.
- ❑ **Commitment** - Assess ability to participate. Team members will meet regularly, develop clear, updated action plans and learn to act as opportunity arises.
- ❑ **Communication** - Consider team members who can effectively convey information in a manner that's readily understood by others and mirrored by their actions.
- ❑ **Flexible** - Be open to adapting to mid-course changes, disruptions and other fluctuations.
- ❑ **Motivators / Influencers** - Consider team members viewed as leaders within their work unit. Individuals with the ability to overcome inertia and motivate their peers to follow them become coaches and facilitators in a changing environment.
- ❑ **Infrastructure** - Create a supportive climate for the Energy Team to advance energy goals through training and education.



## 3. The Energy Champion: From Audit to Action —

### The Best Energy Champions

- Engineers
- Boiler/Refrigeration Supervisors
- Plant Managers
- Plant Accountants

The appointment of an 'Energy Champion' at your plant or facility locations, or among work-groups is critical to successfully administering and implementing an energy management plan. An Energy Champion is a person dedicated to promoting energy-efficiency principles across the company. These are individuals who are passionate about energy efficiency and are willing and able to monitor and report energy initiative efforts and progress to goals.



This important role has been linked to reducing energy consumption. Your company's leadership should fully support the Energy Champion and consistently reinforce a 'systems' approach to energy management.

In most small to medium-sized food processing companies, employees wear many hats. For example, the energy champion may be the plant engineer who is also the environmental manager as well as the sustainability manager. This is likely true for members of the Energy Team as well. Multiple responsibilities mean multiple demands on time. Thus, work may not progress as rapidly as desired, but an energy plan will keep efforts focused.

Also, depending on the size of your company, there may be one energy champion or several energy champions for multiple facilities. JR Simplot Company, a large food processor, has an energy manager and several energy champions. Experienced

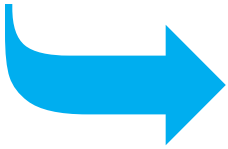
energy manager Don Sturtevant outlines a proven strategy for energy managers:

### Top Ten Activities for an Energy Manager

1. Provide reward and recognition
2. Establish teams and champions
3. Build the business case
4. Get CEO sponsorship and leadership
5. Clearly define and communicate goal
6. Partner with EVERYONE
7. Clear obstacles
8. Training
9. Track results and communicate
10. Provide capital and expense dollars

### Key attributes of an Energy Champion include:

- ☐ Embraces a vision of an energy intensity reduction path for the company. This role is considered the heartbeat for attaining real, sustainable savings.
- ☐ Respected by all and effectively communicates from plant floor to the executive suite.
- ☐ Has time to devote to the role of Energy Champion.
- ☐ Understands partnership roles and can foster utility and regional non-profit relationships.
- ☐ Embraces a systems approach toward energy efficiency and is able to coordinate and understand different teams, work processes, production, and organizational development including strategic management.



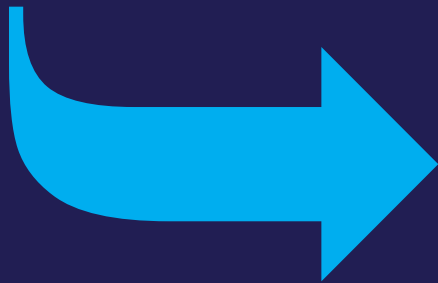
## 4. Obtain Resources

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To be successful, your company should support the Energy Team by:

- Providing staff resources for the Energy Team (perhaps by adding energy responsibilities to existing staff tasks.
- Allocating sufficient time for the Team to devote to energy issues.
- Providing a modest operating budget for the Energy Team.
- Communicating the company's commitment to the Energy Team and its critical role within the company, including recognition of Team successes.

# Create the Plan



## Goals

1. Determine Energy Baseline
2. Set a goal
3. Engage Partnerships
4. Conduct an Energy Assessment
5. Create an Action Plan

According to US DOE's Superior Energy Performance,<sup>3</sup> an Energy Action Plan establishes a **continuous improvement** framework to set energy savings goals, monitor progress and measure results of energy saving activities. The plan provides guidance for managing energy and ensures that energy-efficiency improvements are continuously identified and implemented. Your plan should engage human, technical, and financial resources as a

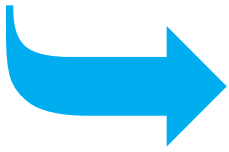
comprehensive approach to better manage energy inputs and outputs as controllable costs.

Facilities that proactively manage energy use and develop a documented plan for doing so use significantly less energy. Performance indicators that relate energy consumption to production output will support measuring or documenting improvements in energy intensity.

In 2009, NWFPFA began work to establish an industry-wide energy intensity baseline for the NWFPFA membership. NWFPFA will use its baseline to track progress toward the industry-wide energy intensity reduction goals.

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<sup>3</sup> Paul Scheihing, *Superior Energy Performance: A Roadmap for Achieving Continual Improvements in Energy Performance*



## 1. Determine Your Energy Baseline

As a fundamental step towards reducing your plant's energy intensity, it is important to establish a baseline. This provides a starting point from which you can measure progress and improvements resulting from energy efficiency measures.

The units of energy chosen by NWFPFA to determine energy intensity are British Thermal Units (BTU) because different energy sources are included in the baseline. All forms of consumed energy (electricity, natural gas, fuel oil, wood) were converted to BTUs.<sup>4</sup>

A very simple method to determine a plant's annual energy intensity requires two numbers:

1. **Total BTUs** of energy consumed at the plant in one year
2. **Total units** of finished goods produced at the plant (output) in one year

To calculate energy intensity, divide total BTUs by total output:

$$\text{Total BTUs} / \text{Total Output} = \text{Energy Intensity}$$

Different processing types characteristically use different amounts of energy and are more or less energy intensive than others. To date, NWFPFA

has identified energy intensity ratios within its membership between 500 and 17,000 BTUs/pound.

For this simple method, follow these three steps to calculate your energy intensity baseline:

1. **Determine annual energy consumption. If energy data is not being collected electronically or manually, energy bills can be used to provide this information or contact your energy service provider for assistance.**

To standardize, NWFPFA recommends converting all energy sources to BTU's:

- Electrical energy (kilowatt hours) converts to BTUs by multiplying total kilowatt hours by 3413.
- Natural gas, purchased by the "Therm" (100,000 BTUs) or MM BTUs (1,000,000 BTUs).
- Fuel oil BTU content per gallon depends on the fuel grade (2 through 6). On average, the BTU content for each is: #2 = 138,500; #3 = 141,000; #5 = 148,000; #6 = 152,000.
- Propane, purchased by the gallon (91,600 BTUs).

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<sup>4</sup> NWFPFA's *Energy Intensity Baseline of the Northwest Food Processing Industry*

Tally your BTUs from all your energy sources. You now have the numerator for the formula.

## 2. Calculate total annual production.

Use the unit of production specific to your product. However, if you produce multiple products, NWFPA recommends a standardized production measure in pounds. This means volumetric measures, such as gallons, will need to be converted to pounds. If finished products have different densities, different conversion factors should be used. NWFPA converts the production of its membership into pounds for the NWFPA baseline and can provide assistance with unit conversions.

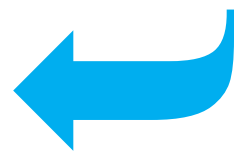
## 3. Divide the production number into the total energy number to calculate the number of BTUs consumed to produce a unit of product.

**Track your energy use over time** and use your baseline to:

- Set an energy goal/target
- Track progress toward the goal/target
- Communicate and reward accomplishments

Company Name: ABC Foods	
<b>Finished Product Pounds</b>	<b>70,001,377</b>
Electricity KWh	1,438,900
Gas MMBTU	1,438,900
Other Energy	0
Electricity BTUs (KWh x 3413)	4,910,965,700
Gas BTUs (MMBTUs x 1 million)	8,531,000,000
<b>Total BTUs</b>	<b>13,441,965,700</b>
<b>Total BTUs/Pound</b>	<b>192</b>

## 2. Set a Goal



With an energy intensity baseline in place, set an energy goal. Articulate a goal that is SMART:<sup>5</sup>

- Specific
- Measurable
- Attainable
- Realistic
- Timely

The goal should be defined in terms of a specific quantity or percentage savings or reduction. For example, ConAgra-Lamb Weston has set a goal to reduce carbon emissions by 20% in five years. J.R. Simplot Company has set a goal to reduce energy intensity by 20% in 10 years. Performance

<sup>5</sup>Management Systems and Managing Energy

goals help shape the development and implementation of the company's 'Energy Action Plan.' This energy plan is a documented demonstration of your company's commitment to effectively managing energy. It also links your commitment to enhanced performance and measurable productivity improvements.

