Energy Trust of Oregon
Industry and Agriculture Sector 2011-2015 Planning Summary

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I. Sector Level Summary

A. Executive Summary

The Industry and Agriculture sector's Production Efficiency program (PE) is primarily based on a custom approach to working with industrial customers. It uses technical Program Delivery Contractors (PDCs) who identify opportunities and facilitate customers' ongoing participation in the program. Specialized contractors are also utilized to provide project-specific technical services. Since 2008, there has been an expansion and diversification of target market segments, sources of savings, types of measures and technical interventions.

The Production Efficiency program is 3 years into a major innovation period, and actions over the next 2 – 5 years will largely build on existing program strengths and recent lessons learned to maximize the outcomes of these innovations. The launch of the trade ally driven Small Industrial Initiative in 2008 provided a more cost effective channel for smaller efficiency measures in agricultural and small industrial sites. The development of strategic energy management offerings has helped to offset the impact of the down economy on larger capital projects by identifying low-cost savings, enabling the program to continue to grow at a modest pace.

Over the next 5 years internal challenges associated with the program's strategies will drive re-design, development and management to maximize positive outcomes. One example is the need to distill and transfer key lessons for new offerings and technical services to more quickly share which is best suited to which types of customers. As new offerings multiply it will be critical to mitigate the impacts of the added complexity of multiple options by consistently using standard procedures.

Policy issues pose the largest risks to the program. Legal limitations on spending for > 1 aMW sites established in SB838 and the pending sunset of the Oregon Business Energy Tax Credit have the ability to eclipse any other constraints the Program expects to see over the next 5 years. Unfavorable disposition of these issues will have a significant effect on savings potential and savings outcomes and could require a major program redesign within the next 5 years.

B. Sector Vision and Leadership Statements

To provide long-term vision, guidance, and consistency to the Industry and Agriculture Sector, the following principles have been established with input from the program team and leadership at Energy Trust:

Vision Statement
Industrial and Agricultural businesses in Oregon invest in and manage their energy use, improving profitability, productivity and sustainability.

Mission Statement
To drive the implementation of energy efficiency and support the integration of renewable energy projects, facilitating comprehensive and long lasting energy savings in Oregon industrial and agricultural businesses.

Leadership position
Energy Trust remains a leader in innovative technological and behavioral approaches to industrial energy efficiency; provides technical expertise, training and project funding to help companies plan, manage and improve their energy efficiency.

Measures of Success
Working with Energy Trust, Industrial and Agricultural customers increase their efficiency, increase their awareness of energy waste and clean energy opportunities and decrease organizational barriers to successful project implementation.

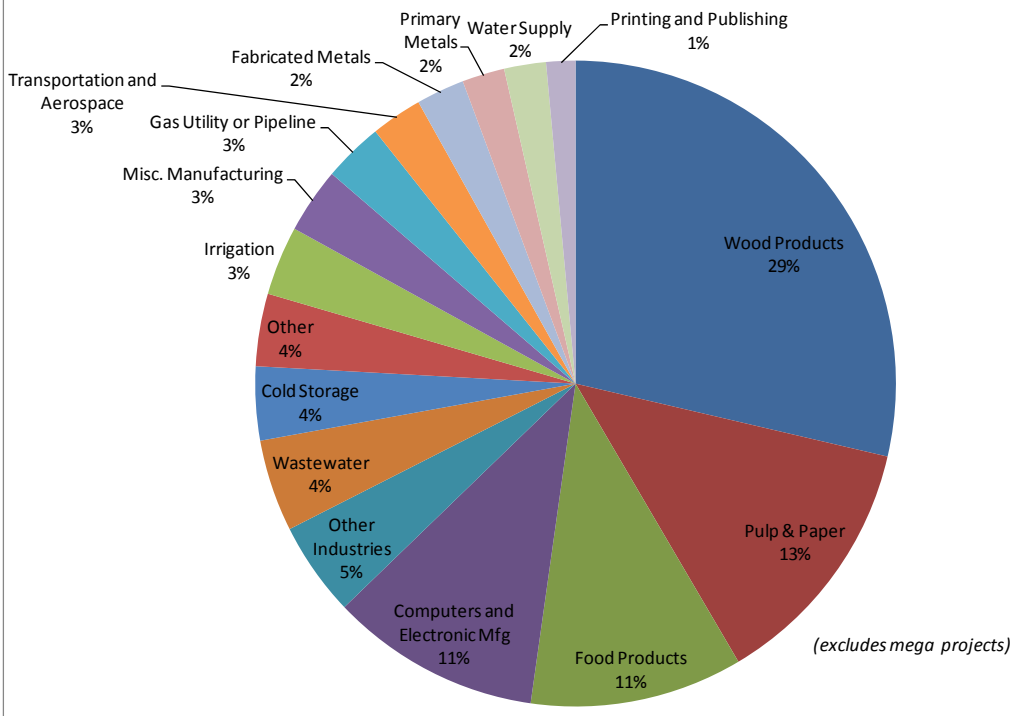
- Exceed savings and cost-effectiveness goals
- Increase participation by smaller industrial and agricultural businesses
- Increase depth and persistence of savings by providing training, tools and technical support to create or improve an energy management culture in the workplace

II. Sector Level Savings

A. History

Oregon's economy is driven by diverse and robust industrial and agricultural businesses. From 2001 – 2007, Manufacturing contributed 32.1% of Oregon's real GDP, making Oregon the nation's 3rd most industrial state as a % of GDP[1]. Although manufacturing employment is down from historical levels, the sector still provided more than 15% of Oregon jobs in 2007. In 2008, the agriculture sector contributed $4 billion to the Oregon economy, providing 2.5% of the state's real GDP and making Oregon the nation's 9th most agricultural state as a % of state GDP[2]. Since its launch in 2003, Energy Trust's Production Efficiency program has served a wide variety of Oregon industry (Figure 1).

Figure 1: **Percentage of Program Savings 2003-09 by Industry**



1 http://www.milkeninstitute.org/manufacturing/manufacturing.taf?page=state&state=OR

2 http://econpost.com/industry/agriculture-sector-top-states-percentage-state-economy

B. Sources of Savings

The program is organized around and achieves savings through 3 Tracks: Custom, Calculated and Prescriptive. Each is targeted to specific industry needs and/or market segments with differing complexity, delivery channels and development timelines.

