

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: July 22, 2014

REGULAR X CONSENT _____ EFFECTIVE DATE _____ N/A _____

DATE: July 14, 2014

TO: Public Utility Commission

FROM: Juliet Johnson 

THROUGH: Jason Eisdorfer, Maury Galbraith, and Aster Adams 

SUBJECT: ENERGY TRUST OF OREGON: (Docket No. UM 1696) Cost Effectiveness Exceptions Requests for Electric Measures.

STAFF RECOMMENDATION:

Commission approve Energy Trust of Oregon (Energy Trust or ETO)'s request for exceptions to the cost effectiveness guidelines for certain specified electric measures but do not approve ETO's request for other specified electric measures as explained in more detail below.

DISCUSSION:

Issue Summary

In late December 2013, Energy Trust of Oregon (Energy Trust or ETO) updated the electric avoided cost assumptions used to evaluate the cost effectiveness of energy efficiency measures and programs. New avoided costs are lower by varying amounts based on the measure savings shapes and lifetimes.¹

In February 2014, Energy Trust completed a review of the impacts to cost effectiveness of current electric measures across all the portfolio of programs. Measures that are no longer passing the cost effectiveness test with new avoided costs made up 5.6 percent of 2013 savings. Another factor that is impacting future savings assumptions and cost effectiveness is a new Oregon commercial building code that became effective in July 2014.

¹ For example, avoided costs for heat pumps with an 18 year measure life declined just five percent while the avoided costs for commercial lighting with a 15 year measures life declined 20 percent.

In its petition filed on May 22, 2014, Energy Trust requested the Commission grant it exceptions to the cost effectiveness guidelines for specified electric measures that ETO asserts qualify under the cost effectiveness exceptions listed in Order No. 94-590, issued in Docket No. UM 551 (UM 551) and described in more detail below. For selected other measures, Energy Trust requests Commission approval of temporary cost effectiveness exceptions through 2015 while additional analysis is performed. Below is a list of the measures for which ETO seeks exceptions:

1. Measures that are newly non-cost effective based on recently updated electric avoided costs:
 - Duct insulation for electrically heated homes
 - Freezer recycling
 - Zonal electric advanced builder option package (BOP) for new homes
 - Light emitting diode (LED) A-Lamp
 - Ozone laundry in motels
 - Multifamily insulation
 - Select sizes of new commercial HVAC equipment

2. Measures that continue to be non-cost effective but meet one or more of the UM 551 exception criteria:
 - The following *Market Solutions* measures:
 - Radiant heating and cooling in offices
 - Air barriers in offices
 - Fan static pressure reduction, offices and retail
 - Phantom plug load reduction in offices
 - Nest thermostat pilot
 - Solar water heating
 - 1 HP motor for existing commercial applications
 - Commercial vent hood with variable frequency drives of less than two horsepower (VFD<2HP)
 - The following irrigation measures
 - Wheel line leveler
 - Drain replacement
 - Drop tube or hose extension
 - Impact sprinkler
 - Rotating sprinkler
 - 4', 1, 2 and 3 Lamp T8s within particular instances

3. Measures for which Energy Trust is seeking a temporary extension through 2015, while Energy Trust redesigns each so that they will be cost effective and not need exceptions:

- Ductless heat pumps (single family residential, and multifamily)
- Rim joist insulation
- CEE Tier II refrigerator
- Server Virtualization
- Convection ovens
- The following *Market Solutions* bundles and elective measures:
 - *Market Solutions* “good” bundle for the retail sector with electric heating
 - *Market Solutions* schools package upgrade from good to better
 - Multifamily package from good to better
 - *Market Solutions* schools, bi-level lighting; Offices 25 percent light power density (LPD)

Energy Trust proposes to discontinue non cost effective *custom* industrial and commercial that are site or end use specific. Energy Trust reports that with updated electric avoided costs about 5-7% of custom savings from 2013 for these programs would not be cost effective. Going forward Energy Trust proposes to not incent non cost effective customer industrial and commercial measures.

Order No. 94-590’s Measure Exception Criteria

Energy Trust follows Oregon Public Utility Commission (PUC) guidelines for cost effectiveness established primarily in Order No. 94-590. As such, Energy Trust has been directed to only offer incentives to efficiency projects which pass both the utility and total resource cost (TRC) effectiveness tests.² A measure which does not pass the tests may be included in the programs if it meets one or more of the following criteria set forth in Guideline 13 on pages 18-19 of Order No. 94-590.