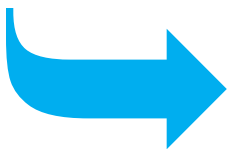
You might also consider adopting a formal company energy policy that incorporates your energy goals and targets. An example is included at Appendix C. Once the goals and policy have been adopted, communicate the goals and policy to the entire organization, including all employees.

Support your Energy Champion and the Energy Team by using goals as a tool to:<sup>6</sup>

- Set the tone for company improvements (creating an 'energy culture')
- Measure success
- Aid the Energy Team in identifying progress & set backs
- Foster ownership of advancing energy management within the company
- Demonstrate commitment
- Identify milestones and maintenance schedules

Three Northwest food-processing companies have each saved about \$2 million in energy costs over four years of implementing energy management. Another food processing company saw its electric bill decrease by over 8% and its gas bill decrease by nearly 1% during the first year it began managing energy. A vegetable processor reduced its energy intensity by over 3% during the first year it began managing energy.

- NEEA, *Management Systems and Managing Energy*



### 3. Engage Your Utility Partner

Two of the most important partnerships you can invest in are:

**Utilities** – NWFPFA recommends that you engage your energy service provider early on in the process. A

strong utility partnership creates both short and long-term advantages.

Northwest utilities are motivated to capture industrial electric energy savings and are ready to work with food processors to identify and implement

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<sup>6</sup> *Superior Energy Management*, [www.energystar.gov](http://www.energystar.gov)

the most appropriate energy-saving technologies. Incentives and training programs can target support where it's most needed in your facility. Currently, electric utilities are funding between 50% - 70% of project costs. Bonneville Power Administration has formally committed to support NWFPFA members in achieving the 25% energy intensity reduction goal. Generous incentives and resources are available for customers of consumer-owned utilities in Idaho, Oregon, Washington and Montana that are participating in BPA's Energy Smart Industrial program. Likewise, customers of Portland General Electric and Pacific Power in Oregon provide incentives and resources through another NWFPFA partner, Energy Trust of Oregon, which also has incentives available for some customers of NW Natural Gas and Cascade Natural Gas. For a listing of utility incentives see Appendix D.

**Suppliers** - Product and service providers can often be a source of information, solutions and problem solving. Engage your vendors and

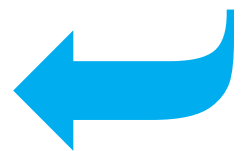
consultants in your company's energy goal. Some organizations may choose to outsource entire aspects of their energy efficiency plans while others may only want to contract with vendors for specific projects.

Partners include:

- ☐ Utilities – incentives, training, technical expertise
- ☐ Trade and professional associations – energy and business best practices, educational resources, professional networking
- ☐ Regional and state energy non-profits – training, education, grants
- ☐ Distributors - upstream and downstream demand impact
- ☐ Consultants -audits, services outside your current business scope
- ☐ State research and development groups
- ☐ Academic institutions – internships, research, demonstration projects, emerging technologies

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## 4. Conduct an Energy Assessment



Energy assessments or audits are comprehensive evaluations of the actual performance of your plant's systems and equipment energy consumption. Audits identify opportunities for improvement, help you

decide on how to prioritize projects and are valuable in tracking progress. You can perform a self-audit and leverage resources found in the appendix or you can work with a third party.

Energy assessments typically follow a two-phase approach: a scoping study and a detailed study. The scoping study, or short assessment or “plant walk-through,” quickly identifies energy intensive processes and looks for indicators of energy waste such as compressed air leaks, oversized motors, etc. These findings are prioritized and a recommendation is made to conduct a detailed study on processes expected to yield the highest savings.

A detailed study, or “revenue-grade” study, collects information on cost of materials, labor, engineering, expected energy savings, etc in order to determine the return on investment for recommended measures. These analyses are expected to be of sufficient detail to provide documentation necessary to justify capital expenditures by the plant and/or the utility offering incentives for energy projects.

## Securing an Energy Assessment

Available funding for energy assessments varies widely throughout the Northwest by service area or entity. The table at Appendix D identifies funding for assessments. Check with the contacts on this table on the current offerings for your energy service

provider. Another table at Appendix D provides contacts for consumer-owned utilities participating in BPA’s Energy Smart Industrial program.

Another option for assessments (electricity and/or natural gas) is the Industrial Assessment Centers (IACs). The IACs are staffed by university engineering department faculty and funded by the US DOE Industrial Technologies Program to conduct assessments at small to medium-sized industrial facilities. IACs are located at Oregon State University and Boise State University. The assessments are typically free (or low cost) to facilities with gross annual sales below \$100 million and fewer than 500 employees at the plant site.

While an audit may not be an exact science, there are some practical “Rules of Thumb” to ensure accuracy and technical expertise:<sup>7</sup>

- ❑ Select experienced auditors with proven engineering experience who offer a measured guarantee to the accuracy of the analysis.
- ❑ Look for an auditor who understands and differentiates techniques appropriate for small-scale energy audits vs. large-scale complexes.

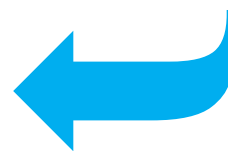
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<sup>7</sup> *Improving Industrial Energy Audit Analysis*, Capehart, University of Florida for ACEEE,



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## 5. Develop an Energy Action Plan



The Energy Action Plan will provide a systematic approach to achieving the energy goal. It should identify the steps and resources needed to move your company from its current performance level (the baseline) to the level defined by the goal. This plan should be dynamic and updated on an annual basis to reflect progress, learnings and changes. The completion of an energy audit will produce several recommendations for energy improvements, including your largest savings opportunities, and the savings potential for your facility. You may want to revisit your energy goal at this point to assure that it is reasonable and attainable. Recognize that there are savings achievable outside technical recommendations such as behavior/culture change. J.R. Simplot Company suggests a 5% - 10% energy savings due to behavior/culture change.

An energy action plan should include the following elements:

1. Identification of roles and responsibilities: Energy Champion and Energy Team; corporate, plant management, technical resources; consultants
2. Key performance indicators - total plant and systems
3. Capital projects
4. Non-capital projects and activities
5. Funding for projects (company capital, incentives, loans, grants)
6. Training and education for plant personnel in energy efficiency best practices
7. Monitoring and measuring
8. Communication plan – Internal and external; raise awareness and communicate successes and challenges
9. Plan review, update and revisions
10. Recognition and rewards for plant personnel

Consider also the elements identified in the assessment table on page 37 or Appendix A of this document. This may suggest elements to include in your plan.

### Prioritize Energy Saving Projects

Many energy savings projects will have been identified in your plant energy assessment. Which projects should be included in the energy plan and in what priority? Mike Henderson at ConAgra-Lamb Weston advises that “not everything can be first priority and identified opportunities must still compete for capital.” According to an ongoing study by NWFPA, multiple factors will impact your decision-making process to prioritize and implement energy savings projects.

The following have been identified as the key factors:

1. Energy Importance
2. Payback
3. Savings Impact
4. Initial Investment
5. Complexity
6. Staff Time
7. Continuity of Operations

NWFPA is evaluating how these factors affect decisions to implement projects identified in the energy assessment and has developed a Recommendation Scoring Analysis

(RSA) tool that considers the key factors and determines a score for each audit recommendation.<sup>8</sup> Evaluations of IAC audit data indicate that recommendations with a score of 55 or less are implemented or planned to be implemented. Of course, other considerations certainly may influence the decision to include the project in the plan regardless of RSA score.

The following table shows an Assessment Summary with RSA scores from one of NWFPA's case studies. The recommendations are not listed in priority order.

Item	Description	Annual Energy Savings MMBTU/yr	Energy Cost Savings	Cost	Incentive	Net Cost	Pre-Incentive Payback	Post Incentive Payback	RSA Score
1	Main plant & warehouse lighting	289	\$5,868	\$36,463	\$12,762	\$23,701	6.2	4.0	31
2	Cold storage lighting	53	\$1,078	\$9,625	\$2,622	\$7,003	8.9	6.5	42
3	Office area lighting	81	\$1,767	\$12,250	\$3,698	\$8,552	6.9	4.8	32
4	Cold storage refrigeration system	233	\$4,606	\$17,510	\$8,755	\$8,755	3.8	1.9	76
5	Cold storage door	41	\$796	\$10,00	\$2,400	\$7,600	12.6	9.6	376
6	Inverter duty motor	30	\$622	\$5,200	\$1,751	\$1,751	8.4	5.5	277
7	High efficiency motors with VFD	257	\$5,250	\$27,861	\$13,931	\$13,930	5.3	2.7	149
8	Electric vibratory conveyors	338	\$6,923	\$134,000	\$19,000	\$115,000	19.4	16.6	2,869
9	Condensate as feed water for hot water system	18							45
10	Install floating head pressure control	159	\$361	\$9,735	0			0	18
11	Cycle evaporator fan	9	\$3,109	\$440	\$220	\$220	0.1	0.1	8
12	Install runtime initiated defrost	\$185	\$880						19

Source: NWFPA

<sup>8</sup> NWFPA, Energy Assessments & Mapping in the Food Processing Industry

Each company must decide for itself the priorities it will place on energy efficiency projects and activities consistent with its business and operational strategies and plans. You might consider fast tracking measures that yield savings quickly, easily and allow plant management to clearly observe energy efficiency successes. Establishing success early on may ease the difficulty of implementing a more challenging measure later.

