Large Customer Funding Briefing Paper

Background, 2016 analysis and strategies to achieve compliance in PGE territory

September 6, 2017

Summary

Energy Trust of Oregon electric efficiency funding flows from two legislatively mandated sources (SB 1149 and SB 838). Commercial and industrial customers using more than 1 average megawatt per year (termed large customers) are excluded from SB 838. To ensure large customers are not benefitting from this supplementary funding, a limit was set on the percentage of SB 1149 incentive funding that Energy Trust can allocate to large customers. Energy Trust contracts with a third party annually to review large customer incentive spending. The "Greater than 1 aMW Analysis" individual reports for Portland General Electric and Pacific Power are at the end of this briefing paper.

In 2016, incentive spending slightly exceeded the threshold for PGE large customers. This was after multiple years of being close to the threshold. In anticipation of exceeding it, Energy Trust staff has been coordinating with the Oregon Public Utility Commission, Energy Trust board of directors, PGE and Pacific Power over the past four years to create options for potential actions to regain compliance, including those that staff will implement starting this year.

Energy Trust will implement five strategies in September 2017 to reduce PGE incentive expenditures over a three-year timeframe:

- Reduce the PGE per-site incentive cap from $1 million to $500,000
- Reduce the PGE site cap for self-direct customers from $500,000 to $250,000
- Cap total annual incentives for customers with multiple PGE sites at $1.5 million
- Shorten the reservation period an incentive offer is valid from 24 months to 12 months
- No longer provide incentives for new PGE projects exceeding the site cap (mega projects)

These actions will reduce average PGE incentive spending from 2018 to 2020 by $1.1 million per year from historical levels. Savings over the same period will be lower by at least 14.3 million kilowatt hours per year. This funding reduction means that Energy Trust will not secure all cost-effective energy efficiency from these customers.

Background

Energy Trust of Oregon electric efficiency funding flows from two legislatively mandated sources: 1) SB 1149 public purpose charge funding is received from all PGE and Pacific Power customers as of 2002, and 2) SB 838 funding is received from PGE and Pacific Power customers using less than 1 average megawatt (aMW) per year as of 2008. Through SB 838, PGE and Pacific Power, in coordination with Energy Trust, can add incremental funding to the public purpose charge to achieve all cost-effective energy efficiency identified through utility integrated resource planning. Commercial and industrial customers using more than 1 aMW per year (large customers) are excluded from, and cannot directly benefit from, SB 838 funding. Language describing the SB 838 electric efficiency funding mechanism in legislation reads as follows:

> SECTION 46.
> (1) In addition to the public purpose charge established by ORS 757.612, the Public Utility Commission may authorize an electric company to include in its rates the costs of funding or implementing cost-effective energy conservation measures implemented on or after the effective date of this 2007 Act. The costs may include amounts for weatherization programs that conserve energy.
> (2) The commission shall ensure that a retail electricity consumer with a load greater than one average megawatt:
>
> > (a) Is not required to pay an amount that is more than three percent of the consumers' total cost of electricity service for the public purpose charge under ORS 757.612 and any amounts included in rates under this section; and
> > (b) Does not receive any direct benefit from energy conservation measures if the costs of the measures are included in rates under this section.

To ensure large customers are not benefitting from SB 838 funding, a 2008 informal multiparty agreement set a limit to the percentage of SB 1149 incentive funding that Energy Trust can allocate to large customers. The stakeholders involved included Energy Trust, the OPUC, PGE, Pacific Power, Citizens' Utility Board of Oregon and Industrial Customers of Northwest Utilities. Incentives were used as a proxy for overall spending, as program management and administrative costs are difficult to allocate to specific program participants.

The methodology was reviewed again by the OPUC, electric utilities, Energy Trust board of directors and Energy Trust Conservation Advisory Council in 2013 and 2015 in anticipation of exceeding the threshold at some point due to increased project activity by large customers. The probability of reaching the threshold was highlighted in the 2010-2014 Strategic Plan.

In agreement with the parties, Energy Trust does not proactively manage to avoid reaching the cap because it could negatively impact customer relationships in the Production Efficiency, New Buildings and Existing Buildings programs, and there is no guarantee the threshold would be exceeded in any program year.

Methodology

Energy Trust developed an analytic method to track compliance with the working group agreement, and over the past several years, has published reports annually showing whether expenditures comply with the agreement.

The annual limits, established separately for each utility, are based on large customer funding prior to SB 838 implementation. They are calculated as the total incentives paid in a year to large customer sites divided by the total SB 1149 efficiency revenues directed to Energy Trust over a base pre-SB 838 timeframe. For Pacific Power, the base period is 2004-2007, and for PGE, the base period is 2005-2007. For Pacific Power, the base (or threshold) is **27.3%** and for PGE it is **18.4%**. The difference in limits between utilities reflects differences in size and volume of large customer projects during the base period.

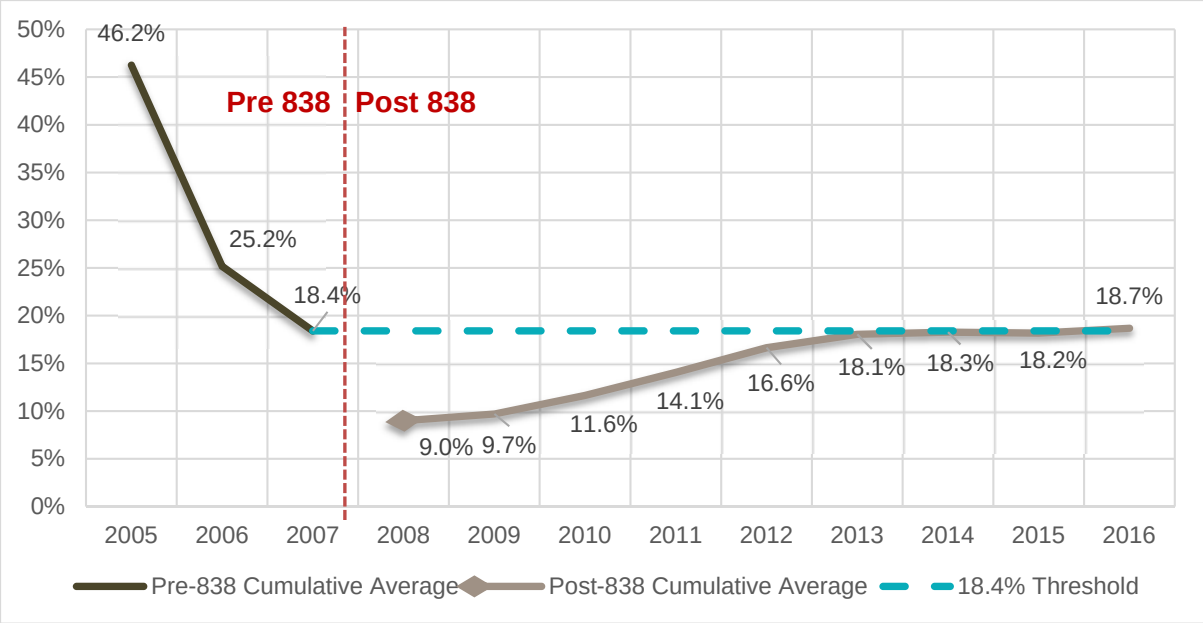
The post-SB 838 percentage for comparison to the numbers described above is calculated on a cumulative basis starting in 2008. It is the sum of incentives for large customers over the sum of total SB 1149 energy efficiency revenues to Energy Trust.