The Custom track includes both capital and O&M measures, including recently developed strategic energy management offerings. By performing custom analysis and verification of savings for each project, the program has the flexibility to work with large industrial retrofits, unique process improvement projects and emerging technologies and practices. The Custom track works with medium to large industries, which are provided energy efficiency services and incentives to drive deep and persistent process efficiencies. The Custom track is delivered by assigned PDCs and a pool of technically specialized Allied Technical Assistance Contractors (ATACs).

The Calculated track includes industrial lighting and the Small Industrial Initiative, which are both delivered through trade ally networks. Trade allies are recruited and provided with calculated savings tools and a simplified incentive process. This is effective for standard measures where savings are easily calculated by common formulas with a small number of inputs. It streamlines program participation and reduces the cost of delivery, enabling a cost-effective approach to smaller projects.

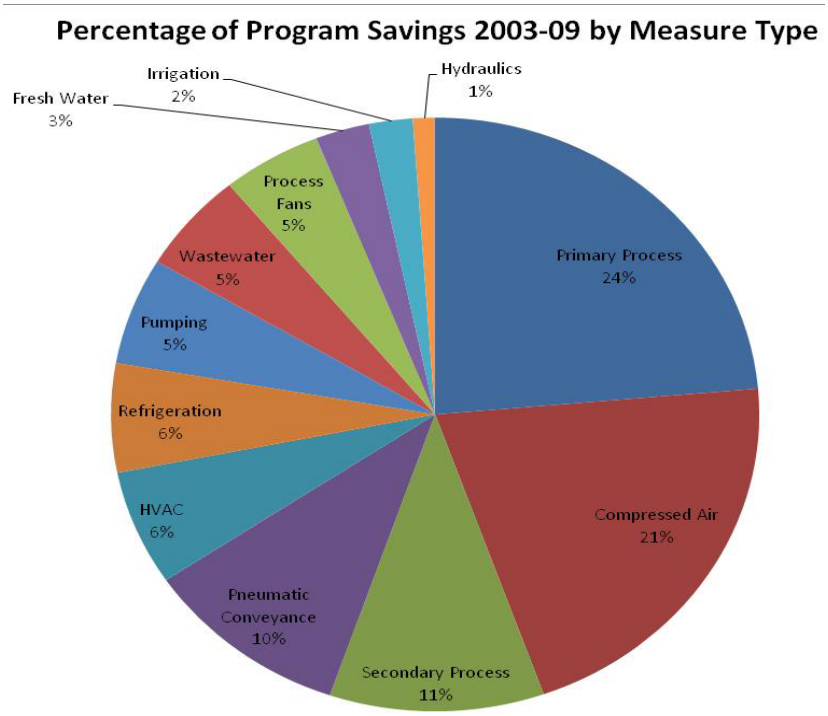
The prescriptive track is used for deemed measures, ie, when measure savings, incentives and cost-effectiveness have been pre-established by Energy Trust. Application for incentives is made by customers after purchase and savings and incentives are determined based on a single input such as number of widgets, for example, # of irrigation nozzles.

Custom Track

Production Efficiency began in 2003 as a Custom track offering, with large capital projects primarily at large manufacturing plants. Initially Lockheed Martin was the Program Management Contractor (PMC) and they utilized subcontractors as Program Delivery Contractors (PDCs). PDCs are industrial efficiency engineers who act as long-term energy efficiency “account managers” for medium to large industrial customers. PDCs provide turnkey support to participants in their assigned territories, helping them identify specific efficiency opportunities and facilitating their ongoing participation in Energy Trust programs.

The Custom track has provided a delivery channel for very diverse projects and custom analysis has overcome the wide variation in industrial applications (Figure 2). Allied Technical Assistance Contractors (ATACs) with specific expertise in the targeted system are contracted to perform detailed technical studies, which are based on both a deep knowledge of the measure and data driven analysis of that operating conditions that will measure will be running in. ATAC studies follow technical and communication guidelines designed to inform and propel investment decision-making and project implementation at the site. These studies also provide the technical basis for the program’s incentive offer and post-install verification of savings

Figure 2



At the end of 2007, management of Production Efficiency was brought in-house. Prior to 2008, the program averaged < 400 projects/ year, with > 75% of savings per year coming from the top 5 – 10 largest projects. From 2004 – 2008, the Custom track provided on average 78% of the annual savings for the program. The Custom track still provides the majority of program savings, although in 2009, Custom capital projects represented only 55% of the program's savings (Table 1).

These types of large custom projects are very cost-effective but they typically have a 1 – 3 year development cycle, which has made it difficult to provide short term intervention or tuning of program results. Also, having just a handful of large projects representing more than 75% of program savings increases the risk that a single underperforming project can have a large effect on reportable savings. To mitigate these risks, Custom track projects continue to be delivered by Program Delivery Contractors (PDCs), with savings analysis provided by the PDCs and ATACs under the direction of the program's in-house Technical Manager. To manage these same risks, the program has diversified the segments served, measure types and channels to market, as seen in Tables 1 and 2 and described in the following sections.

Table 1: Reportable Savings by Project Track and Year

Project Track	2004	2005	2006	2007	2008	2009	2010*
Custom	60,227,215	65,727,121	54,505,721	29,530,071	46,662,463	38,275,336	55,533,763
Calculated	0	9,853,987	9,274,225	12,477,885	13,941,905	23,299,069	27,992,863
Prescriptive	0	509,946	1,006,571	1,860,869	1,397,202	1,976,004	1,136,940
O&M (includes IEI & KB)	0	0	0	0	1,564,770	5,917,939	27,725,738
Totals	**60,227,215**	**76,091,054**	**64,786,517**	**43,868,825**	**63,566,340**	**69,468,348**	**112,389,304**

Excludes mega-projects **Completed as of 7/10 + Pipeline*

Table 2: Number of Completed and Pipeline Projects by Track

Project Track	2004	2005	2006	2007	2008	2009	2010*	Total # Projects
Custom	111	182	146	85	119	96	144	
Calculated	0	34	40	67	186	256	205	
Prescriptive	0	28	53	58	95	277	171	
O&M	0	0	0	0	1	4	40	
Total by Year	111	244	239	210	401	633	560	2,398

**Completed To Date + Pipeline*

Custom O&M and Strategic Energy Management

Increased efficiency and renewable generation goals have driven an emphasis at Energy Trust on finding and delivering comprehensive and deep energy solutions. The largest untapped resources in the Industrial sector are in O&M and Strategic Energy Management (SEM), due primarily to the technical difficulty of analyzing savings and the difficulty of supporting persistence through influencing operator behavior. Fortunately, there have been developments in this region which are addressing barriers to industrial SEM, O&M and other behavioral approaches to savings. These developments laid the groundwork for two successful pilots from 2008 – 2010 that focused on achieving O&M and behavioral savings in large industry through the implementation of strategic energy management practices.