Several areas of significant energy savings have been identified for food processing and are worth consideration for incorporation in an energy action plan. The Northwest Power

and Conservation Council evaluated 27 currently available electrical energy efficiency measures and their potentials for energy savings<sup>9</sup>. NWFPA prepared the table below based on the Council's data. Much work remains to be done regarding estimations of potential energy savings from energy efficiency measures, but this table gives an indication of where some of the largest opportunities may lie. The four highlighted conservation measures in the table account for 73.4 percent of the total potential available savings in 2010, and 68.5 percent in 2020.

### Northwest Food Processing Electrical Energy Conservation Measures

Conservation Measure	End Use	2010 Share of Total Savings	2020 Share of Total Savings
<b>Refrigeration: Cooling and Storage</b>	<b>Refrigeration</b>	<b>21.6%</b>	<b>20.0%</b>
<b>Energy Project Management</b>	<b>All</b>	<b>21.4%</b>	<b>20.1%</b>
<b>Integrated Plant Energy Management</b>	<b>All</b>	<b>18.8%</b>	<b>17.7%</b>
<b>Refrigeration: Storage Tune-up</b>	<b>Refrigeration</b>	<b>11.6%</b>	<b>10.7%</b>
Plant Energy Management	All	6.0%	5.6%
Transformers	All Electric	5.3%	5.0%
Fan Equipment Upgrade	Fan	3.8%	3.6%
Pump Equipment Upgrade	Pump	2.7%	2.5%
Lighting	Lights	1.6%	7.9%
Air Compressor Optimization, Equipment & Demand Reduction	Air Compressor	1.5%	1.4%
Synchronous Belts	All Motors	1.4%	1.3%
Fan Energy Management	Fan	1.4%	1.3%
Lighting Controls	Lights	1.2%	0.9%
Pump Energy Management	Pump	1.0%	0.9%
Fan System Optimization	Fan	0.4%	0.4%
Pump System Optimization	Pump	0.4%	0.3%
Motors Rewind 20-200 HP	All Motors	0.1%	0.4%

<sup>9</sup> NWPPCC 6<sup>th</sup> Power Plan

The total refrigeration system opportunity is shown to be over 30% of potential energy savings. For many food processors, refrigeration is the largest electrical load (35% - 65%). Refrigeration is typically targeted in energy assessments and provides opportunities for energy savings.

Refrigeration Cooling and Storage improvements may include installing evaporator fan variable frequency drives, closed loop electronic demand control, and improved operations and maintenance (O&M) procedures.

Likewise, Refrigeration Storage Tune-ups consist of measures such as temperature and pressure set point adjustments, algorithms and sequencing order optimization, coil cleaning and valve adjustment and repair.

Energy Management also is shown to produce significant savings (a total opportunity of 46.2%). The Council identified three categories of energy management, described below. Nearly all of the listed activities are discussed in this Roadmap.

GOOD	BETTER	BEST
Plant Energy Management	Energy Project Management	Integrated Plant Energy Management
Includes basic energy efficiency projects where utility incentives and other subsidies are available – supported with comprehensive demand-side assessments and good preventative maintenance practices based on system-specific guidelines and supported by system operator training.	Includes assignment of an energy engineer, tracking energy costs, identification and prioritization of capital projects, application of system optimization tools and practices on a few key systems in the facility.	Includes development and implementation of an energy management plan (policy, accountabilities, department/ system level targets and measurements, etc.) to support continuous improvement of energy intensity and independent verification of energy savings.

Source: Northwest Power and Conservation Council

NWFPA has also identified compressed air systems as a significant use of electricity and an area with opportunities for energy savings.

Further, nearly all food processing plant boilers are natural gas-fired and typically represent the largest natural gas load (recall from Figure 1 that nearly 73% of all food processing plant energy consumed is in the form of natural gas). Boilers will continue to be an area of focus for nearly all food processing assessments and boiler measures can provide opportunities for considerable energy savings.

Look for ways to find and introduce new technologies, processes and measures.

Technologies not identified by the NWPCC 6th Power Plan could enhance the savings potential associated with the individual companies as well as possibly enhancing energy management practices and the savings associated with other current measures.

## Case Study: Frito-Lay

This leading snack food manufacturer's energy management plan features aggressive energy reduction goals with a focus on results. This demands a high degree of monitoring, measurement, and frequent internal and external company communication. Frito-Lay created a company Resource Conservation Group to fulfill a need for engineering talent, responsible for the implementation of the energy management plan. While surpassing intermediate targets on the way to even larger estimated savings, Frito-Lay's efficiency initiatives have returned over 30 percent on investment.

**Notable feature:** Large and challenging energy reduction goals were used to rally and motivate staff to generate results.

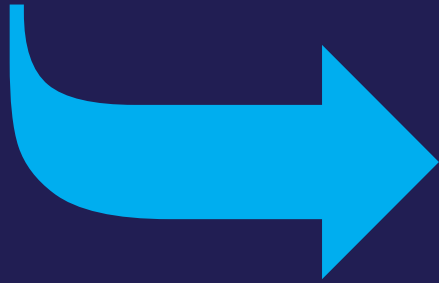
### Corporate Energy Management Style:

- ❑ **Authority:** Aggressive corporate goals specify desired reductions in energy and water. Goals are prorated across plants. A Senior VP for Operations reviews comparisons of plants' progress.
- ❑ **Leadership:** A Group Leader for Energy & Utilities coordinates corporate-wide discovery and evaluation of improvement opportunities.
- ❑ **Who Decides to Act?** Plant managers and personnel make implementation decisions.
- ❑ **Organization:** Several tiers of energy leadership are involved: a corporate tier provides technical assistance; a regional tier coordinates audit functions, and site champions assume implementation details.
- ❑ **Accountability:** Corporate comparison of plants' budget-to-actual energy performance is the mechanism for ensuring compliance.

- Christopher Russell, Alliance to Save Energy,  
*Energy Management Pathfinding: Understanding  
Manufacturers Ability and Desire to Implement  
Energy Efficiency*



# Launch the Plan

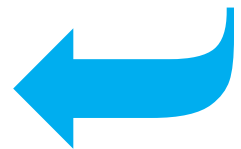


## Goals

1. Set Metrics
2. Monitor Performance
3. Assess Progress to Goals
4. Adjust Plan

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### 1. Set Metrics

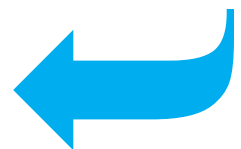


Identify key performance indicators (KPIs)--total facility and system--that can help you track and measure progress. Information provided by the plant energy assessment will help

to identify systems and reasonable targets. For example, for compressed air, these KPIs could include: kW/CFM, discharge pressure (psig), or leak load (CFM).

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### 2. Monitor Performance



If you don't measure it, you can't (or won't) manage it. It is important to establish a system to track energy use in order to monitor progress toward targets and goals. Performance data should be regularly reported and discussed at Energy Team meetings and should be periodically reviewed with management. There should also be a mechanism in

place to investigate and take corrective action if the energy data indicates there is unusual or excessive energy use in the plant.

The simplest and most basic approach is to compile monthly energy use and cost data (from utility bills) and plant production data on Excel spreadsheets. These can be

split out to track electricity, natural gas and other fuel sources. Also include a column for energy intensity (BTUs/unit of production) and cost per unit of production.