2016 Analysis

Energy Trust contracted with a third party (CLEAResult Consulting, Inc.) to conduct the 2016 large customer incentive spending analysis (included in full below). The reports concluded Energy Trust 2016 spending stayed within the Pacific Power threshold and slightly exceeded the PGE threshold:

- Pacific Power 2016 large customer incentive spending: 20.1% (7.2% below the 27.3% threshold)
- PGE 2016 large customer incentive spending: 18.7% (0.3% above the 18.4% threshold)

Chart 1: Cumulative average of SB 1149 revenue spending on large customer incentives 2004-2016, pre & post-838, for PGE customers



Large customer incentive spending in PGE territory has increased since 2008 as more customers engaged with Energy Trust programs and the customer makeup in PGE territory evolved. For example, as seen in Table 1, while SB 1149 revenue in 2016 was similar to 2015, incentive spending for PGE large customers increased by nearly $1.4 million. In addition, the number of large customers in PGE territory increased from 41 in 2008 to 62 in 2016.

In 2016, total incentive spending for PGE large customers was 23% of SB 1149 revenue, an increase of 6% over 2015 and the highest level since 2013.

Table 1: Summary of spending and kWh savings for large customers 2012-2016, for PGE customers

PGE	2012	2013	2014	2015	2016	2008-2016 (average)
Energy Efficiency SB 1149 Revenue	$28,119,658	$26,484,405	$28,741,721	$28,723,137	$28,127,435	$27,703,705
Incentives to >1aMW Sites	$7,508,724	$6,705,824	$5,621,248	$5,004,680	$6,413,577	$5,117,266
>1aMW Sites Incentives as a Percent of SB 1149 Revenue	27%	25%	20%	17%	23%	18.7%
Cumulative Average	17%	18.1%	18.3%	18.2%	18.7%	18.7%
Number of >1aMW Sites Receiving Incentives	56	56	55	57	62	53
Savings from >1aMW Sites (kWh)	62,520,010	95,229,586	73,813,874	40,267,774	36,740,007	50,267,619
Total Savings (kWh)	282,316,497	311,992,892	321,470,265	170,374,245	194,005,002	226,793,027
Percent of Total Savings from SB 838-Exempt Sites	22%	31%	23%	24%	19%	22%

The 2017 incentive spending for these customers is forecast to reach more than $7.1 million, with cumulative expenditures forecasted to rise to 19.1%. This 2017 forecast necessitates earlier and more direct action. The increases in incentive spending result from a healthy economy, increased new commercial construction and industrial activity, a mega project and ongoing success engaging large customers.

Incentive Reduction Actions

Staff reviewed proposed actions to ensure they would reduce spending while minimizing loss of savings, allow Energy Trust to maintain positive working relationships with customers, be reasonably simple to implement and communicate, be implemented over a multi-year timeframe, and allow staff to adjust approaches if needed and suspend the corrective actions when compliance is achieved.

To reduce expenditures, Energy Trust is modifying incentive eligibility requirements for PGE large commercial and industrial customers, including those that self direct the public purpose charge. Staff selected what are believed to be the lowest-risk options in terms of effectively reducing expenditures while maintaining positive customer relationships.

Starting immediately for the Production Efficiency, Existing Buildings and New Buildings programs, and continuing until expenditures meet the threshold, Energy Trust will:

- Reduce the PGE per-site incentive cap from $1 million to $500,000
- Reduce the PGE site cap for self-direct customers from $500,000 to $250,000
- Cap total annual incentives for customers with multiple PGE sites at $1.5 million
- Shorten the reservation period an incentive offer is valid from 24 months to 12 months
- No longer provide incentives for new PGE projects exceeding the site cap (mega projects)

To reach funding compliance, incentive spending for PGE large customers needs to average $4.2 million per year from 2018 to 2020. The $4.2 million spending level is $1.1 million less than the average spending from 2008 to 2017.

Most of these incentive reduction strategies were vetted with the OPUC and electric utilities in years prior, and have been shared with them again now that the PGE large customer funding cap was exceeded in 2016. The customer and the time limit are new controls. Without these extra strategies a customer with multiple sites in PGE territory could take up 75% of the allowable, remaining funds or reserve funds too long.

It is anticipated these actions will reduce expenditures for this customer class by 2020. Taking action now will help Energy Trust stay within the allowable amount beyond 2020, and will allow the organization to implement these lower-impact options instead of larger, drastic changes.

These changes will result in fewer savings achieved for the organization, from a customer base that historically provides the most cost-effective savings. On average, large customer projects have benefit/cost ratios that are 2.5 times higher than SB 838-eligible site projects. Staff anticipates a reduction of 14.3 million kWh or 1.63 aMW in savings per year from 2018 to 2020, impacting goal-setting and IRP forecasting.