- A. The measure produces significant non-quantifiable non energy benefits. In this case, the incentive payment should be set at no greater than the cost effective limit (defined as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g. two years of bill savings
- B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure
- C. The measure is included for consistency with other DSM programs in the region
- D. Inclusion of the measure helps to increase participation in a cost effective program

² Guideline 12 set forth in Order No. 94-590 discusses use of the utility and total resource cost effectiveness tests. See Order No. 94-590 at 14-18.

- E. The package of measures cannot be changed frequently and the measure will be cost effective during the period the program is offered
- F. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers
- G. The measure is required by law or is consistent with Commission policy and/or direction

Analysis and Recommendations

Appendices A, B, and C show the savings and benefit cost (B/C) ratios for each measure for which exceptions are being requested. The appendices also list which UM 551 exception criteria Energy Trust believes applies to each measure. For each measure Energy Trust is requesting a cost effectiveness exception, the case has been made as to which UM 551 exception applies and why. Below is a summary of each request along with Staff's recommendation.

ETO Request for Exceptions:

- Duct insulation for electrically heated homes – The TRC B/C ratio for this item is 0.92 and the utility B/C ratio is 5.13. Energy Trust is proposing an exception based on the fact that in addition to energy, the customer benefits in other ways from this measure (*exception A*) and the measures helps to encourage comprehensive weatherization installations (*exception D*). Staff recommends the Commission delay making a decision on this item until the resolution of Docket No. UM 1622 (UM 1622) that deals with gas energy efficiency exceptions. The Commission is scheduled to consider the UM 1622 gas energy efficiency exceptions requested by ETO at its September 30, 2014 public meeting. Insulation measures for gas heated homes will be addressed in that docket and it is Staff's opinion that electric and gas insulation measures should be handled in a similar way. In the meantime, Staff recommends the Commission allow this measure to continue.
- Freezer recycling – The TRC B/C for this measures is 0.95 and the utility B/C ratio is 1.00. The refrigerator recycling program continues to be cost effective. Energy Trust proposes to continue this measure under exception D, which states that inclusion of freezers helps to increase participation in the overall refrigerator/freezer recycling program, which is cost effective. Staff recommends the Commission approve this exception, because of exception D and because the TRC B/C is so close to 1.

- Zonal electric advanced builder option package (BOP) for new homes – The TRC B/C ratio for this measure is 0.80 and the utility B/C ratio is 2.10. This item is one of three electrically heated home Energy Star packages. The other two are cost effective. From a time and management perspective it would be challenging to offer incentive for only two of the three packages. It would also be confusing to developers and could limit participation. Energy Trust proposes to continue offering this measure with the exception that it is included for consistency with other DSM programs (exception C) and inclusion helps to increase participation by developers in a cost effective program (exception D). Staff recommends the Commission approve this exception.
- LED A-Lamp – This measure was just developed for use in 2014. Energy Trust has limited data on cost to date and the impact on expected savings forecast is difficult to estimate. Energy Trust expects the volume to grow rapidly which is expected to drive down cost. Energy Trust believes that by supporting the highest-efficacy LED products, they will help drive the market away from lesser-performing LED products. The TRC B/C for this measure is 0.90 and the utility B/C is 2.06. Energy Trust proposes an exception based on criteria B, which is that inclusion of the measure will increase market acceptance, leading to lower costs and it will be cost effective within two years. Staff supports this exception.
- Ozone laundry in motels – The TRC B/C ratio for this measure is 0.92 and the utility test B/C is 1.86. The measure remains cost effective for motels with electric water heat and for both fuels in other facility types with larger laundry loads, such as hotels, nursing homes, and industrial laundries. This is a newer and largely unknown technology with promising potential but very low uptake so far. Energy Trust proposes to continue this measure under exception criteria D, inclusion of the measure will increase the participation in the program. Staff supports this exception and also notes that exception B (inclusion may increase market acceptance and lead to reduced cost) might also be applicable for this measure.
- Multifamily insulation – Ceiling and floor insulation for electrically heated multifamily units is no longer cost effective with TRC B/C ratios of 0.53 and 0.46. The utility B/C ratios are 1.8 and 2.5 for ceiling and floor insulation, respectively. Energy Trust is asking for an exception under exception A – the measure produces significant non-quantifiable non energy benefits, and exception D – inclusion of this measure will increase participation in the program. Staff recommends the Commission also delay making decisions on these items until the resolution of UM 1622. In the meantime, Staff recommends the Commission allow this measure to continue.