*Appendix E shows a hypothetical example of this type of tracking.*

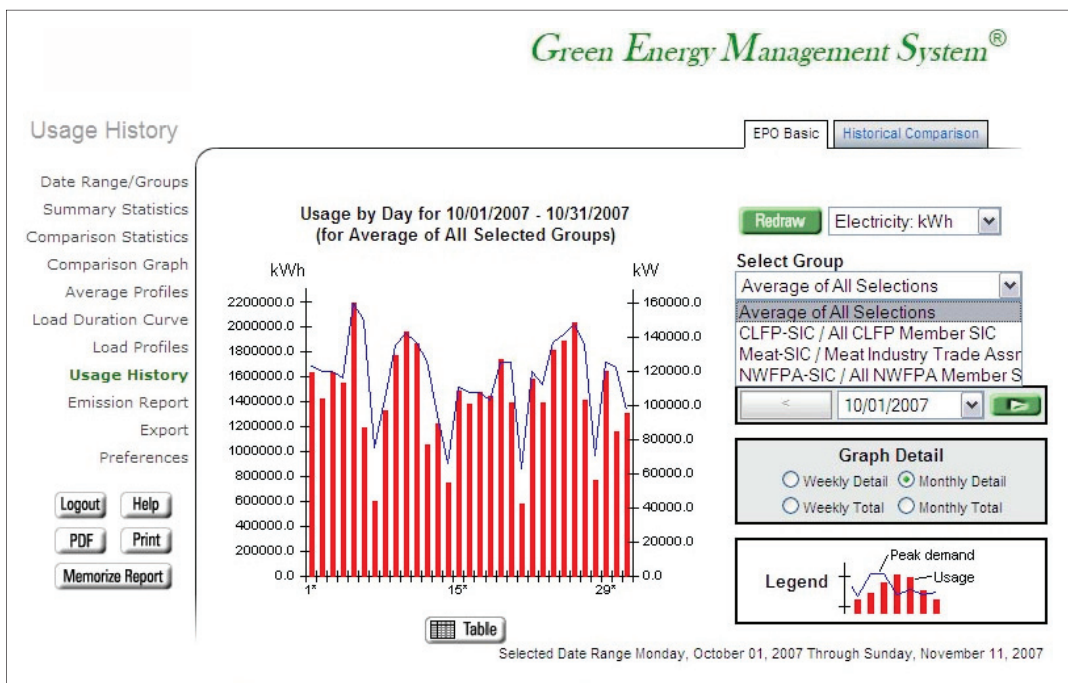
Energy monitoring and management systems (EMMS) are a more advanced way to compile and track this data. Simply defined, an EMMS is a collection of hardware and software that collects energy data and displays it in a format that can be used for energy decision-making. There is a wide range in complexity and costs in available systems. Each company must decide what system is most appropriate given its particular needs. EMMS software solutions are commonly offered as third-party web-hosted programs that can be accessed via standard protocol such as HTTP.

EMMS has many features that help companies track and manage energy, which include:

- Real-time energy data (typically collected at 15 minute intervals)
- Profiles of energy use per day, week, month, year or other selected intervals
- Energy cost tracking and projections
- Data mining and data export to Excel, Word, etc.
- X – Y scatter plots of various data and statistical analysis
- Dashboard functionality
- Compare current performance to targets or baseline
- Customized alarm module (detects anomaly and sends alarms/emails)
- Management alerts (sends emails, texts, etc.)

The following is a screenshot from the Green Energy Management System,

one of many available EMMS solutions:





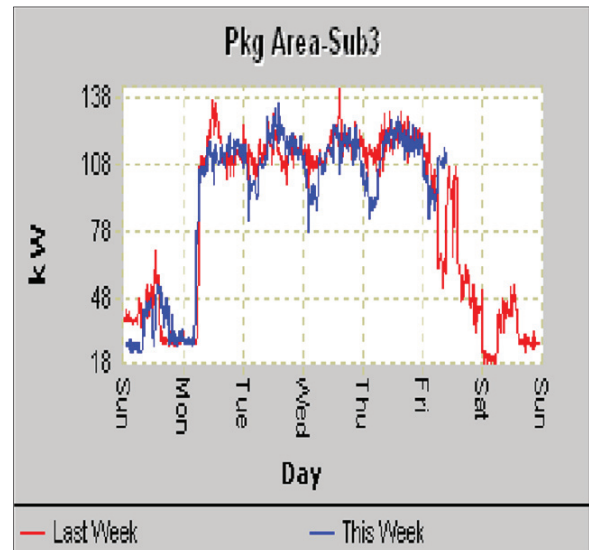
One company found that its hydraulic system was being left on unnecessarily for six hours every night. To fix this problem, a mechanical timer was installed to automatically turn off the hydraulic system every night.

The combination of EMMS with sub-metering of process lines, equipment, major systems, business functions, etc., allows companies to pinpoint problems, make adjustments and see immediate results.

This chart shows information from the EMMS on energy use before (red) and after (blue) the corrective action.

Sub-metering also allows companies to assign energy costs to different business functions—processing, packaging, cold storage, etc.

An understanding of energy data and how to use that data to manage energy use and achieve energy savings is essential. This may be among your training needs. NWFPFA is working with Portland General Electric to develop such a course for food processors, which will be available later this year.



NWFPA is currently piloting EMMS and sub-metering in several food processing plants. Analysis and evaluation of plant experiences and energy savings will be available to aid food processors in deciding whether EMMS is a tool that they would like to incorporate into their energy management plan.

### 3. Assess Progress Toward Goals and Review the Energy Plan

Formally assess your progress and the energy management plan on an annual basis. Regular review of performance reveals what has been accomplished versus goals and projections. The progress review should not only compare energy use/intensity and costs against KPIs, targets and goals (quantitative review) but include a qualitative review as well. Seek

informed opinions from the Energy Team, Energy Champion, management, and other plant personnel.

Reviewing progress toward energy intensity reduction goals helps companies:

- Characterize current energy use
- Identify poor performing areas

- of the operation and reveal opportunities for improvement
- Improve operations, processes, and behaviors and foster innovation
- Understand the contribution of energy to operating costs
- Develop an historical perspective and context for future actions and decisions
- Establish reference points for measuring and rewarding good performance

Reviewing and assessing areas of the action plan helps companies identify what worked and what did not work and any needed revisions:

- **Tracking system** – was data reported in a useable format, are there data gaps, would an EMMS tool be helpful, is a more granular approach needed?
- **Projects and actions** – were expected savings achieved, were budgets/timelines met, were there installation/implementation issues, what new projects and actions should be added to the plan?
- **Education and training** – were employees provided needed training, was the training effective, are there training gaps?
- **Communication** – were periodic reports made available to management and other employees, were successes communicated inside and outside the company, what is the level of awareness of the program in the company?
- **Funding/Resources** – were sufficient financial resources to support the program provided by the company, were capital funds available, were outside resources available, were sufficient staff resources allocated?
- **Rewards and Recognition** – did individuals/teams receive awards or acknowledgment for their contribution(s) and was this communicated inside the company?
- **Targets/Goals** – were the interim targets or goals met; are they realistic, are adjustments or revisions needed?
- **Energy Team/Champion** – are the roles and responsibilities of the Team and Champion clear, are additional Team members needed (consider other business units), how engaged were the Energy Team/Champion in implementing the Plan?
- **Company Culture** – is the role of energy management being elevated in the company and is it being correlated to other business objectives, are other business units and functions cooperative in implementing the Plan, has the company demonstrated a commitment to energy efficiency and a program of continuous improvement?

In addition to the above, consider the practice elements in NWFP's Energy Efficiency Assessment table in *Appendix A*. Revisit this table on a

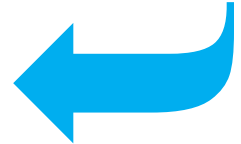
regular basis. What adjustments are needed to achieve or maintain the Managed, Measured and Planned level? What would be required to move beyond this level?

Finally, energy efficiency improvement opportunities exist at every phase of business and production operations.

When assessing progress to goals, linking energy management efforts to business outcomes and processes offers a multi-dimensional view of energy's role in your organization. Appendix F shows a table linking energy efficiency efforts to business outcomes.

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## 4. Adjust Plan



Use the results and information gained in the progress and plan review to make necessary adjustments to the energy management plan. Repeat this entire cycle annually. As the cycle continues, you will

have established a sustainable energy management strategy, reduced energy intensity and realized the associated benefits of continuous energy improvement.