The result will likely mean lost opportunity of low cost resource, unmet demand and unrealized savings. In the long run, savings from larger sites will not be fully captured. This is particularly the case for “lost opportunity” savings that must be acquired during specific events, such as a major capital investment in a

process line upgrade or redesign, or a building renovation. A significant share of Energy Trust savings comes through such events.

All Potential Actions Considered

A range of strategies are possible to reduce spending on large customers. There is no perfect solution; every option to reduce spending on large customers has weaknesses or potential negative repercussions. Staff proposes to start with the low-risk options.

Short-term, low-risk strategies

1. No new mega projects in PGE territory until we regain compliance
2. Change site caps: Reduce annual site incentive caps from $1 million total across all projects back to former site cap of $500,000; and/or reduce site caps for self-directors to 50% of standard site caps

Interventions that cap the highest incentives naturally affect spending on the very largest customers, without altering the services or project incentives that have proven to be effective to acquire savings. These can be applied to a single utility territory effectively, and implementation is fairly simple, involving conversations as needed with only a handful of the largest customers. While these interventions are expected to reap results, they may not prove to be enough to solve the funding issue; however, they should cause minimal impact on most customers. Staff will assess the intervention effectiveness over the year and course correct as necessary.

Higher-risk, higher-cost, higher-effort strategies

1. Determine two-year annual cap of total incentive funds available to large customers in PGE territory to drive down spending; implement as first-come, first-served with reservation system

This strategy would likely be effective, but implementing it is operationally complex for the organization—creating inefficiencies in program management. If triggered, the reservation system creates far more complexity for customer, requires communication to all business customers and has greater impacts in the market.

2. Reduce incentive levels/kWh at large customer PGE sites
3. Develop total incentive budget for large customers in PGE territory to drive spending down and run competitive process for all incentives as a way to drive down acquisition costs

Strategies 2 and 3 under the higher-risk section introduce a high risk of catastrophic loss of short-term savings, may affect ability to meet IRP goals, and may result in long-term damage to customer relationships and future savings.

Greater Than 1 aMW Analysis Project

Portland General Electric (PGE) 2016 Report

Prepared by CLEAResult for:
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06.21.2017

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PROJECT OVERVIEW

The purpose of this project is to determine the percentage of SB 1149 funds that Energy Trust spent on sites that used more than 1 aMW (>1aMW) in 2016. This percentage was compared to Energy Trust's historical spending percentages from 2005-2007 to determine if spending on this group of customers has changed since the inception of SB 838.

PROJECT RESULTS

Key Findings

- While overall 1149 revenue ($28 million) in 2016 was close to 2015, >1aMW incentives increased by almost $1.4 million
- Total kWh savings for PGE in 2016 increased by over 23.5 million kWh while savings at >1aMW sites decreased by 3.5 million kWh during the same period
- The cumulative post-838 share of 1149 revenue spent on incentives at >1aMW sites saw an increase from 18.2% to 18.7% due to the increase in spending in 2016, meaning the pre-838 baseline of 18.4% has been passed

In 2016, total incentive spending on >1aMW users was 23% of SB 1149 revenue, an increase of 6% since 2015 and the highest level since 2013. Average spending per site was up to $103,000 from an average of $86,000 last year, while average savings was down to 592,000 from kWh from an average of close to 695,000 kWh in 2015. Table 1 also shows the average percentage of SB 1149 revenue spending on >1aMW customers since 2008, and the percentage of total savings from >1aMW customers.

Table 1: Comparison of analysis and results 2014 -2016

PGE >1aMW Customer Activity	2014	2015	2016	Change in Overall Percentage
% 1149 revenue to >1aMW customers	19.6%	17.4%	22.8%	5.4%
Cumulative average % 1149 revenue to >1aMW customers since 2008	18.3%	18.2%	18.7%	0.5%
% Total kWh savings from >1aMW customers	23.0%	23.6%	18.9%	-4.7%

*Historical baseline average is 18.4%

Tables 2 & 3 below show SB 1149 revenue, incentives spent on >1aMW customers, the percentage of total SB 1149 revenue spent on the >1aMW sites, total kWh savings from projects at >1aMW sites, and the number of sites receiving incentives for 2005-2007 and 2008-2014.

Table 2: Summary of spending and kWh savings for >1aMW customers 2005-2007 (pre-838)

Pre-838 Results				
Energy Efficiency 1149 Revenue	2005	2006	2007	2005-2007 (average)
Energy Efficiency 1149 Revenue	$21,065,813	$22,720,384	$25,673,961	**$23,153,386**
Incentives to >1aMW Sites	$9,742,145	$1,282,158	$1,762,765	**$4,262,356**
>1aMW Incentives as a Percent of 1149 Revenue	46%	6%	7%	**18.4%**
Number of >1aMW Sites Receiving Incentives	39	30	27	**32**
Savings from >1aMW Sites (kWh)	126,503,077	14,056,604	68,431,766	**69,663,816**
Total Savings (kwh)	213,903,461	121,192,910	139,322,053	**158,139,475**
Percent of Total Savings from >1aMW Sites	59%	12%	49%	**44%**

Table 3: Summary of spending and kWh savings for >1aMW customers 2008-2016 (post-838)

Post-838 Results										
PGE	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2008-2016 (average)**
Energy Efficiency 1149 Revenue	$26,890,837	$26,669,621	$27,065,764	$28,510,770	$28,119,658	$26,484,405	$28,741,721	$28,723,137	$28,127,435	**$27,703,705**
Incentives to >1aMW Sites	$2,421,817	$2,778,741	$4,189,900	$5,950,881	$7,508,724	$6,705,824	$5,621,248	$5,004,680	$6,413,577	**$5,117,266**
>1aMW Sites Incentives as a Percent of 1149 Revenue	9%	10%	15%	21%	27%	25%	20%	17%	23%	**18.7%**
Cumulative Average	9%	10%	12%	14%	17%	18.1%	18.3%	18.2%	18.7%	**18.7%**
Number of >1aMW Sites Receiving Incentives	41	48	49	54	56	56	55	57	62	**53**
Savings from >1aMW Sites (kWh)	21,022,885	26,348,517	49,949,458	46,516,463	62,520,010	95,229,586	73,813,874	40,267,774	36,740,007	**50,267,619**
Total Savings (kwh)	145,935,756	150,705,221	219,884,055	244,453,313	282,316,497	311,992,892	321,470,265	170,374,245	194,005,002	**226,793,027**
Percent of Total Savings from 838-Exempt Sites	14%	17%	23%	19%	22%	31%	23%	24%	19%	**22%**
Potential additional incentives to >1aMW sites (Sensitivity Analysis)	*n/a*	*n/a*	*n/a*	*$39,727*	*$0*	*$0*	*$0*	*$0*	*$0*	***n/a***