- Select sizes of new commercial HVAC equipment – The HVAC equipment being addressed in this item are: 5 ton air source heat pump, 2 ton ground source heat pump, 2 ton water source heat pump, 12.5 ton AC unit. Each of these HVAC equipment types at these sizes are no longer cost effective, with TRC B/C ratios of 0.65, 0.79, 0.79, and 0.78 and utility test B/C ratios of 2.91, 2.87, 2.87, and 2.50. In 2013, there were no projects that used these measures but there could be future opportunities for which these sizes would be appropriate. Because each size is *one specification* within a range of sizes *that are cost effective*, Energy Trust proposes that these measures continue to be included for consistency in the market with other cost effective equipment sizes, under UM 551 condition D. Staff is sympathetic to this argument and because the utility test B/C ratios are well above one, Staff is satisfied that ratepayers would not be harmed by keeping this measure. Staff recommends the Commission approve this exception.
- The following *Market Solutions* measures: a) Radiant heating and cooling in offices, b) Air barriers in offices, c) Fan static pressure reduction, offices and retail, and d) Phantom plug load reduction in offices – The TRC B/C ratios for these measures are 0.94, 0.80, 0.87, and 0.80 and the utility test B/C ratios are 2.34, 4.46, 4.19, and 2.14. Energy Trust's New Buildings program designed and developed a 'market specific incentive offering' in 2013 that provides more savings opportunities for small commercial new construction market. For each building type (retail, office, restaurant, grocery, schools and multifamily) measures are bundled into "good, better and best" packages. This is a very innovative model that has been quite successful in getting small business owners to act. The Commission already granted exceptions for the measures listed above, as part of UM 1622, because these packages can be used for electric and gas instances. Staff recommends that the same rationale apply in this request. Staff recommends the Commission grant exceptions for these measures based on the reasons summarized in Staff's memo dated September 28, 2012, (pages 4-6) and summarized in Appendix C.
- Nest thermostat pilot – This measure is not cost effective, however, there is uncertainty around the savings. The projected TRC B/C ratio is 0.80 and the utility test B/C ratio is 1.75. Through correspondence with Energy Trust, Staff approved this pilot on September 26, 2013 as meeting UM 551 criteria F – the measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers. Staff recommends the Commission support this exception.
- Solar water heating – The TRC B/C ratio for this measure is 0.41 and the UCT B/C ratio is 2.32. Energy Trust is seeking an exception to this measure under

exception criteria A – the measure produces significant non-quantifiable non energy benefits based on evaluation results that suggest participants recognize significant non-energy benefits when making their purchase decisions, principally environmental benefit through fully offsetting direct use of natural gas. Given its very low TRC B/C ratio, Staff does not support this exception request and does not recommend the Commission support it either. Alternatively, because solar water heating will also be addressed in UM 1622, the Commission could delay on making a decision about this measure until UM 1622 is resolved.

- 1 HP motor for existing commercial applications – This is a seldom used measure that has not been cost effective (TRC B/C = 0.32, UCT B/C = 2.08). Energy Trust suggests it is reasonable to keep this incentive because it is one size in a range of sizes that is reasonable for the market place to keep of market demand and the others are cost effective. Exception criteria D is being proposed, which is inclusion of the measure helps to increase participation in a cost effective program. Given its very low TRC B/C ratio, Staff recommends the Commission not support this exception request.
- Commercial vent hood with VFD<2HP – The TRC B/C ratio of this measure is 0.83 and the utility test B/C ratio is 1.80. Although not cost effective, Energy Trust says that commercial vent hoods with VFDs under 2HP in size continue to not be cost effective but are important to offer within a range of sizes (up to 5HP). Energy Trust proposes that this measure continue to be included in the new commercial offerings for schools, groceries and restaurants with other cost effective HP sizes across the range of equipment options, consistent with UM 551 exception D. Staff supports this exception request because of the reason given, and also because the TRC B/C ratio is not too far below one (0.83). Staff also notes that these hoods are installed in new commercial buildings, and represent a lost opportunity measure if not installed initially. Gas prices will likely go up again in the future and Energy Trust will not have another opportunity at that time to go back and install these hoods, once they do again become cost effective.
- The following irrigation measures: wheel line leveler, drain replacement, drop tube or hose extension, impact sprinkler, rotating sprinkler. The TRC B/C ratios for these items are: 0.15, 0.60, 0.70, 0.44, and 0.45. The utility test B/C ratios are: 0.67, 8.21, 1.51, 1.45, and 2.07. These measures have been offered in common with Bonneville Power Authority (BPA) and Oregon Department of Energy's Small Premium Projects (SPP) programs for several years. Energy Trust proposes to continue to offer these measures based on exception criteria C (the measure is included for consistency with other DSM programs in the region) and criteria D (helps increase participation in a cost effective program). Staff