The NEEA Industrial Continuous Energy Improvement (CEI) program, in particular, has been a major influence by testing and proving out the efficacy of a comprehensive management systems approach to energy efficiency. Energy Trust's involvement on the NEEA Industrial Advisory Committee provided a rich source of information on this emerging industrial efficiency strategy and invaluable exposure to lessons learned by NEEA starting in 2005. In addition, NEEA's CEI delivery contractors developed expertise which was leveraged by the program when it hired one of these consultants to launch the Industrial Efficiency Improvement (IEI) pilot in 2009.

The IEI brings a group of 10 – 12 industrial sites through one year of training and technical support on continuous improvement topics such as goal setting, developing a successful energy team, understanding site energy use and identifying efficiency opportunities, monitoring, tracking and reporting of operational efficiency and employee and executive engagement. The offering includes 8 – 10 live and webinar trainings over a 10 month period. One on one technical support is provided in between to establish baselines and other energy models, to drive low and no cost savings through simple O&M and behavior changes and to help sites implement the other training topics.

The Kaizen Blitz pilot, which launched in 2008, provides utilizes some of the same strategies as the IEI, but without the major emphasis on comprehensive management systems as a basis. Participant effort is still critical to success, but the Kaizen Blitz focuses on the use of energy information systems as a driver for tracking operational energy use and increasing efficiency. Energy savings opportunities are found by technical service providers and key plant operators and managers through intensive kaizen events, and implementation of low and no cost actions occurs immediately during the event and over the following year. The Kaizen Blitz approach emphasizes action and the positive motivation for ongoing improvement that occurs when small changes in plant practices can be seen as energy savings immediately.

These pilots have provided critical operating cost savings to industry during the recession and enabled the program to continue involvement with industrial sites and achieve goals

despite the slowdown in capital investment. Behavioral efforts also provide a basis for increasing customer commitment to energy efficiency, deepening relationships and increasing the flow of capital projects at participating sites. Delivery is through the normal Custom track, with PDCs scoping for opportunities and managing participation; Technical Service Providers and ATACs provide specific technical support or analytical services.

In addition to driving new capital efficiency projects, both pilots have been a source of highly cost-effective savings from implementation of low and no cost behavior change actions. In the past year, these strategies have routinely delivered 3 – 15% energy reductions. The success of these actions and the current economic conditions drove the design of a short-term incentive special in 2010, the Industrial O&M 90 by 90 Special Offer, which provides 90% of implementation costs as incentives to sites that would implement recommended actions within 90 days of receiving an incentive offer. The combined results of roughly sixty projects in the 90 by 90 effort, 2 groups of IEI participants and 5 Kaizen Blitz participants are expected to provide 20 – 25% of total program electricity savings in 2010.

In order to provide incentives and report these savings, the program developed a Custom O&M measure to incent and document savings for the IEI and Kaizen Blitz pilots and other one-off O&M projects, such as compressed air leak repair. To qualify, a Custom O&M measure must include an approved persistence strategy, and the costs to implement this are eligible costs of the project for purposes of incentive calculation. For example, a compressed air leak repair project may include a primary persistence strategy of installing flow meters on the system and changing Standard Operating Procedures (SOPs) to require regular monitoring and repair as needed. Secondary persistence strategies may involve purchase of ultrasonic leak detectors to be used during routine maintenance or labeling of equipment set points.

A comparison of current incentive levels, measure life and estimated levelized costs of capital and O&M savings is represented in Table 3.

Table 3: Custom Track Measure Comparison

Measure type	Avg Measure Life (yrs)	Cash Incentive $/annual kWh	Project cost cap %	Avg. acquisition cost $/kWh	Levelized cost $/kWh
Custom capital - non-lighting	10	$0.25	50%	$0.150	$0.015
Capital < 1 yr payback	10	$0.02	50%	$0.025	$0.003
Custom O&M	3	$0.08	50%	$0.038	$0.013
Custom O&M - 90 by 90 special	3	$0.08	90%	$0.043	$0.014
Custom O&M - SEM	3	$0.08	50%	$0.041	$0.014
O&M/ SEM < 1 yr payback	3	$0.02	50%	$0.020	$0.007

notes: 1. avg. acquisition cost includes both cash and technical service incentives
2. levelized is incentives only, does not include program mgmt or delivery

Calculated Savings Tracks: Lighting and Small Industrial

Calculated savings measures, with spreadsheet tools that allow multiple variables to be input into a standardized savings analysis, have also become a significant source of savings, primarily through lighting, irrigation and small compressed air measures. Unlike the custom track, the calculated savings track is deployed through Trade Allies, independent contractors and vendors who receive training, tools and collateral from Energy Trust. Trade Allies

improve sales and profitability by helping their customers access Energy Trust incentives for approved efficient systems and products.

Industrial lighting has been a fairly robust offering at the Trust since 2005, and has proven to be a reliable, low-risk, high-realization source of savings. Lighting savings are primarily delivered into the program by the Lighting Trade Ally Network, a group that recruits and trains electrical and lighting contractor trade allies to serve many of the region's resource acquisition programs.

This model has allowed for extremely cost-effective savings from lighting in the industrial sector: With the exception of some of the recent O&M offerings, lighting has provided the most cost-effective resource, with an incentives-only levelized cost of $.01/kWh. From 2005 – 2008, industrial lighting measures represented approximately 20% of total sector savings. In 2009, Industrial lighting took off, increasing results more than 50% over the previous year and representing 28% of 2009 savings.

The Small Industrial Initiative (SII) was launched in late 2007 as an additional delivery channel, using a calculated savings approach to provide incentives cost-effectively to smaller industrial and agricultural operations. The SII developed and rolled out a full suite of irrigation and greenhouse incentives for the agriculture sector beginning in 2008 and is delivered through trade allies who serve farmers or commercial growers.

The SII also provides more quick-turn savings through trade ally delivered small compressed air retrofits. In 2009, the SII provided only 6% of program savings, but the Initiative's effect on volume and rural participation has been much more substantial, as it more than doubled the average number of projects the program completes per year and more than tripled the amount of savings from irrigation efficiency.