Chart 1 shows the cumulative average of 1149 spending from 2005-2007 and 2008-2016. The horizontal line indicates the cumulative average from 2005-2007, which is the historical baseline and threshold for spending in the post-SB 838 period. Annual 1149 spending on >1aMW sites and the cumulative average increased from 2008 through 2012, but decreased slightly in 2013 and 2014. The cumulative average of the post-838 period (18.7%) is now just above the historical threshold of 18.4%. If revenue remained consistent in 2017, it would require a decrease in spending on >1aMW sites of over $2 million from incentive totals in 2016 to $4.4 million to lower the cumulative average below the 18.4% threshold

Chart 1: Cumulative average of SB 1149 revenue spending on >1aMW customer incentives 2004-2016, pre & post-838

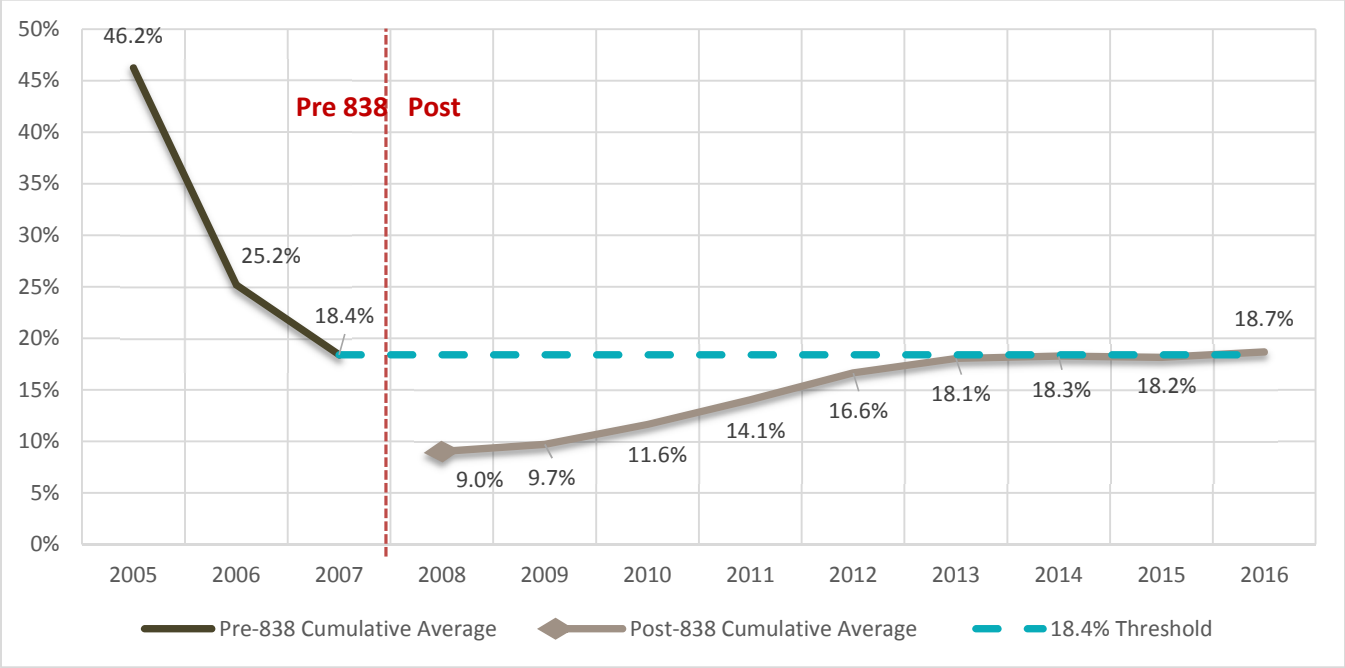


Table 4 below shows PGE spending on >1aMW customers by program by year beginning in 2005. Programs include Production Efficiency (PE), Existing Buildings (BE), and New Building Efficiency (NBE) projects.

Table 4: Summary of incentive spending & savings by program by year on >1aMW customers 2005-2016, pre & post-838

PGE	Production Efficiency		Existing Buildings		New Building		Total	
	$	kWh	$	kWh	$	kWh	$	kWh
Pre-838 Results								
2005	$8,134,413	N/A	$1,236,725	N/A	$371,008	N/A	$9,742,145	126,503,077
2006	$942,023	N/A	$111,121	N/A	$229,014	N/A	$1,282,158	14,056,604
2007	$1,520,782	N/A	$73,324	N/A	$168,659	N/A	$1,762,765	68,431,766
Post-838 Results								
2008	$1,989,391	N/A	$294,243	N/A	$138,184	N/A	$2,421,817	21,022,885
2009	$1,466,194	N/A	$781,466	N/A	$531,081	N/A	$2,778,741	26,348,517
2010	$3,097,231	43,322,367	$1,042,144	6,495,907	$50,525	131,184	$4,189,900	49,949,458
2011	$4,397,749	39,347,943	$1,513,314	6,703,335	$39,818	465,185	$5,950,881	46,516,463
2012	$5,774,602	51,916,828	$1,673,182	10,428,884	$60,940	174,338	$7,508,724	62,520,050
2013	$4,824,179	81,668,283	$1,654,099	11,204,217	$227,546	2,357,086	$6,705,824	95,229,586