supports the Energy Trust continuing to offer all of these measures except wheel line levelers. Wheel line levelers have a TRC B/C of 0.15 and a UCT B/C ratio of 0.67. For all other measures, Staff recommends the Commissioners approve exceptions for all other measures for the reasons given and particularly to be consistent with BPA and ODOE programs.

- 4', 1, 2 and 3 Lamp T8s within particular instances – Appendix C shows the particular lamp-ballast combinations that do not pass the TRC at the new avoided cost and the TRC and utility test ratios for each measure. In each case, the lighting in question passes the utility test. Energy Trust is proposing to continue to offer these measures because providing incentives for only some fixtures and only with prescribed ballast factors would cause confusion in the market and reduce penetration. The program total savings for T8 lighting are cost effective. Energy Trust is recommending exceptions under criteria C and D. Staff supports these exceptions.

For the following measures Energy Trust is seeking a temporary exception through 2015, while Energy Trust redesigns them so that they will be cost effective and not need exceptions.

Temporary exception requests through 2015:

- Ductless heat pumps (DHPs) for single family residential, multifamily, and commercial – The TRC B/C ratios for these heat pumps are between 0.66 and 0.76 with utility test B/C ratios of around 3.8. Although there has been and will continue to be volume growth, costs for the DHP installations have not declined as much as expected, likely due to the number of indoor heat exchangers per outside compressor exceeding one, keeping the projects costs up. Energy Trust is proposing to continue to offer DHPs in 2014 while working to educate the market. ETO is also proposing to rework its program design for 2015 to better target the project conditions that result in cost effective savings. Staff supports this exception request through 2015.
- Rim joist insulation – The TRC B/C ratio of rim joist insulation is 0.60 and the utility test B/C ratio is 7.6. Energy Trust proposes to rework this measure for 2015 so that it will be included as a requirement with wall insulation where accessible and it would no longer be offered as a discrete measure. Energy Trust proposes keeping the measure for continuity until the changes are made in 2015. Staff has recommended that a determination on non-cost effective insulation measures be postponed until after resolution of UM 1622. Staff recommends that this item also be taken up at that time. Until that time, Staff recommends Energy Trust continue with the measure.

- CEE Tier III refrigerator – The TRC B/C ratio of this item is 0.85 and the utility test B/C ratio is 1.00. Energy Trust is proposing to continue to offer this measure through 2015 as they transition into a new design for 2015 based on recent evaluation results. Staff supports this exception through 2015.
- Server Virtualization – The TRC B/C ratio for this item is 0.5 and the utility B/C ratio is 1.3. Energy Trust was surprised to see the cost for this item increase significantly in 2012 and 2013 over what it had been previously. The cost is about five times more than they expected. ETO proposes to continue the measure through 2015 while they investigate whether the sudden cost increase was a result of market changes or if there was a technical or data entry error and, if so, to correct it. If there is a market reason for the cost increase, Energy Trust will reevaluate the measure, make any program adjustments that might address the cost, or if necessary remove the measure. Staff supports Energy Trust going through this process for server virtualization.
- Convection Ovens – The TRC B/C ratio for this item is 0.84 and the utility test B/C ratio is 2.6. Energy Trust has reason to believe that market data will reveal this measure is less costly than they assume. They propose to continue offering commercial convection ovens through 2014 and updating the measures as needed for 2015. Staff supports this request.
- The following *Market Solutions* bundles and elective measures:
 - *Market Solutions* good bundle for the retail sector with electric heating
 - *Market Solutions* schools package upgrade from good to better
 - Multifamily package from good to better
 - *Market Solutions* schools, bi-level lighting; Offices 25 percent LPD

The cost effectiveness of Energy Trust's *Market Solutions* bundles has been impacted by the updated avoided costs. The cost effectiveness will also be complicated by the 2014 commercial building code updates. Energy Trust proposes to keep all these measures in the current packages for now since the packages are slated to be updated next year for the code change and updating the packages twice in a short time span is labor intensive and potentially disruptive to the market. Staff supports this request.