Prescriptive Track

Over the program's history, prescriptive measures have provided a small portion of program savings. This is primarily due to the technical challenges of developing industrial prescriptive measures with reasonable savings estimates. The broad range of specialized equipment for industry and the variability of industrial operations and applications for energy saving technologies do not typically lend themselves to accurate estimates of deemed savings. Despite these challenges, the program looked for ways to expand the range of prescriptive incentives, as the value of quick- turn, low delivery cost sources of savings within the program became apparent. With the help of Energy Trust's Planning and Evaluation group, the program has analyzed and adopted relevant measures from the Commercial sector and has developed industrial prescriptive measures, often identifying opportunities for deemed savings based on program experience with Custom projects.

Prescriptive premium efficiency motors were added in 2005. Small variable speed drives in HVAC applications, heat pumps and small HVAC systems were adopted from the Commercial sector, but have had very limited uptake. Currently premium motors, green motor rewinds, a suite of greenhouse measures and a suite of irrigation measures are the primary source of prescriptive savings. Although prescriptive measures represent less than 3% of program annual savings, these very small projects have been effective in reaching new participants and providing a cost-effective means to stay engaged at large sites not currently making significant capital efficiency investments.

Sources of Savings: Gas

The public purpose charge for gas has not historically included larger industrial customers, who were exempted from participation. Due to this policy, the program did not begin administering incentives for gas efficiency until late 2008, when the Small Industrial Initiative was launched. The SII reached small industrial and agricultural customers who were already paying the gas public purpose charge. Although some small prescriptive gas measures such as insulation and high efficiency water heaters have been completed, the majority of gas projects have been thermal efficiency projects in nurseries.

The program started working on industrial gas efficiency in Cascade Natural Gas territory in the spring of 2009 when the new PDC assigned to Central Oregon turned up a compelling combined gas and electric efficiency project at a site in the city of Prineville. The presence of an assigned PDC in Cascade territory, combined with this immediate project opportunity and Cascade's clarification and support for funding industrial gas efficiency, enabled the mid-year addition of industrial gas incentives and goals in this territory.

There were 2 projects completed in 2009. This is a modest number, but the projects provided over 50,000 therms of savings. In 2010, two PDC have goals in CNG territory, which were doubled from 2009 goal. The PDCs will continue to look for and develop these gas projects concurrent with their overall delivery scope, via a custom track approach.

In June of 2009, the program began a more substantial industrial gas efficiency effort when the NWN Industrial DSM pilot was launched. The pilot provides a limited amount of funding for gas efficiency projects for customers on specific rate schedules. These customers had been exempted from paying the public purpose charge in the past and had not been eligible for incentives. The funding for the pilot was provided initially by NWN, with recovery provided by a special rate adjustment to customers which takes effect in November, 2010. The purpose of the pilot is to test these customers' uptake of gas efficiency and to test Energy Trust's ability to deliver to this specific set of eligible customers.

The existing PDCs serve their customers with electric and gas efficiency services, which has proved to be an efficient delivery model. There has been tremendous uptake for this offering, with almost 1,000,000 therms of cost-effective gas efficiency projects identified, in development and expected to be completed before the end of the pilot in 2011. Food processing companies, which spend a majority of their energy costs on natural gas, represent the lion's share of participants with about 50 percent of expected savings, with the other half coming from diverse industries and projects. Because it's such a strategic market, Production Efficiency has a dedicated PDC for food processors and is engaged with the NW Food Processors Association to help them reach their industry's aggressive savings goal of 25% by 2020.

The biggest challenge around the delivery of industrial gas efficiency is the limited pool of eligible sites and the lack of visibility for which sites are or are not eligible to participate. This barrier will be discussed in the Planning section of this document. At this time, Transport customers - those who buy their gas from a 3rd party and pay the utility only for use of the distribution system - are not eligible for Energy Trust incentives. The majority of large gas users are Transport customers, and both current and proposed data sharing policies do not allow the utility to share any customer information with Energy Trust.

C. Market Opportunity

Industrial efficiency programs have been operating in Oregon for more than 20 years, including Production Efficiency for the past 6 years. Despite this, the remaining industrial efficiency resource is substantial. There is no particular market or measure that has reached the end of its potential, and even participants who have been doing efficiency projects for years have found more and better ways to save energy. Looking at the 20 year resource potential developed in 2008 and Production Efficiency electric savings to date by market (Figures 3 and 3a) and by measure (Figure 4) provides a clear picture of the broad range of future opportunities available.