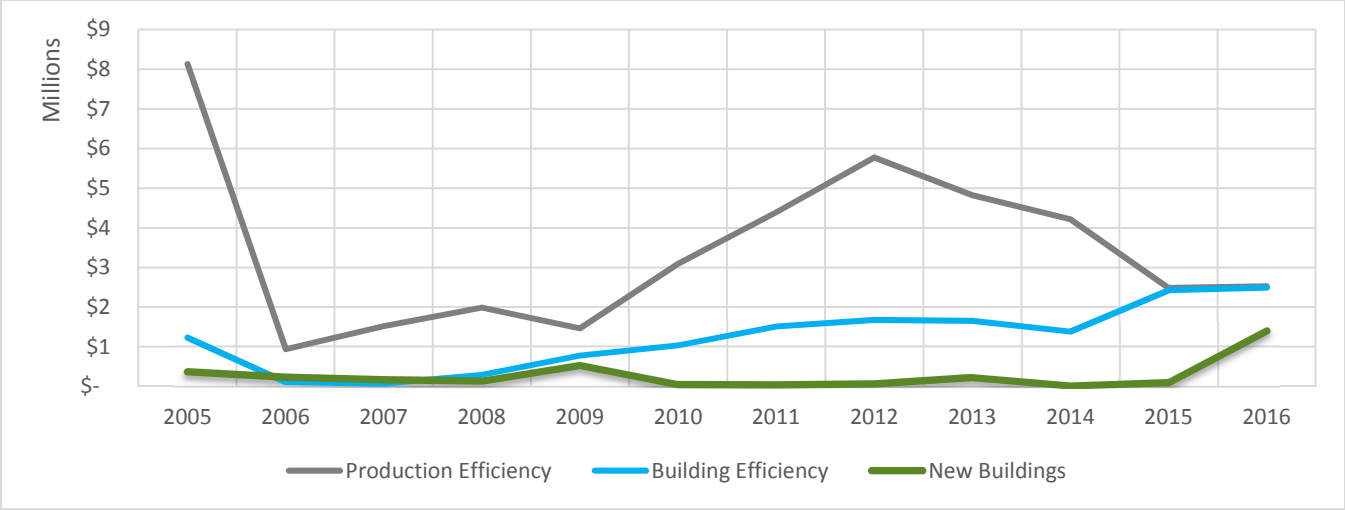
2014	$4,219,172	66,948,131	$1,384,860	6,765,869	$17,216	99,874	$5,621,248	73,813,874
2015	$2,485,462	28,953,430	$2,425,927	11,013,332	$93,291	301,012	$5,004,680	40,267,774
2016	$2,525,003	20,114,928	$2,490,249	9,377,647	$1,398,325	7,247,432	$6,413,577	36,740,007

Chart 2 below shows spending by program by year in graphical form. Each program category demonstrates unique year to year incentive spending patterns:

- New Buildings program spending increased over $1.3 million from 2015
- Production Efficiency and Existing Buildings program spending increased only slightly from 2015

The largest single >1aMW project was $1.2 million data center through the Existing Buildings program and the only large project above $1 million.

Chart 2: PGE >1aMW incentives by program 2005-2016, pre & post-838



METHODOLOGY

To calculate the incentive spending and percentages, a list of PGE >1aMW customers was compared to Energy Trust incentive program data, which includes incentives paid to all commercial and industrial PGE customers. Due to differences in the way that each data set is coded, address was the primary identifying characteristic to match >1aMW customers with incentive recipients.

There were several challenges to using address as the primary identifying characteristic. These challenges included:

- Some sites include multiple addresses
- A few addresses have multiple sites
- Some addresses have multiple customer names (typically, multiple divisions or business lines at one address)
- Multiple addresses exist for the same physical location (ie, one data set uses an address on a particular street, and the other uses an address on the cross street or a parallel street)
- Discrepancies in spelling or entry of addresses between data sets
- Generic locations are listed on the PGE >1aMW customer list instead of addresses; for example, "Warehouse" instead of "123 Main Street"
- For large industrial sites, the >1aMW customer list may contain an address for an adjacent office building and does not include every building address within the site

CLEAResult used newer software in addition to past methods to match project addresses to 1aMW sites:

- Both site and project addresses were normalized using Alteryx address normalization functionality
- Direct matches where street addresses matched exactly were considered matches
- Matching of 4-digit zip code extensions (usually indicate the same block)
- Alteryx geo-spatial tools were used to determine closest adjacent projects to 1aMW sites by distance
- Sites with the closest projects in proximity and no direct address match were given the first priority for analysis and review
- Projects with highest kWh savings were given higher priority and additional scrutiny
- Projects and site addresses that matched with different company names were researched and included if proof existed that both were of the same company (often due to company mergers or using corporate names)

ASSUMPTIONS

The primary premise of this analysis is the site definition. The OR SB 1149 definition of a site is: "'Site' means a single contiguous area of land containing buildings or other structures that are separated by not more than 1,000 feet, or buildings and related structures that are interconnected by facilities owned by a single retail electricity consumer and that are served through a single electric meter."

The site definition used to identify incentives paid to >1aMW user sites cannot be strictly applied to individual meters at large sites because neither CLEAResult nor Energy Trust has granular level data on the meters at a given site. Therefore, CLEAResult assumes that >1aMW user sites with generic addresses, such as "South of A Street," or multiple close addresses, match Energy Trust incentive program data when the address is a close match. These instances occur most frequently for the three site types outlined below with a set of assumptions are used to overcome uncertainty in each case.

There are three main business types that compose the majority of the >1aMW list: large industrial, hospitals, and college campuses. Each of these business types are typically physically constructed in a campus-like manner with many buildings clustered together that are owned by a single entity. Assumptions must be made when selecting one of these businesses as a match due to subtle differences between the way the >1aMW user list is constructed and the way the Energy Trust incentive program data reports the location of a project:

Large Industrial

- The >1aMW user list typically reports a single address for the site

        - The reported address is typically adjacent to the actual industrial site
        - This address may be a central office that handles billing for all structures
    - The Energy Trust incentive project list reports each individual building address within a site
        - The addresses reported on this list don't always align with the >1aMW user list address
    - An assumption is made that all addresses on the Energy Trust incentive project list are part of a single site if the >1aMW user list contains an address that is adjacent or within close proximity to all other addresses
        - If a single office reports for several different industrial sites these sites must be relatively close to be considered a match