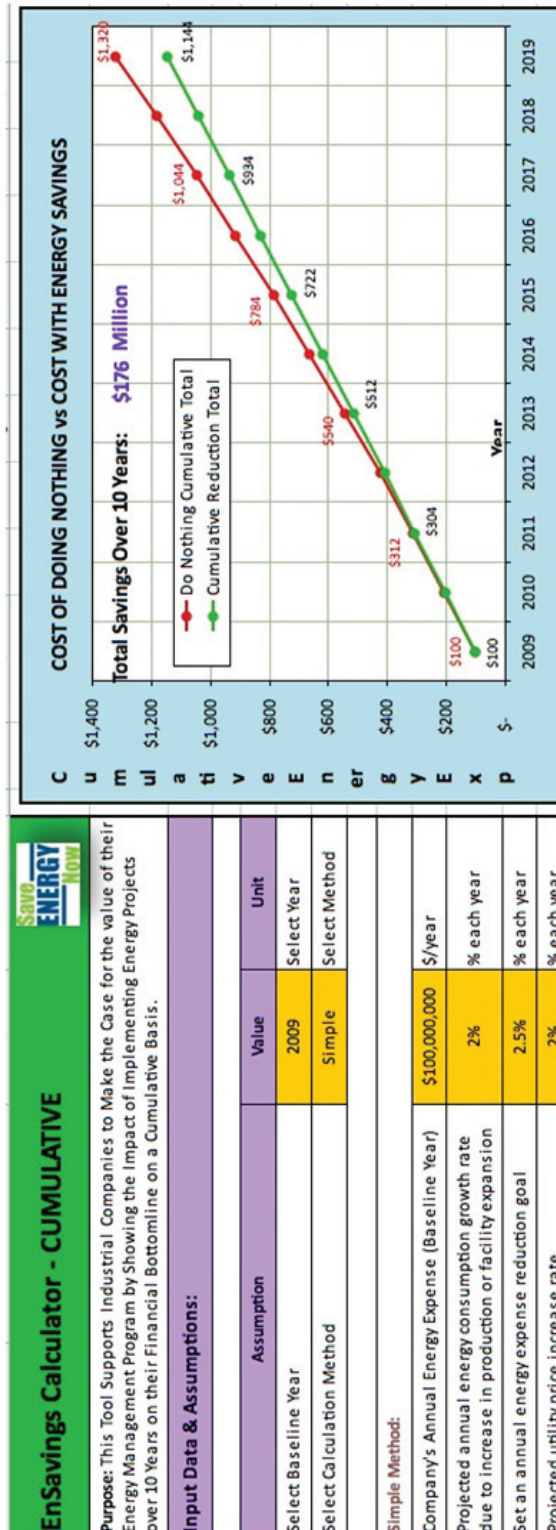
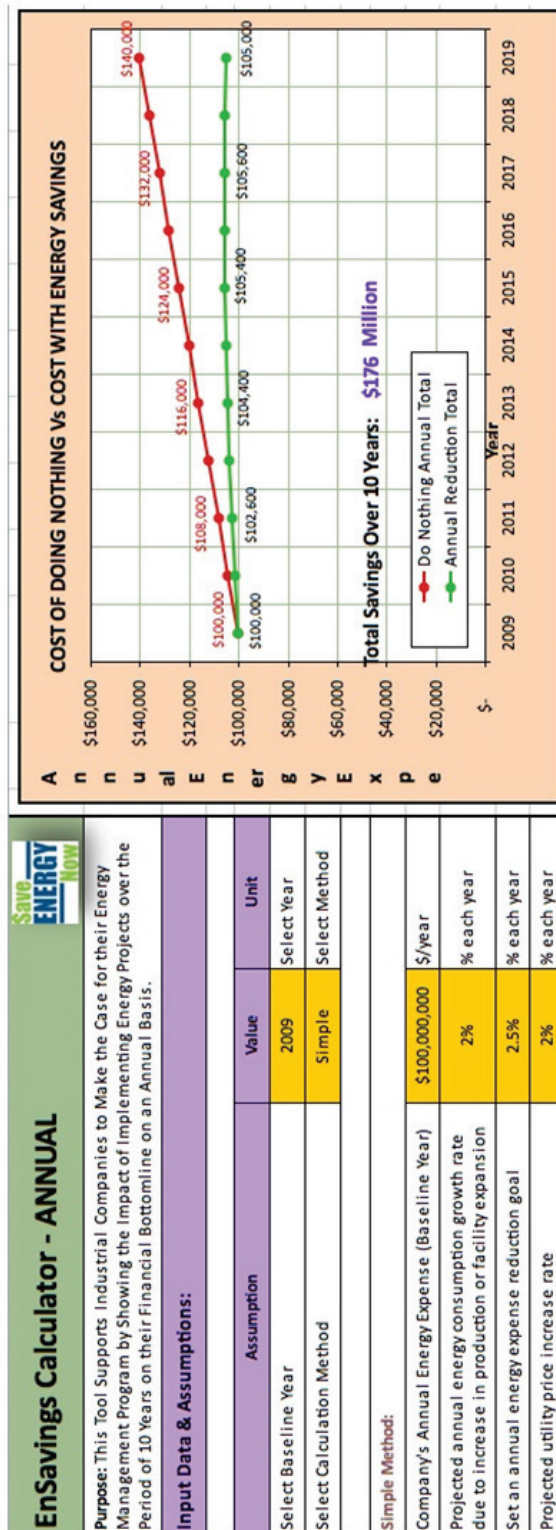


Appendix A

Energy Efficiency Assessment	Ad Hoc ReactiveGrowingManaged, Measured, PlannedIndustry CollaboratorIndustry Leader				
Characteristics	<ul style="list-style-type: none"><li>Equipment focused: motors, pumps, boilers, refrigerators, process heat</li><li>Reactive, ad hoc,</li><li>Just trying to keep factory running</li></ul>	<ul style="list-style-type: none"><li>Larger process scope</li><li>Some processes defined</li><li>Some plans and goals exist locally or driven by energy champions</li></ul>	<ul style="list-style-type: none"><li>Company management is committed to energy efficiency improvement and incorporates KPI's into strategy</li><li>Plant or company-wide integrated programs in place and creating results</li></ul>	<ul style="list-style-type: none"><li>Company actively works outside 4 walls to collaborate with: suppliers, utilities, organizations, competitors, consortiums, and associations.</li></ul>	<ul style="list-style-type: none"><li>Leading edge of energy management in-house</li><li>Strong internal programs working well become ideals and standards for other industry members</li><li>Company becomes role model and shares</li></ul>
Gaps	<ul style="list-style-type: none"><li>No processes</li><li>No formal goals</li><li>No proactive management</li><li>No program plan</li><li>No proactive maintenance, system tuning</li></ul>	<ul style="list-style-type: none"><li>No formal management attention at a plant-wide or company- wide level</li><li>No formal program with teeth</li><li>No comprehensive strategy of approach</li><li>No budgeted approach</li></ul>	<ul style="list-style-type: none"><li>No collaboration with suppliers and others outside your company</li><li>Missing involvement and contribution in regional or peer level industry activities</li></ul>	<ul style="list-style-type: none"><li>Primary intentions for benefits are still focused on self, not industry</li><li>Missing the stability, strength, and mindset to be an industry leader with confidence to share learnings with region</li></ul>	<ul style="list-style-type: none"><li>Must be eternally vigilant to situational changes in industry and in energy supply</li></ul>
People	<ul style="list-style-type: none"><li>Maintenance, technicians, operators</li><li>No or limited written energy goals or responsibilities</li></ul>	<ul style="list-style-type: none"><li>Engineering level</li><li>Maintenance manager</li><li>Supervisors</li><li>Job descriptions and goals include energy efficiency</li></ul>	<ul style="list-style-type: none"><li>Plant management</li><li>In-house plans and approaches developed and deployed. All managers have efficiency goals</li></ul>	<ul style="list-style-type: none"><li>Upper and middle management work with industry partners, associations and other organizations.</li></ul>	<ul style="list-style-type: none"><li>All levels of company actively involved in EE</li><li>Active leadership outside of company</li><li>Externally active energy champions</li></ul>
Mindset	<ul style="list-style-type: none"><li>If it ain't broke, don't fix it</li><li>No focus on energy</li></ul>	<ul style="list-style-type: none"><li>Growing awareness of energy efficiency needs and options</li><li>Initial management interest in energy efficiency (EE)</li></ul>	<ul style="list-style-type: none"><li>Management responds with budgeted programs</li><li>Energy efficiency is a priority and factor in work</li><li>Training and support leads to widespread awareness and commitment to EE</li></ul>	<ul style="list-style-type: none"><li>Energy efficiency is important in minds of all employees who see the value to their company and to the region</li></ul>	<ul style="list-style-type: none"><li>Whole company sees value in being an industry leader and sharing best practices, encouraging others</li><li>Sees the good of the clusters and region as well as own company</li></ul>
Innovation	<ul style="list-style-type: none"><li>None or building clever band-aids.</li><li>Buy new equipment for productivity or capacity only</li></ul>	<ul style="list-style-type: none"><li>May use some technology solutions new to your company but not new to industry</li><li>Some new process or equipment creation to meet energy goals</li></ul>	<ul style="list-style-type: none"><li>Adoption of energy efficiency technology processes and equipment at a company-wide or plant-wide scale</li><li>Systems mgmt tools new to the plant in place</li></ul>	<ul style="list-style-type: none"><li>Innovation at the larger scope of regional policies</li><li>Innovation in power usage and controls at a broad level</li><li>Strong co-innovation with EE suppliers and external partners</li></ul>	<ul style="list-style-type: none"><li>Active innovators at the industry – wide level.</li><li>Innovations in the company are emulated by others in both food processor companies and others as well.</li></ul>



# Appendix B: Save Energy Now EnSavings Calculator







# Appendix C: Energy Policy Example



## ENERGY POLICY One Earth Food Group - Plant 1

### Goal:

One Earth Food Group – Plant 1 is committed to continuously improving our performance and reducing operating costs. We will strive to improve energy management within our operations and work towards Energy Efficient Best Practices where cost-effective. Not only is reducing our energy cost per unit produced a competitive advantage over others in our industry; it is also the right way to do business. One Earth Food Group – Plant 1 will serve as a role model for employees in energy efficiency by providing information and incentives for employees to reduce energy consumption both at work and at home.