Figure 3: Production Efficiency – Electric Savings by Sector

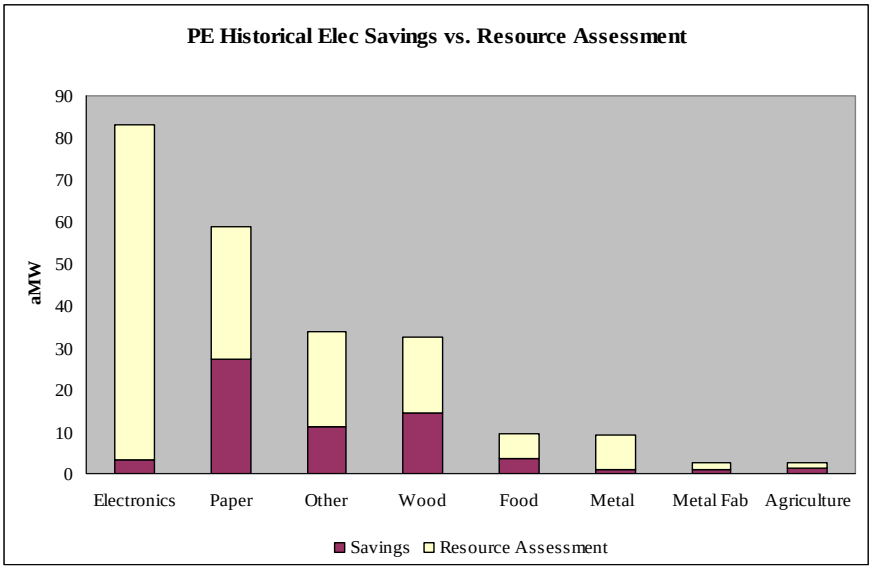


Figure 3a: PE "Other" Sectors Savings to Date

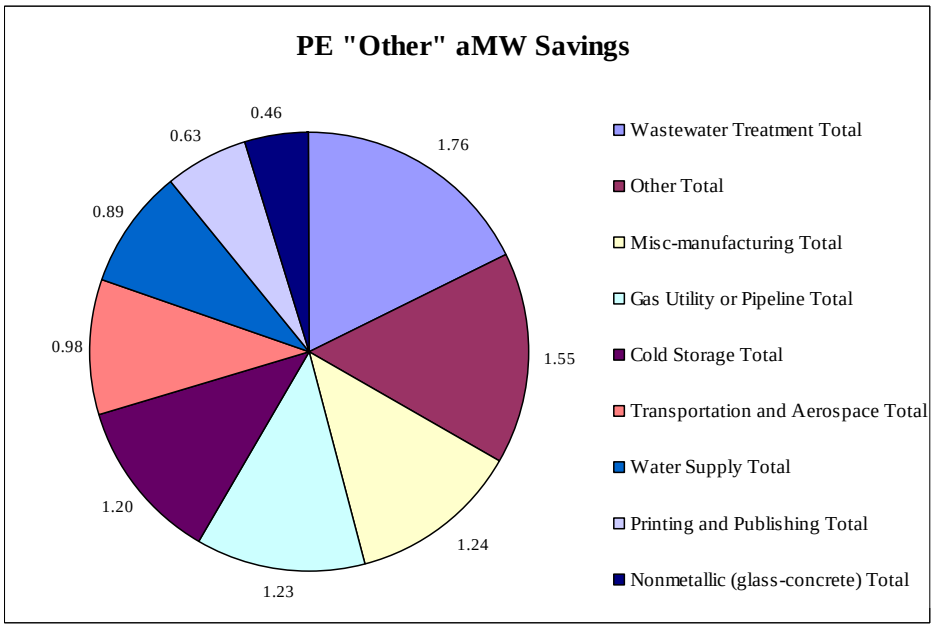
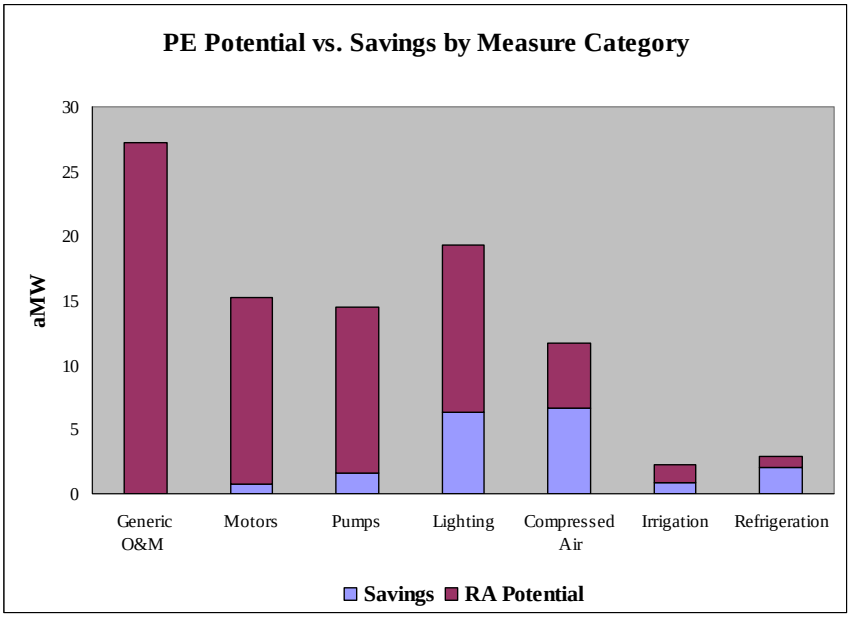
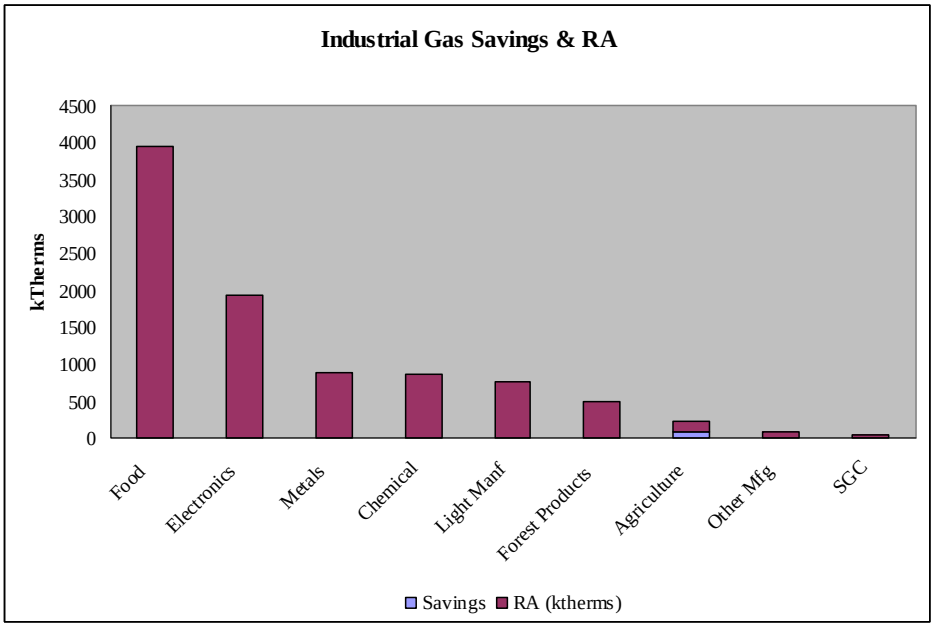


Figure 4: Electric Savings Potential Compared to Savings to Date



Since the Program only began gas efficiency efforts in earnest in 2009, almost all of the industrial gas resource remains untapped. The market is wide open and the technical potential associated with sites on currently eligible industrial rate classes is very high, as shown in Figure 5.

Figure 5: Gas Savings Potential vs. Savings to Date



III. Sector Level Strategies

A. Areas of Focus and Targeted market segments

Production Efficiency will be most effective over the next 5 years by building on program strengths – strong, positive relationships with participants, and the ability to deliver site- and industry-specific services that create deep, comprehensive and persistent savings in medium to large industrial sites. Additional success will come from building up services and incentives for the small industrial and agricultural customers.

Production Efficiency will continue to serve medium to large industrial participants in targeted industries: forest products, food processing/ distribution/ storage, high tech manufacturing, pulp and paper, water and wastewater utilities, other miscellaneous large manufacturing. This work leverages the program's and PDCs' existing relationships and utilizes the most developed delivery channels: the Custom track and the lighting trade ally network. These industry sectors still hold great potential for additional savings acquisition and have demonstrated commitment to energy efficiency. Importantly, they have successfully completed projects in the past and understand the benefits of energy investments.