Hospitals

- The >1aMW user list handles hospital sites by reporting some sites with a single address and other sites with multiple addresses within a campus
    - Single address entries are typically within the hospital campus but not part of the main structures
        - This address may be a central office that handles billing, similar to large industrial
    - Sites with multiple addresses often times do not include every potential address within the site
- The Energy Trust incentive project list reports each individual building address within a site
    - A single health care company often times owns several different sites within a city where each site is relatively close together
    - Each hospital campus is clearly finite and separate from any other site regardless of whether the proximity to other sites is near or far
- An assumption is made for single address entries that all addresses on the Energy Trust incentive project list are part of a single site if they are within the finite campus where the >1aMW user address is located
- An assumption is made for multiple address entries that all addresses within the associated campus are part of a single site even if the >1aMW user list does not provide a complete list of addresses for the site

College Campuses

- The >1aMW user list always gives multiple addresses for a single site
    - Every potential address within a single college campus is not given
- The Energy Trust incentive project list reports each individual building address within a site
- An assumption is made that all addresses on the Energy Trust incentive project list for a college campus are part of a single site even if the >1aMW user list does not provide every address

Greater Than 1 aMW Analysis Project

Pacific Power 2016 Report

Prepared by CLEAResult for:
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PROJECT OVERVIEW

The purpose of this project is to determine the percentage of SB 1149 funds that Energy Trust spent on Pacific Power sites that used more than 1 aMW (>1aMW) in 2016. This percentage was compared to Energy Trust's historical spending percentages from 2004-2007 to determine if spending on this group of customers has changed since the inception of SB 838.

PROJECT RESULTS

Key Findings

- Overall 1149 revenue increased by over $377,000 while >1 aMW incentives increased by over $1.7 million from 2015
- Total kWh savings for Pacific Power increased by over 2 million kWh while savings at >1 aMW sites decreased by over 9.8 million during the same period
- The cumulative post-838 share of 1149 revenue spent on incentives at >1aMW sites is consistent at 20%, still below the pre-838 baseline of 27%

In 2016, total spending on >1aMW users was 23% of SB 1149 revenue, an increase of 8% from 2015. The percentage of total savings from >1aMW customers increased by 5% in 2016. Average savings per >1aMW customer site decreased from around 767,000 kWh per site to 643,000 kWh per site, while total incentives per site increased from about $93,000 to almost $114,000 in 2016

Table 1: Comparison of analysis and results 2014 -2016

Pacific Power	2014	2015	2016	Change in Overall Percentage
% 1149 revenue to >1aMW customers	21.7%	15.0%	22.7%	7.7%
Cumulative average % 1149 revenue to >1aMW customers since 2008*	20.5%	19.7%	20.1%	0.4%
% Total kWh savings from >1aMW customers	26.2%	31.1%	22.6%	-8.5%

*Historical baseline average is 27%

Tables 2 & 3 below show SB 1149 revenue, incentives spent on >1aMW customers, the percentage of total SB 1149 revenue spent on the >1aMW sites, total kWh savings from projects at >1aMW sites, and the number of sites receiving incentives for 2004-2007 and 2008-2016.

Table 2: Summary of spending and kWh savings for >1aMW customers 2004-2007 (pre-838)

Pre-838 Results					
Pacific Power	2004	2005	2006	2007	2004-2007 (average)
Energy Efficiency 1149 Revenue	$13,346,771	$13,584,551	$14,614,927	$15,514,799	**$14,265,262**
Incentives to >1aMW Sites	$8,109,843	$3,401,328	$2,194,056	$1,867,641	**$3,893,217**
>1aMW Incentives as a Percent of 1149 Revenue	61%	25%	15%	12%	**27%**
Number of >1aMW Sites Receiving Incentives	38	42	27	34	**35**
Savings from >1aMW Sites (kWh)	64,086,521	36,711,900	14,947,636	27,311,042	**35,764,275**
Total Savings (kwh)	135,919,794	104,841,801	101,439,945	113,245,845	**113,861,846**
Percent of Total Savings from >1aMW Sites	47%	35%	15%	24%	**31%**

Table 3: Summary of spending and kWh savings for >1aMW customers 2008-2016 (post-838)

Pacific Power	2008	2009	2010	2011	2012	2013	2014	2015	2016	2008-2016 (average)
Energy Efficiency 1149 Revenue	$16,068,161	$16,391,296	$16,254,154	$18,772,015	$19,637,424	$20,069,559	$21,298,942	$21,164,176	$21,541,576	$19,021,922
Incentives to >1aMW Sites	$2,527,165	$2,435,060	$5,595,740	$4,223,682	$3,993,951	$2,953,604	$4,618,310	$3,168,073	$4,892,441	$3,823,114
>1aMW Incentives as a Percent of 1149 Revenue	16%	15%	34%	23%	20%	15%	22%	15%	23%	20%
Cumulative Average	16%	15%	22%	22%	22%	20%	21%	20%	20%	20%
Number of >1aMW Sites Receiving Incentives	39	46	54	51	50	53	48	49	42	48
Savings from >1aMW Sites (kWh)	28,944,611	20,615,419	73,365,871	43,075,265	60,102,118	68,146,982	49,011,387	37,592,519	27,779,471	45,403,738
Total Savings (kwh)	114,454,241	91,026,119	175,567,589	163,873,693	180,707,979	194,374,912	186,775,439	120,813,231	122,910,753	150,055,995
Percent of Total Savings from >1aMW Sites	25%	23%	42%	26%	33%	35%	26%	31%	23%	30%
Potential additional incentives to >1aMW customers (Uncertain Sites)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0	n/a

Chart 1 shows the annual cumulative average of 1149 spending from 2004-2007 and 2008-2016. The horizontal line indicates total cumulative average from 2004-2007, which is the historical baseline and threshold for spending in the post-SB 838 period. While annual 1149 spending on >1aMW customers has fluctuated since 2008, the cumulative average has shifted only slightly from 22% to 20% from 2010 to 2016. The cumulative average of the post-838 period has not exceeded the 27% threshold and is not likely to reach that level without a considerable increase in >1aMW spending relative to recent trends. If current revenue levels remained consistent, it would require an increase of over 100 percent from the current annual >1aMW incentive spending average for over seven years for the cumulative average to reach the 27% threshold.