### Objectives:

To achieve this, we will:

- Participate in the Continuous Energy Improvement process;
- Use our Continuous Energy Improvement Program to support our overall business goals, including improving production and safety practices;
- Ensure that energy efficiency considerations are included in all aspects of our business planning and operation, consistent with sound business management practices and our responsibilities as a corporate citizen;
- Ensure employees are aware and accountable for actions influencing energy management;
- Purchase energy at the most effective cost and reduce where possible, consistent with our business goals;
- Set and use energy efficiency objectives and targets to drive performance improvements from a management and operations perspective;
- Implement monitoring and reporting procedures to communicate our performance internally and to relevant external parties;
- Strive to continuously improve our energy efficiency performance, improve productivity and reduce our environmental impacts through regular review of our activities;
- Conduct technical and energy practice assessments to track our progress and establish goals.
- Actively seek employee's ideas and participation in Continuous Energy Improvement.

### Targets:

- As an initial objective for our first 12 month period, we will reduce our overall energy use by 5% kWh/lb. of saleable product and/or therm/lb. of saleable product;
- To support our overall continuous improvement program, we will reduce energy consumption by 7% kWh/lb. of saleable product over each of the next three years;
- We will have two measures in the first 12 month period to engage employee participation:
  - Quarterly communication on energy savings and program targets through our print newsletter
  - Target five department targets based on employee participation

We will realize our Continuous Energy Improvement program goals and objectives by having all members of the company embrace this policy.

Benny Goodman  
VP of Operations

Date

Lena Horne  
Plant Manager

Date





# Appendix D:

## Utility Incentives and Programs

Utility	Assessment Provider / Funder	Scoping Study/ Short Study	Detailed Study	Eligibility	Contact	Incentive Rate Retrofit	Incentive Rate New Construction	Project Cap %	Progress Payments	Low / No interest Loans	Custom Projects	Energy Management Training	Embedded Energy Project Manager	Operations & Maintenance Improvement Incentives	Tax Credit (BETC) Application Assistance	Documents	General Program Info
<b>Most Public Utilities - Oregon, Washington, Montana, Idaho</b>	Bonneville Power Administration	yes / up to 100%	yes / up to 100%	Utility must opt into BPA's Energy Smart Industrial Program (ESI)	Jennifer Eskil, Industrial Sector Lead, 509-527-6232, jleskil@bpa.gov	\$0.25/kWh	\$0.25/kWh	70%	Yes	No	Yes	Yes	Yes	Yes	Yes, if the utility asks ESIPS	Contractors complete all paperwork	BPA Energy Smart Industrial (ESI)
<b>Portland General Electric</b>	The Energy Trust of Oregon	yes / up to 100%	yes / up to 100%	Must be a business customer of Portland General Electric	Eric Wilson, Industrial Sector Coordinator, 503-445-7643, eric.wilson@energytrust.org	\$0.25/kWh, up to 50% of eligible project costs	\$0.25/kWh, up to 50% of eligible project costs	50%	No	No	Yes	Comprehensive Energy Management training for limited number of sites	Considering	Yes	Yes	Contractors complete all paperwork	Energy Trust-Industry & Ag
<b>Pacific Power – Oregon</b>	The Energy Trust of Oregon	yes / up to 100%	yes / up to 100%	Must be a business customer of Pacific Power	Eric Wilson, Industrial Sector Coordinator, 503-445-7643, eric.wilson@energytrust.org	\$0.25/kWh, up to 50% of eligible project costs	\$0.25/kWh, up to 50% of eligible project costs	50%	No	No	Yes	Comprehensive Energy Management training for limited number of sites	Considering	Yes	Yes	Contractors complete all paperwork	Energy Trust-Industry & Ag
<b>Pacific Power - Washington, California</b>	Pacific Power	Provided at no direct cost	Provided at no direct cost	All business customers of Pacific Power in Washington and California are eligible.	Nancy Goddard, Program Manager, 503-813-5183, 800-222-4335, energy.expert@pacificorp.com	WA - \$0.15/kWh + \$50/KW, CA - \$0.12/kWh + \$50/KW	WA - \$0.15/kWh + \$50/KW, CA - \$0.12/kWh + \$50/KW,	WA - 60%, CA- 50% (lighting limit 50%)	No	No	Yes	No	No	No	n/a	Yes	Pacific Power Industrial Program
<b>Rocky Mountain Power - Idaho, Utah, Wyoming</b>	Rocky Mountain Power	Provided at no direct cost	Provided at no direct cost	Business customers of Rocky Mountain Power on a general service rate schedule. For the list of eligible rate schedules, contact see www.rockymountain-power.net.	Nancy Goddard, Program Manager, 503-813-5183, 800-222-4335, energy.expert@pacificorp.com	\$0.12/kWh + \$50/KW	\$0.12/kWh + \$50/KW	50%	No	No	Yes	No	No	No	n/a	Yes	Rocky Mountain Power Industrial Program
<b>Seattle City Light</b>	Seattle City Light	yes / up to 50%	yes / up to 50%	Available to large and medium size Seattle City Light industrial customers	SCEnergyAdvisor@seattle.gov	\$0.20/kWh	\$0.23/kWh	70%	Yes	No	No	Yes	Developing	Developing	n/a	Contractors complete all paperwork	http://www.seattle.gov/light/Conserve/business/cv4_ess.asp
<b>Northwest Natural Gas</b>	The Energy Trust of Oregon	yes / up to 100%	yes / up to 100%	Certain rate schedules of Northwest Natural Gas	Eric Wilson, Industrial Sector Coordinator, 503-445-7643, eric.wilson@energytrust.org	\$1 per annual therm saved, up to 50% of eligible project costs	\$1 per annual therm saved, up to 50% of eligible project costs	50%	No	No	Yes	Comprehensive Energy Management training for limited number of sites	Considering	Yes	Yes	Contractors complete all paperwork	Energy Trust-Industry & Ag

Utility	Assessment Provider / Funder	Scoping Study/ Short Study	Detailed Study	Eligibility	Contact	Incentive Rate Retrofit	Incentive Rate New Construction	Project Cap %	Progress Payments	Low / No interest Loans	Custom Projects	Energy Management Training	Embedded Energy Project Manager	Operations & Maintenance Improvement Incentives	Tax Credit (BETC) Application Assistance	Documents	General Program Info
<b>Cascade Natural Gas</b>	The Energy Trust of Oregon	yes / up to 100%	yes / up to 100%	Non-transport customers of Cascade Natural Gas	Eric Wilson, Industrial Sector Coordinator, 503-445-7643, eric.wilson@energytrust.org	\$1 per annual therm saved, up to 50% of eligible project costs	\$1 per annual therm saved, up to 50% of eligible project costs	50%	No	No	Yes	Comprehensive Energy Management training for limited number of sites	Considering	Yes	Yes	Contractors complete all paperwork	Energy Trust-Industry & Ag
<b>Idaho Power</b>	Idaho Power	Yes / \$3000 per scoping study (services provided by Idaho Power contractors)	yes / 50% of study cost / max \$10,000	Must be a business customer of Idaho Power	Randy Thorn, Energy Efficiency Engineer, 208-388-5624, randythorn@idahopower.com	\$0.12/kWh	Yes, \$0.12/kWh on incremental savings over Baseline	70%	No	No	Yes	No	No	No	n/a	Yes	Idaho Power Custom Efficiency Program Info
<b>Tacoma Power</b>	Tacoma Power	required, not funded	yes / up to 100% on a case by case basis	Tacoma Power customer (assessment funding for complex measures only)	Peter Meyer, Commercial/ Industrial Program Manager, 253-502-8528, pmeyer@cityoftacoma.org	\$0.23/kWh	Yes, \$0.20/kWh up to 100% of incremental cost	70%	No	Yes	Yes	Offers a variety of training opportunities	Developing	No	n/a	Yes	Tacoma Power Custom Efficiency Program Info
<b>Avista</b>	Avista	Avista staff performs a high level energy audit	yes / on a case by case basis / customer must pay back Avista if project isn't completed	Must be an industrial customer of Avista	Jerry Wright, Food Processing Account Executive, 509-495-4112, jerry.wright@avistacorp.com	\$0.08-.20/ kWh if a non-lighting measure has a 1 -13-year simple payback; lighting measures must be 1 - 8 years simple payback	Yes, various rates	50%	No	No	Yes	Yes in conjunction with WSU and DOE	Possible	Yes, limited	Oregon Gas project only	Yes	Avista Energy Conservation
<b>Puget Sound Energy</b>	Puget Sound Energy	PSE EME conducts energy audits	yes / on a case by case basis	Must be a business customer of Puget Sound Energy	Chao Chen, Sr. Energy Mgmt. Engr., 425-456-2588, chao.chen@pse.com.	\$0.20/ kWh for lighting, \$0.30/kWh for non-lighting; \$5/therm for gas projects	Yes, up to 70% of incremental cost	70% retrofit (lighting limit 50%)	No	No	Yes	Yes	Yes (development grant)	Yes, Resource Conservation Manager Program	n/a	Yes	Puget Sound Efficiency Programs and Rebates