Tapping the technical and market expertise of PDCs to cost-effectively serve larger industry will also allow Energy Trust to build out tools, services and trade ally networks for underserved or emerging sectors. Expanding products and services for the Small Industrial Initiative is another area of focus and growth. This will allow the program to continue to diversify sources of savings and provide economic benefits of efficiency to smaller industrial sectors such as wineries and nurseries. The program will continue to develop measures, expand the trade ally network and build greater market awareness, paying particular attention to the agriculture sector. SII has already increased the number of projects in the ag sector by a factor of 10 since 2007 and the Trade Ally delivery model provides a cost-effective way to serve small industrial customers with lower individual savings potential.

Longer term, Production Efficiency will identify additional underserved but motivated small industrial sectors through market and technical research, development of prescriptive and calculated savings measures and targeted market outreach.

B. Planned Sources of Savings and Managed Risks

For medium to large industry the program will continue to focus on the full array of possible energy savings opportunities, including custom process efficiency and equipment retrofit and replacement. Continuous improvement principles and strategic energy management practices will also be employed to achieve ongoing savings from industrial participants.

The IEI and Kaizen Blitz pilots and recent experience with Custom O&M have demonstrated that highly cost-effective savings can be achieved even at large industrial sites that believe they have harvested their low-hanging fruit capital projects. These participants often discover additional cost-effective capital projects while implementing O&M measures and the savings from these less-expensive projects increase their ability to successfully implement larger capital projects. Once the SEM offering is completed, the PDCs and the program continue as

a strategic partner to these sites, helping them to plan, track and manage their projects and progress towards energy goals through ongoing engagement, over multiple years.

Acceleration of electricity savings in large industry will be driven by the 5 – 15% savings from reducing operational energy waste and an additional 15 – 25 % from the increased implementation of capital efficiency projects at these sites. This same focus will allow for short-term reduction of costs/ kWh in large (>1 aMW) customer sites, as low-cost O&M savings balances out higher capital project costs.

- The primary risk of this strategy is technical, in the evaluation and persistence of O&M savings. The risk is being well managed currently, and will continue to be addressed through utilizing high-quality technical contractors and maintaining stringent internal technical review to enable measurement and verification of these non-traditional sources of savings.
- A secondary risk comes from the increasing complexity represented by these innovative offerings. Experience in the recent pilots has demonstrated the value of using consistent and standard program processes and procedures in order to maintain quality and customer service. Program Managers will focus on definition, design and integration of the diverse array of technical services to drive savings while averting confusion caused by complexity.

Energy Trust staff and Production Efficiency PDCs will increase strategic market outreach, development or delivery as part of the long-term investment in market transformation required to meet increasing savings goals. As an example, food processing and pulp and paper plants currently have dedicated PDCs and water and wastewater utilities have a Water and Wastewater Technical Manager within the I & A Sector. These dedicated resources transfer best practices and lessons learned to other participants so that a new energy-savings strategy or application can be introduced to other customers in an efficient manner. An example of this is the demand-controlled ventilation solution developed for FEI Corporation and which has application at other high-technology companies. In addition, the Water and Wastewater Technical Manager will continue outreach to the municipal utilities via presentations to, and partnering with, the water and wastewater professional organizations concerning efficiency measures and incentive offerings.

The market risks and barriers associated with large capital efficiency projects include:

- Stability of the plants affects persistence of savings. A process change brought about by business needs such as availability of feedstock may fail a previous measure, and sale of site may result in process change or measure failure. Currently, the 10 year measure life, which is lower than the actual technical measure life in most cases, is one way this risk is mitigated. The requirement for at least 50% cost share on Custom capital projects also mitigates the risk, as it is believed that the sites would not invest their own capital in measures if they believed that change was imminent. As shown in Table 3, Custom capital projects are cost effective even at 10 year measure life, and O&M measures pay off in just a few years. To better understand the magnitude of the risk, Energy Trust plans to study plant closures and persistence in depth starting in 2011.

- Availability of capital and the willingness to invest capital in efficiency given the relatively low cost of energy are barriers to participation, as noted in the 2007-2008 Production Efficiency evaluation. These market barriers have been exacerbated by the recent economic recession and the uncertainty of the recovery, but the increase in number of projects and savings in 2009 and 2010 tells a different story: motivated sites continue to invest carefully in their operations. The program is designed to

address these market barriers, by buying down the costs of capital projects with cash incentives, by helping to minimize the technical risk of project performance through providing independent, 3rd party technical expertise and by increasing customer awareness and motivation through training and public recognition.

- Regarding availability of capital, most industrial customers use their own capital for projects or get financing through their own channels at very competitive rates, and are unwilling to go into debt to finance non-essential (ie, retrofit) projects. Medium to large industrial customers have shown no need for or interest in creative financing options at this time. Investment in efficiency improvements often fluctuates year to year, and the program's strategy is to keep them engaged at least minimally in the down years to facilitate larger projects in the future. Sites with little access to capital in a given year may be candidates for low cost, quick payback measures such as lighting, motors or O&M.

Industrial gas savings will be fully integrated into both the Custom track for larger projects and the prescriptive track for small industrial and agricultural participants. Given the program's recent entry into gas efficiency, there is a tremendous amount of untapped resource potential and much of it includes low hanging fruit, highly cost-effective capital projects. Despite lack of history with industrial gas efficiency, utilization of existing, mature program design and delivery tracks reduces risk – this is a new offering, but not a new program. One expected innovation is that Production Efficiency will begin to work on Gas O&M under the Custom track in 2011, focusing on boiler and steam system tune-ups.

C. Key Activities

1. Energy Trust will continue to utilize PDCs as long-term energy efficiency "account managers" for industrial customers since this model has been so successful**.** Ongoing relationships between participants and trustworthy and knowledgeable 3rd party engineers provide the basis for repeated success at sites, including shorter timelines for project development due to familiarity of all parties. Energy Trust will continue to plan, develop and fine-tune compelling offerings for PDCs to bring to market. Energy Trust will also continue to help the PDC's expand technical knowledge to identify and promote renewable energy projects at industry and agricultural sites.

    a. Because of their deep customer relationships, PDCs are a key component of Production Efficiency's outreach and customer service activities. Energy Trust will increase the effectiveness of these efforts by providing centralized Program management and direction of effort. Additionally, Energy Trust will develop customer recognition tools and program collateral; identify and transfer best practices between PDC teams, ATACs; and provide detailed guidance for PDC action plans/ strategies.