Chart 1: Cumulative average of SB 1149 revenue spending on >1aMW customer incentives 2004-2016, pre & post-838

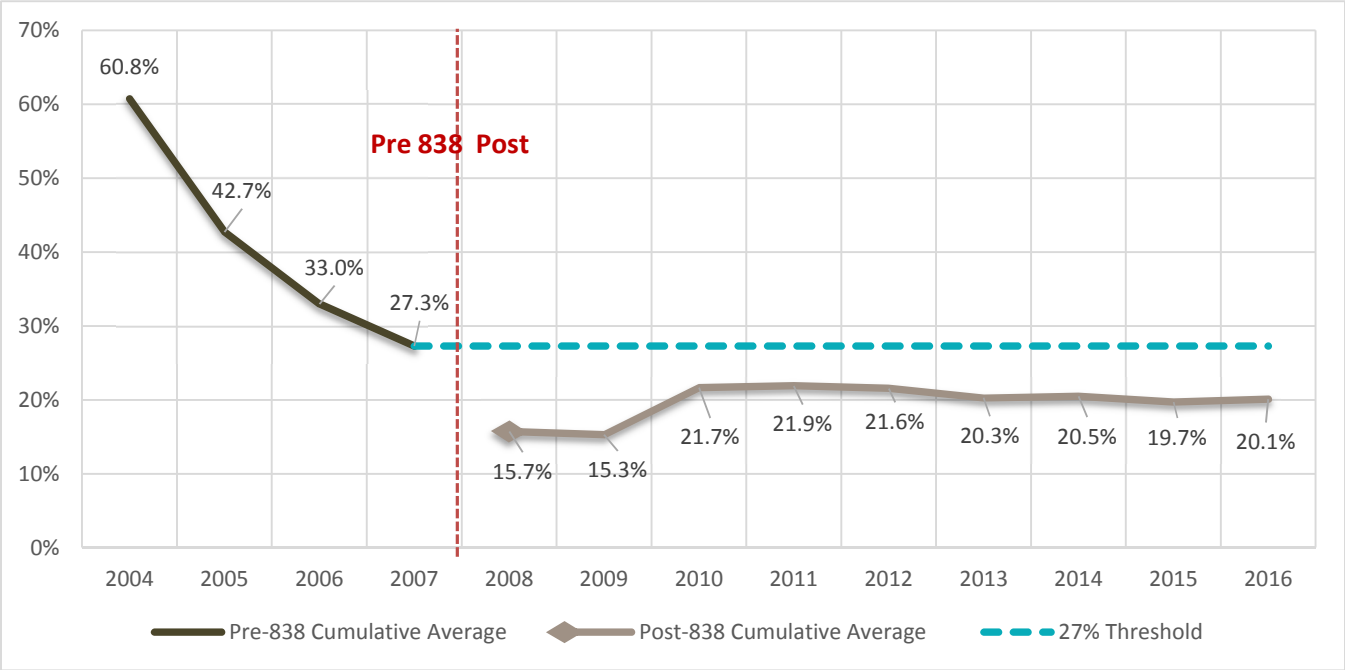


Table 4 below shows Pacific Power spending on >1aMW customers by program by year beginning in 2004. Programs include Production Efficiency, Existing Buildings, and New Building Efficiency projects.

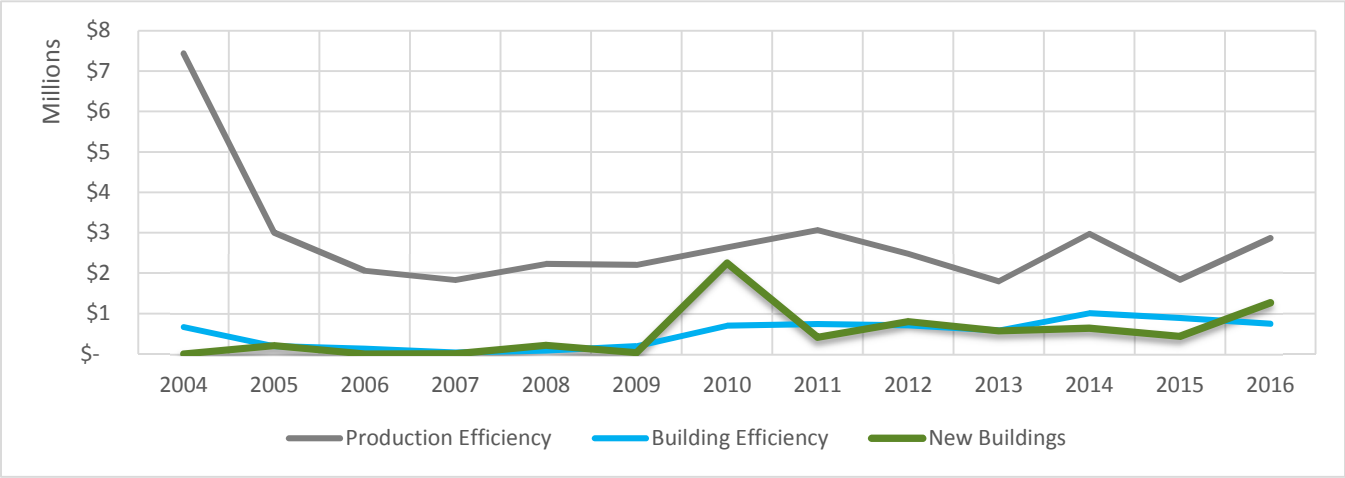
Table 4: Summary of incentive spending & savings by program by year on >1aMW customers 2004-2016 pre & post-838