# Assessment Provider Details – Public Utilities

## Bonneville Power Administration

Last updated: November 4, 2010

For more information, please contact the appropriate ESIP:

Utility	ESIP	ESIP Location	ESIP Phone	ESIP Email
<b>IDAHO</b>				
Albion, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Bonniers Ferry, City of	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Burley, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Clearwater Power Company	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Declo, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
East End Mutual Electric Co	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Fall River Rural Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Farmers Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Heyburn, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Idaho County Light & Power	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Idaho Falls Power	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Kootenai Electric Coop	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Northern Lights Inc.	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Plummer, City of	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Riverside Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Rupert, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Salmon River Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Soda Springs Municipal Light	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
United Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
Weiser, City of	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
<b>MONTANA</b>				
Flathead Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Glacier Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Lincoln Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Mission Valley Power	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Missoula Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Ravalli County Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com
Vigilante Electric Coop	Richard Jarvis	Kalispell	406-257-3013	rich.jarvis@energysmartindustrial.com

Utility	ESIP	ESIP Location	ESIP Phone	ESIP Email
NEVADA				
Wells Rural Electric Company	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com
OREGON				
Bandon, City of	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Blachly-Lane Co. Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Canby Utility Board	Ray Hardiman	Portland	503-575-9521	ray.hardiman@energysmartindustrial.com
Central Electric Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Central Lincoln PUD	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Clatskanie PUD	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Columbia Basin Electric Coop	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Columbia Power Coop Association	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Columbia River PUD	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Consumer Powers Inc	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Coos-Curry Electric Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Emerald PUD	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Eugene Water & Electric Board	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Forest Grove Light & Power	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Lane Electric Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Hood River Electric Coop	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
McMinnville Water & Light	Ray Hardiman	Portland	503-575-9521	ray.hardiman@energysmartindustrial.com
Midstate Electric Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Milton-Freewater Light & Power	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Northern Wasco County PUD	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Oregon Trail Electric	Nosh Makujina	Boise	208-631-5961	nosh.makujina@energysmartindustrial.com
Salem Electric	Ray Hardiman	Portland	503-575-9521	ray.hardiman@energysmartindustrial.com
Springfield Utility Board	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Tillamook PUD	Ray Hardiman	Portland	503-575-9521	ray.hardiman@energysmartindustrial.com
Umatilla Electric Coop	Nosh Makujina	Boise	208-631-5961	nosh.makujina@energysmartindustrial.com



Utility	ESIP	ESIP Location	ESIP Phone	ESIP Email
Umpqua Indian Utility Coop	Richard Jackson-Gistelli	Eugene	503-575-9519	richard.gistelli@energysmartindustrial.com
Western Oregon Electric Coop	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
WASHINGTON				
Asotin Co. PUD	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Benton PUD	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Benton REA	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Big Bend Electric Coop	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Blaine, City of	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Centralia City Light	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Cheney, City of	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
City of Chewelah Electric Dept.	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Clallam County PUD	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Clark Public Utilities	Ray Hardiman	Portland	503-575-9521	ray.hardiman@energysmartindustrial.com
Columbia REA	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Consolidated Irrigation District	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Coulee Dam, Town of	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Cowlitz County PUD	Patrice Dick	Portland	503-278-4657	patrice.dick@energysmartindustrial.com
Eatonville, Town of	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Ellensburg, City of	Nosh Makujina	Boise	208-631-5961	nosh.makujina@energysmartindustrial.com
Ferry County PUD #1	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Franklin County PUD	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Grant County PUD	Mike McDevitt	Walla Walla	509-524-8790	mike.mcdevitt@energysmartindustrial.com
Grays Harbor County PUD	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Inland Power & Light	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Kittitas County PUD #1	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Klickitat County PUD	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Lakeview Light & Power	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Lewis County PUD	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Mason County PUD #1	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Mason County PUD #3	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
McLeary Light & Power	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Modern Electric Water Co.	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com

Utility	ESIP	ESIP Location	ESIP Phone	ESIP Email
Nespelem Valley Electric Coop	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Okanogan Co PUD #1	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Pacific County PUD #2	Bill Kostich	Portland	503-928-7461	bill.kostich@energysmartindustrial.com
Pend Oreille County PUD	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Peninsula Light	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Port Angeles, City of	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Richland, City of	John Whitchurch	Walla Walla	509-524-8622	john.whitchurch@energysmartindustrial.com
Seattle City Light	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Snohomish County PUD	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Sumas, City of	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Tacoma Power	Bob Brennand	Olympia	503-278-4651	bob.brennand@energysmartindustrial.com
Tanner Electric Coop	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
Vera Water & Power District	Eric Lee	Spokane	509-443-3314	eric.lee@energysmartindustrial.com
Wahkiakum County PUD #1	Patrice Dick	Portland	503-278-4657	patrice.dick@energysmartindustrial.com
Whatcom County PUD #1	Bruce Poulin	Seattle	503-575-9526	bruce.poulin@energysmartindustrial.com
<b>WYOMING</b>				
Lower Valley Electric Coop	Jeff Hare	Salt Lake City	801-770-4332	jeff.hare@energysmartindustrial.com

**ESIP:** An ESIP (Energy Smart Industrial Partner) is an industrial energy efficiency expert available to answer questions and help facilitate electrical energy efficiency projects between local public utilities and their industrial facility customers. If you have questions about a possible project, incentives, or paperwork, please contact the appropriate ESIP.

For ESI program information, please visit: [www.EnergySmartIndustrial.com](http://www.EnergySmartIndustrial.com)





# Appendix E: Energy Tracking

ENERGY TRACKING - EXAMPLE											
MONTH	KWh	Electricity BTUx10^6 Dollars	Therms	Natural Gas BTUx10^6 Dollars	Fuel Oil GallonBTUx10 Dollars	TOTAL BTUx10^6	TOTAL Dollars	PRODUCTION POUNDS	ENERGY INTENSITY		
Jan	800,000	2730 \$	70,000	7,000 \$	35,000	0	0	9,730 \$	75,000	3,500,000	2,780
Feb	500,000	1706 \$	50,000	5,000 \$	25,000	0	0	6,706 \$	50,000	1,500,000	4,471
Mar	800,000	2730 \$	70,000	7,000 \$	35,000	0	0	9,730 \$	75,000	3,500,000	2,780
Apr	1,300,000	4436 \$	75,000	7,500 \$	37,500	0	0	11,936 \$	102,500	7,000,000	1,705
May	1,500,000	5118 \$	100,000	10,000 \$	50,000	0	0	15,118 \$	125,000	10,000,000	1,512
Jun	2,500,000	8530 \$	200,000	20,000 \$	100,000	0	0	28,530 \$	225,000	12,000,000	2,378
Jul	3,450,000	11771 \$	275,000	27,500 \$	137,500	0	0	39,271 \$	310,000	20,000,000	1,964
Aug	3,500,000	11942 \$	300,000	30,000 \$	150,000	0	0	41,942 \$	325,000	25,000,000	1,678
Sep	3,000,000	10236 \$	250,000	25,000 \$	125,000	0	0	35,236 \$	275,000	20,000,000	1,762
Oct	2,250,000	7677 \$	200,000	20,000 \$	100,000	0	0	27,677 \$	212,500	15,000,000	1,845
Nov	1,500,000	5118 \$	100,000	10,000 \$	50,000	0	0	15,118 \$	125,000	10,000,000	1,512
Dec	1,250,000	4265 \$	100,000	10,000 \$	50,000	0	0	14,265 \$	112,500	7,000,000	2,038
TOTAL	22,350,000	76258 \$	1,790,000	179,000 \$	895,000	0	0	255,258 \$	2,012,500	134,500,000	1,898
UNIT CO2 \$	0.05	\$14.65	\$	0.50	\$	5.00					