2. The Program will deliver on industrial strategic energy management, including using energy information systems and other O&M strategies to gain 5 – 15% energy intensity savings from low cost actions/ measures at medium and large industrial sites. These efforts also provide a basis for increasing customer commitment to

3. Production Efficiency will improve Small Industrial and Agricultural customer experience by streamlining project process for smaller projects. This will be accomplished through the development of additional prescriptive and semi-prescriptive path offerings that rely on vendor delivery and require less intensive forms and administration. The Program will also cultivate a higher awareness of the benefits of efficiency and services for smaller industrial customers by investing in strategic market research and outreach to 1 – 2 new targeted sectors per year. This strategy provides an excellent opportunity to collaborate with utility partners through 838-funded utility marketing staff and contractors.

4. Production Efficiency delivers big savings with a small internal staff. To maintain program quality and increase savings, the Program will engage in continuous improvement of internal processes within all Program staff's areas of responsibility. The sector staff will demonstrate the same commitment to process efficiency that we are asking of our customers to reduce wasted time and effort, increase throughput and decrease complexity. Keeping current program practices and procedures optimized allows for greater innovation including increasingly customized technical services without overtaxing staff and contractors or reducing the program's ability to deliver on goals. Utilizing standardized procedures and practices even when testing innovative new offerings also improves those pilots and addresses the risks of innovation by reducing the number of variables being tested.

5. Energy Trust works with a wide range of other efficiency organizations with complementary goals. The Program will continue to leverage the actions of these existing and emerging market players that provide industrial and agricultural energy outreach, technical assistance and public recognition to increase volume and decrease development and engineering cycle of industrial efficiency projects. Collaborators include the IOUs, NEEA, BPA, Business Oregon, ODOE, Oregon Manufacturing Extension Partnership (OMEP), the High Performance Enterprise Consortium (HPEC), and federal actors such as US DOE and US EPA ENERGY STAR.

6. The Program will ensure that it aligns with and utilizes the Energy Trust brand and other internal resources to drive further market penetration and savings, including the website, trade ally support, and general outreach contractors. Production Efficiency staff will help to guide design of new data management systems to support ongoing and comprehensive engagement at customer sites and fully implement new systems. Reaching goals will also require Production Efficiency to utilize Planning and Evaluation services to optimize and fully integrate the array of emerging custom track technical service offerings and to add prescriptive savings offerings for the Small Industrial Initiative.

C. Sector Plan Linkage to Energy Trust Strategic Plan Actions

Energy Trust Strategic Plan Key Actions	Linkage to Industry and Ag Sector Plan and Key Actions
1. Accelerate EE Investment	• Primary purpose of PE program – continue to build out Custom, calculated and prescriptive source of savings, using and enhancing existing successful program delivery design.
2. **Maintain support for a variety of renewable technologies**	• PDCs identify opportunities for renewables at industry and ag sites, make referrals, provide tech support. • Program identifies, analyzes and incents industrial solar thermal opportunities as gas efficiency projects
3. **Encourage innovative technologies & practices**	• Deployment of industrial strategic energy management practices and energy information systems as key program strategy • Custom track allows for one of a kind process efficiency projects • Cross-participant and cross-contractor information sharing to accelerate implementation of successful efforts
4. **Support development of clean energy business**	• PDCs, ATACs and ITSP contractors all engaged through competitive solicitation in work for program, development of Small Industrial and Industrial Lighting trade allies. • Strategic market focus on efficiency in Clean Tech Manufacturing supports new and existing clean energy businesses by reducing operating costs, verifying efficiency bonafides.
5. **Provide excellent customer service to all Energy Trust participants**	• PDC model dedicates industrial engineers to work with sites year after year, facilitates program participation. Custom track approach is entirely geared to participant needs. • Technical expertise of all program contractors and staff is highly valued by these technically oriented customers. • In-house management of program ensures that calls or inquiries from potential customers are addressed professionally and accurately. • Understanding other EE initiatives our customers are involved in such as the NW Food Processors goals or the US DOE's Energy Leaders allows PE program to leverage and customize services to support these motivated customers.
6. **Bring a broad perspective by considering overall**	• PDCs are sited in all geographic areas of the state, including Southern, Central and Eastern

balance and equity	Oregon. • Small Industrial Initiative invests in increasing offerings and channels to market for smaller industry and farmers, many in rural areas.
7. **Communicate the value of energy savings and renewable generation**	• Developing project history tool to better communicate the economic value of participants' ongoing investment in efficiency within their own organizations. • Increased focus on industrial efficiency success stories and other marketing/ PR approaches to spread best practices.
8. **Maintain an efficient, effective & transparent organization that responsibly invests ratepayer funds**	• Continuous improvement of internal processes and procedures • Better utilize shared Energy Trust resources

D. Areas of Innovation, Expected Market Transformation

Recently, there has been a shift occurring in the attitudes of industry towards energy use and the environmental implications of using more than is required. While industry has traditionally been fairly resistant to talking about the sustainability of their businesses, the tide is beginning to turn.

Responding to public and supply chain market pressures, and driven by costs and international energy and environmental policies, many large companies are paying attention. Early adopters have shown that energy management is an indicator of best management practices in general, and is tied to product quality and employee engagement as well as corporate sustainability. This change in attitudes has occurred in the private sector, even in the absence of meaningful progress in US climate change policies.

US industries have long understood the economic/ business benefit of investing in energy efficiency as a way to reduce operating expenses. Now, Energy Trust expects that these corporate commitments will continue and increase over the next 5 years, further supporting energy savings in industry. In order to realize the benefits from this perceptual change, the Program will track developments of policy or market interventions related to this movement. We will align or develop program services for sites in Energy Trust territory who are participating in these larger sustainability efforts. Examples include the current international efforts to develop an Energy Management Standard for Industry (ISO 50001), federal product purchasing standards that require carbon reporting and retail supply chain requirements such as those promoted recently by Wal-Mart.

The Program is currently testing a number of program innovations that could be rolled out to the larger customer base. One new initiative involves the use of energy and production data as a management tool for optimizing industrial operations. It is expected that over the next 5 years, some of the wide range of software tools that have been developed for Commercial buildings will be customized for industrial applications, making more options available. We also expect that Industry will begin to accept and practice monitoring and tracking as early entrants continue to promote their cost-savings and success with these tools. The

deployment of energy tracking tools offers up the potential of new program models in the future, based on site energy intensity, operational performance, continuous improvement and persistence rather than on a measure by measure approach to energy savings. Aspects of these approaches will continue to be tested and implemented over the next 5 years.