Pacific Power	Production Efficiency		Existing Buildings		New Buildings		Total	
	$	kWh	$	kWh	$	kWh	$	kWh
Pre-838 Results								
2004	$7,437,150	59,431,460	$672,694	4,655,061	$0	0	$8,109,843	64,086,521
2005	$3,001,897	32,462,637	$191,317	1,471,116	$208,114	2,778,147	$3,401,328	36,711,900
2006	$2,064,894	12,915,875	$129,162	1,954,899	$0	76,862	$2,194,056	14,947,636
2007	$1,829,793	26,303,769	$37,848	1,007,273	$0	0	$1,867,641	27,311,042
Post-838 Results								
2008	$2,228,208	26,993,981	$81,581	558,736	$217,375	1,391,894	$2,527,165	28,944,611
2009	$2,205,999	19,304,368	$196,508	1,172,455	$32,553	138,596	$2,435,060	20,615,419
2010	$2,637,471	43,403,777	$701,914	3,988,196	$2,256,356	25,973,898	$5,595,740	73,365,871
2011	$3,068,225	36,323,836	$739,033	4,439,079	$416,424	2,312,350	$4,223,682	43,075,265
2012	$2,484,773	33,870,298	$704,960	2,905,115	$804,219	23,326,705	$3,993,951	60,102,118
2013	$1,803,408	21,747,738	$579,008	2,628,407	$571,188	43,770,837	$2,953,604	68,146,982
2014	$2,974,893	33,411,070	$1,009,363	10,392,722	$634,054	5,207,595	$4,618,310	49,011,387
2015	$1,839,594	22,287,566	$889,313	3,725,733	$439,167	11,579,220	$3,168,073	37,592,519
2016	$2,870,429	17,865,468	$748,341	3,232,974	$1,273,671	6,681,029	$4,892,441	27,779,471

Chart 2 below shows spending by program by year in graphical form. Each program category demonstrates unique year to year incentive spending patterns.

- Production Efficiency program spending increased by over $1 million from 2015 levels
- New Buildings program spending increased over $800,000 from 2015
- Existing Buildings program spending saw a slight decrease in 2016

Chart 2: Pacific Power >1aMW incentives by program 2004-2016, pre & post-838



METHODOLOGY

To calculate the incentive spending and percentages, a list of Pacific Power >1aMW customers was compared to Energy Trust incentive program data, which includes incentives paid to all commercial and industrial Pacific Power customers. Due to differences in the way that each data set is coded, address was the primary identifying characteristic to match >1aMW customers with incentive recipients.

There were several challenges to using address as the primary identifying characteristic. These challenges included:

- Some sites include multiple addresses
- A few addresses have multiple sites
- Some addresses have multiple customer names (typically, multiple divisions or business lines at one address)
- Multiple addresses exist for the same physical location (ie, one data set uses an address on a particular street, and the other uses an address on the cross street or a parallel street)
- Discrepancies in spelling or entry of addresses between data sets
- Generic locations are listed on the Pacific Power >1aMW customer list instead of addresses; for example, "Warehouse" instead of "123 Main Street"
- For large industrial sites, the >1aMW customer list may contain an address for an adjacent office building and does not include every building address within the site

CLEAResult used newer software in addition to past methods to match project addresses to 1aMW sites:

- Both site and project addresses were normalized using Alteryx address normalization functionality
- Direct matches where street addresses matched exactly were considered matches
- Matching of 4-digit zip code extensions (usually indicate the same block)
- Alteryx geo-spatial tools were used to determine closest adjacent projects to 1aMW sites by distance
- Sites with the closest projects in proximity and no direct address match were given the first priority for analysis and review
- Projects with highest kWh savings were given higher priority and additional scrutiny
- Projects and site addresses that matched with different company names were researched and included if proof existed that both were of the same company (often due to company mergers or using corporate names)

ASSUMPTIONS

The primary premise of this analysis is the site definition. The OR SB 1149 definition of a site is: "'Site' means a single contiguous area of land containing buildings or other structures that are separated by not more than 1,000 feet, or buildings and related structures that are interconnected by facilities owned by a single retail electricity consumer and that are served through a single electric meter." Pacific Power uses two different methodologies for self-direct and non-self-direct customers:

- **Self-direct:** All meters at a site are included based on the 1149 definition of a site
- **Non-self-direct:** Usage is analyzed at the meter level with no aggregation at any higher level

The site definition used to identify incentives paid to >1aMW user sites cannot be strictly applied to individual meters at large sites because neither CLEAResult nor Energy Trust has granular level data on the meters at a given site. Therefore, CLEAResult assumes that >1 aMW user sites with generic addresses, such as "South of A Street," or multiple close addresses, match Energy Trust incentive program data when the address is a close match. These instances occur most frequently for the three site types outlined below with a set of assumptions are used to overcome uncertainty in each case.

There are three main business types that compose the majority of the >1 aMW list: large industrial, hospitals, and college campuses. Each of these business types are typically physically constructed in a campus-like manner with many buildings clustered together that are owned by a single entity. Assumptions must be made when selecting one of these businesses as a match due to subtle differences between the way the >1 aMW user list is constructed and the way the Energy Trust incentive program data reports the location of a project:

Large Industrial

- The >1 aMW user list typically reports a single address for the site
  - The reported address is typically adjacent to the actual industrial site
  - This address may be a central office that handles billing for all structures
- The Energy Trust incentive project list reports each individual building address within a site
  - The addresses reported on this list don't always align with the >1 aMW user list address
- An assumption is made that all addresses on the Energy Trust incentive project list are part of a single site if the >1 aMW user list contains an address that is adjacent or within close proximity to all other addresses
  - If a single office reports for several different industrial sites these sites must be relatively close to be considered a match

Hospitals

- The >1 aMW user list handles hospital sites by reporting some sites with a single address and other sites with multiple addresses within a campus
  - Single address entries are typically within the hospital campus but not part of the main structures
    - This address may be a central office that handles billing, similar to large industrial
  - Sites with multiple addresses often times do not include every potential address within the site
- The Energy Trust incentive project list reports each individual building address within a site
  - A single health care company often times owns several different sites within a city where each site is relatively close together
  - Each hospital campus is clearly finite and separate from any other site regardless of whether the proximity to other sites is near or far
- An assumption is made for single address entries that all addresses on the Energy Trust incentive project list are part of a single site if they are within the finite campus where the >1 aMW user address is located
- An assumption is made for multiple address entries that all addresses within the associated campus are part of a single site even if the >1 aMW user list does not provide a complete list of addresses for the site

College Campuses

- The >1 aMW user list always gives multiple addresses for a single site
  - Every potential address within a single college campus is not given
- The Energy Trust incentive project list reports each individual building address within a site
- An assumption is made that all addresses on the Energy Trust incentive project list for a college campus are part of a single site even if the >1 aMW user list does not provide every address