# Appendix F:

## Energy Efficiency Business Outcomes

When weighing energy efficiency efforts and gauging progress to goals, consider assessing your energy improvements in relation to specific contributions to business outcomes:

Business Process	Business Outcome Related to Energy Efficiency Efforts
Improved Operations	<ul style="list-style-type: none"> <li><input type="checkbox"/> Avoided redundancy and related expenditures</li> <li><input type="checkbox"/> Energy management embedded with ongoing business process</li> <li><input type="checkbox"/> Asset purchase plan for unreliable or high energy consuming technology &amp; machines</li> <li><input type="checkbox"/> Employee ownership of energy improvement behavior</li> <li><input type="checkbox"/> Improved shareholder value</li> </ul>
System Optimization	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improved control of heat and power resources for possible cogeneration opportunities</li> <li><input type="checkbox"/> Improved knowledge of energy utilization patterns drives informed energy purchasing decisions</li> <li><input type="checkbox"/> Enhanced documentation, data collection, communication and mechanical integrity</li> <li><input type="checkbox"/> Increased production through better utilization of equipment</li> <li><input type="checkbox"/> Reduced maintenance costs</li> </ul>
High Performance Equipment	<ul style="list-style-type: none"> <li><input type="checkbox"/> Improved reliability and increased energy utilization</li> <li><input type="checkbox"/> Increased production and sales</li> <li><input type="checkbox"/> Increased process integrity. (i.e. decrease in downtime, increased production)</li> <li><input type="checkbox"/> Increased safety and quality rates</li> <li><input type="checkbox"/> Increased operator performance</li> </ul>
Improved Business Management	<ul style="list-style-type: none"> <li><input type="checkbox"/> Increased capacity to address regulations and technology</li> <li><input type="checkbox"/> Reduced vulnerability</li> <li><input type="checkbox"/> Decision making leveraging the connection between energy consumption and operational efficiency</li> <li><input type="checkbox"/> Increased effectiveness in evaluating capital investment opportunities</li> <li><input type="checkbox"/> Energy is equally important as safety and quality</li> <li><input type="checkbox"/> Enhanced marketability of sustainable efforts</li> </ul>

Source: Christopher Russell, Alliance to Save Energy, Energy Management Pathfinding



# Appendix G: Resources

## How to Find Answers

### **Financing Priority Projects Industrial Assessment Centers**

**(IAC):** Provides free (or low cost) energy audits to facilities with fewer than 500 employees at the plant site and gross annual sales less than \$100 million. In the Northwest, IACs are located at Oregon State University and Boise State University and serve all Northwest states.

For information contact:

OSU

Joe Junker, P.E.

541-737-2674

junker@enr.orst.edu

BSU

Prof. John Gardner

208-426-5702

jgardner@boisestate.edu

### **Idaho Office of Energy Resources Commercial/Industrial Loans:**

Idaho provides loans for energy efficiency projects in Idaho from \$1,000 to \$100,000 at 4% interest.

Go to: <http://www.energy.idaho.gov/financialassistance/energyloans.htm>

### **Oregon Department of Energy Business Energy Tax Credit**

**(BETC):** Oregon offers tax credits for energy conservation, renewables and less-polluting transportation fuels. The tax credit for energy efficiency is 35% of eligible project costs and is 50% of project costs for high efficiency CHP or renewables.

Go to: <http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

### **Oregon Department of Energy State Energy Loan Program (SELP):**

Oregon's SELP program promotes energy conservation and renewable energy development by providing low-interest, fixed-rate loans from \$20,000 to millions of dollars to projects in Oregon.

Go to: <http://www.oregon.gov/ENERGY/LOANS/selphm.shtml>

### **Rural Energy for America Program**

**(REAP):** USDA Rural Development's Business and Cooperative Programs provide grants for energy efficiency projects. Grants are limited to 25% of the project cost, with a maximum of \$250,000. Applicants must be in a rural area (not in a city with a population more than 50,000) and must be small (less than 500 employees and revenues less than \$6.5 million).

**REAP Guaranteed Loans:** This program provides 60% - 80% loan guarantees to commercial lenders for energy efficiency projects. Loans up to \$25 million can be guaranteed. REAP grants and loans can be combined up to 75% of project costs.

For information and to apply for grants or loans contact your Rural Development Energy Coordinator:

Idaho  
Brian Burch  
Boise  
208-378-5623  
[brian.buch@id.usda.gov](mailto:brian.buch@id.usda.gov)

Oregon  
Don Hollis  
Pendleton  
541-278-8049 x129  
[don.hollis@or.usda.gov](mailto:don.hollis@or.usda.gov)

Washington  
Mary Traxler  
Olympia  
360-704-7762  
[mary.traxler@wa.usda.gov](mailto:mary.traxler@wa.usda.gov)

Go to: [http://www.rurdev.usda.gov/BCP\\_ReapResEei.html](http://www.rurdev.usda.gov/BCP_ReapResEei.html)

## **U. S. Department of Energy, Industrial Technologies Program State Incentives and Resources**

**Database:** This database helps you locate resources providing technical assistance, tools or financial resources for energy efficiency measures. The database pulls information on federal, regional, state, industrial systems, and types of resources.

Go to: [http://www1.eere.energy.gov/industry/states/state\\_activities/incentive\\_search.aspx](http://www1.eere.energy.gov/industry/states/state_activities/incentive_search.aspx)

**Utilities:** Most utilities provide assistance and incentives. See Appendix D of this document for a listing of utility offerings and contacts.

## **Technical Information, Assistance and Training American Grant Writers**

**Association (AGWA):** AGWA has a referral service that can help you locate a grant writer to assist you in your grant application. It also has information on hiring a grant writer.

Go to: <http://www.agwa.us>

## **Northwest Energy Efficiency Alliance (NEEA):**

### **Northwest Food Processors**

**Association (NWFPFA):** NWFPFA's web site provides information to help food processors implement energy efficiency measures and develop a strategic energy plan. NWFPFA's Energy Roadmap for Members charts a path to develop such a plan. The web site also provides information and links to energy efficiency training, seminars and events. NWFPFA members may become directly involved by participating in the NWFPFA Energy Committee.

Go to: [www.nwfpa.org](http://www.nwfpa.org)

**Portland General Electric:** PGE offers many energy efficiency related classes on topics that include refrigeration, compressed air, lighting and creating energy champions. Classes are free to PGE customers and a small fee may apply to non-customers.

Go to: [http://www.portlandgeneral.com/business/news\\_classes/classes/default.aspx](http://www.portlandgeneral.com/business/news_classes/classes/default.aspx)

### **U.S. Department of Energy Industrial Technologies Program**

**(ITP):** ITP provides technical information, online tools, and training to help manufacturers improve energy efficiency and adopt state of the art technology and energy management practices.

Go to: [http://www1.eere.energy.gov/industry/tech\\_assist/index.html](http://www1.eere.energy.gov/industry/tech_assist/index.html)

### **U.S. Department of Energy Save**

**Energy Now:** This program provides resources, recognition and opportunities for companies who make a voluntary pledge to reduce their energy intensity by 25% in 10 years.

Go to: <http://www1.eere.energy.gov/industry/saveenergynow/index.html>

### **U.S. Environmental Protection**

**Agency, Energy Star:** This program provides guidelines for energy management, best practices specific to fruit and vegetable processors and brewers, and a tools and resources library. Also provides Energy Star Leaders recognition and resources for companies improving energy efficiency by 10% or more and superior performers may receive Energy Star designation.

Go to: [http://www.energystar.gov/index.cfm?c=business.bus\\_index](http://www.energystar.gov/index.cfm?c=business.bus_index)

**Utilities:** Many utilities provide training. See Appendix D of this document for a listing of utility contacts.

### **WSU Extension Energy Program:**

WSU's program was recognized in 2010 as an "exemplary energy efficiency program" by the American Council for an Energy Efficient Economy. WSU delivers technical assistance, consultations, trainings, and plant services. It may also have grants for energy efficiency projects. It also has a library and a technical assistance clearinghouse.

Go to: <http://www.energy.wsu.edu/IndustrialEfficiency.aspx>