The industrial sector in Oregon has been changing for the past 20 years as a result of market forces and is expected to continue to change over the next 5 years. Although there are some common industrial trends, especially by region when based on natural resources (ex: increase in high tech manufacturing nationally, forest products in the NW), generally each state has its own unique mix of industry. It can be challenging to find timely data about regional or local industrial market trends, but staying abreast of and responding to these market shifts is necessary for the ongoing success of the program. For example, the emerging Clean Tech manufacturing subsector is highly motivated to produce product with a smaller environmental footprint, and this growing sector could justify a strategic market outreach approach within a year or two. Collaborating with regional, state and local organizations including Business Oregon, the Oregon Department of Energy, research universities, sustainability organizations, city economic development initiatives and others may provide insight into the future of Oregon industry while allowing those organizations to leverage Energy Trust incentives to attract new industries and also increasing channels for outreach to existing industries.

E. Key Challenges and Barriers

Challenge: Lack of accurate utility information preventing clear compliance with 838

Barrier: Policy limitation on spending for sites > 1 aMW

Acceleration of savings will rely on the program's ability to keep serving large industrial customers (including those > 1 aMW) without creating additional funding limitations for this customer class. SB838, which expanded funding for EE for most customer classes, limited public purpose funding expenditures on this customer class. This issue may affect the program's ability to achieve IRP savings goals in the future, as IRP savings goals do not account for this policy constraint.

This policy constraint directly affects the Program's planning for mega-projects. Although mega-projects have been a significant source of savings in the past, there have not been any new mega-projects identified in the past 3 years at industrial sites. It would be possible to run a competitive RFP for mega-project proposals that could identify projects with very high savings and low costs. One mega-project every two years, in either commercial or industrial sectors, would provide an inexpensive source of savings that could help meet savings goals and moderate the average cost of the entire portfolio . Implementation of this action is dependent on Energy Trust receiving required data to identify > 1 aMW sites and determination that Energy Trust has not exceeded the terms of the 838 funding constraints for large customers. As of now, any new mega-project done in either the Business or Industrial sectors could trigger the 838 funding constraint, effectively taking this highly cost-effective option for savings acquisition off the table.

Challenge: BETC uncertainty

Barrier: BETC sunset

The majority of projects in the PE program qualify for the Oregon Business Energy Tax Credit (BETC), and the Program supports our participants' application for BETC. In Program evaluations to date, the combined influence of Energy Trust incentives and BETC have had the biggest effect on projects moving forward. Clearly, the elimination of BETC incentives would have a profound impact on savings, and would likely require increased incentive levels to maintain program activity, directly affecting levelized costs for the Program. For example, the BPA Industrial program provides up to 70% of project costs, compared to the current incentive cap of 50% of project costs in the Energy Trust industrial program.

In addition to the risk of BETC's sunset however, there are very near term challenges posed by the recent staffing and policy changes at the Oregon Department of Energy and the uncertainty regarding the future of the BETC program. Disgruntled participants have had trouble distinguishing between the Oregon Department of Energy and Energy Trust, resulting in cancelled projects or in resistance to any future participation in the Program. As this dynamic continues to play out in 2011 and 2012, it is likely that staff and PDCs will spend more time managing participant perception and disappointment and that fewer participants will initiate projects because of the uncertainty.

Finally, if BETC for efficiency actually does sunset, there is likely to be a mad rush to complete projects before the deadline. This would affect the Program and contractors directly, as resources would then be focused inordinately on fast-tracking and closing out projects for 6 – 12 months, reducing effort on building the pipeline for future years.

Barrier: Limited eligibility for gas incentives

Challenge: Gas incentive eligibility determined by rate

Although industrial gas efficiency has outstanding market and technical potential, and the Program delivery model has proven to be an effective channel to reach these savings, the policy and resulting program management options are currently much more limited.

As described earlier, gas Transport customers do not pay any efficiency charge and are not eligible for incentives. Many large industrial sites are gas Transport customers, and so the pre-existing relationships that PDCs have with them for electric efficiency are not able to be leveraged for gas projects. Clearly, there is tremendous technical and economic potential for efficiency at Transport sites, but all gas efficiency projects currently will need to occur absent incentives in Oregon due to the exception of these customers from state efficiency legislation or regulation.

The biggest challenge for the program's delivery of industrial gas savings is related to the limited pool of eligible sites. The complexity of serving sites through a discretely-managed small pool of funding based on rate schedule, the fact that those rate schedules may frequently change and the lack of visibility of those rates to the Program drives up costs and reduces savings.

The OPUC, utilities and Energy Trust are currently engaged in updating data sharing agreements. Although attention has been paid to the impact of exemptions for industrial customers, current and proposed data sharing policies do not allow the utility to share information related to Transport customers. The path forward for implementation of Industrial gas will be determined in early 2011 at the end of the NWN Industrial DSM pilot. It would be very helpful to focus on reducing these barriers in accordance with the new data sharing policies at that time.

Industrial Gas Eligibility Detail:

Although this issue and the management approach to it bears some resemblance to self-direction policy for electric efficiency for > 1 aMW energy users, there are key differences that make the self-direction policy much more manageable. There is a limited pool of electric self-directors, with fewer than 50 industrial sites self-directing for efficiency, and information about who is self-directing can be obtained from the Oregon Department of Energy. The program is able to serve self-directors on a limited basis, at 50% of the full incentive level, for projects that they are not using to fulfill their self-direct obligation. All other industrial customers in Energy Trust territory are eligible for full participation. Essentially, all industrial customers within PGE or Pacific Power territories are eligible for participation, allowing for proactive outreach and strategic planning.

For natural gas, a large percentage of industrial sites are not eligible because they are Transport, and as a result of the restrictive data sharing policy, there is no way to know if they are Transport prior to performing outreach. An eligible gas customer may choose to switch to Transport. Transport customers are not eligible at all for services, so time spent meeting with them prior to determining eligibility is pure cost.

Since late 2008, Production Efficiency has served industrial and agricultural customers paying the public purpose charge under commercial rates. Although the Small Industrial Initiative has proven to be good vehicle to deliver energy efficiency to these customers, occasionally eligible sites will be discovered in the Custom track. Limitations on eligibility and the lack of predictability have driven a reactive approach to achieving these savings and suppressed results over the past 2 years.

The NWN Industrial DSM pilot included Firm and Interruptible ratepayers, under specific Industrial and some Commercial rates, who had not been previously served by Energy Trust and who do not currently pay the public purpose charge for gas. Recovery is through a special rate adjustment on eligible customer's rates, beginning in November of 2010. Finding the eligible customers has been the primary challenge in this initiative as well, but additional challenges have been tied to managing a funding cap for interruptible customers only which necessitated additional tracking and incentive management practices that were outside of the standard program procedures.