Measures that are no longer cost effective and will be removed

Energy Trust proposes to discontinue non cost effective *custom* industrial and commercial that are site or end use specific. Energy Trust reports that with updated electric avoided costs about 5-7% of custom savings from 2013 for these programs

would not be cost effective. Going forward Energy Trust proposes to not incent non cost effective custom industrial and commercial measures. Staff supports this action by Energy Trust.

Party comments

PacifiCorp and Portland General Electric (PGE) provided comments on this submittal. Both parties expressed appreciation for Energy Trust's efforts in compiling these exception requests. PacifiCorp noted that "Clear, well-documented exceptions with known time bounds help the Energy Trust and its trade allies effectively deliver a broad energy efficiency portfolio when avoided costs are lower."³

PGE expressed concerns about UM 551 Criteria A, which says measures with "significant non-energy benefits" that do not pass cost effectiveness tests may continue to be offered. PGE notes that "non-energy benefits have increasingly become a justification for organizations featuring Energy Trust incentives such as Clean Energy Works and MPower."⁴ Both parties agree that Energy Trust should identify and attempt to quantify non-energy benefits. PacifiCorp says Energy Trust should keep a running tab of the non-energy benefits along with an assessment of the rigor surrounding their quantification. PGE says "Enumerating the value of these benefits will contribute to a better understanding of their role in achieving energy savings, and the need to continue programs based on these benefits."⁵

PGE and PacifiCorp note that on page 3 of its filing Energy Trust has taken an important first step in itemizing some non-energy benefits for weatherization, such as thermal comfort, noise reduction, home durability, health benefits and property value increases. PacifiCorp encourages the ETO to build on this work and consider a) if there are additional categories of benefits that are applicable and b) how such benefits might be quantified. Like PGE, PacifiCorp suggests, this would help all stakeholders understand how much of the portfolio depends on inclusion of these types of benefits.

PacifiCorp is recommending rigor and transparency where Energy Trust works with customers to quantify site-specific non-energy benefits. PacifiCorp recommends Energy Trust develop and share a list of categories in which benefits fall and current information on valuation methodologies that is available.

³ PacifiCorp comment in UM 1696 dated June 18, 2014.

⁴ PGE comments in Um 1696 dated June 30, 2014.

⁵ Ibid.

PacifiCorp also supports Energy Trust better attributing project costs to energy savings features, where they may be part of a larger project.

Lastly, PacifiCorp states that "customers and trade allies expect careful management (and possible reductions) of any administrative costs associated with these measures to achieve measurable improvements in benefit/cost ratio results."⁶

Staff appreciates PGE's and PacifiCorp's comments in this docket. Staff is not using non-energy benefits as the basis for any of the exceptions being recommended in this docket. Non-energy benefits will likely be discussed further in Docket No. UM 1622 and Staff recommends PGE and PacifiCorp participate in those discussions. Staff agrees with PacifiCorp that Energy Trust should continue to focus on careful management of administrative costs.

PROPOSED COMMISSION MOTION:

Approve ETO's request for exceptions for the following measures:

- Freezer recycling
- Zonal electric advanced builder option package (BOP) for new homes
- LED A-Lamp
- Ozone laundry in Motels
- Select sizes of new commercial HVAC equipment
- The following *Market Solutions* measures:
 - Radiant heating and cooling in offices
 - Air barriers in offices
 - Fan static pressure reduction, offices and retail
 - Phantom plug load reduction in offices
- Nest thermostat pilot
- Commercial vent hood with VFD<2HP
- The following irrigation measures
 - Drain replacement
 - Drop tube or hose extension
 - Impact sprinkler
 - Rotating sprinkler
- 4' 1, 2 and 3 Lamp T8s within particular instances

Approve ETO's request for exceptions through 2015 for the following measures:

⁶ PacifiCorp comment in UM 1696 dated June 18, 2014

- Ductless heat pumps (single family residential, multifamily, and commercial)
- Rim joist insulation
- CEE Tier III refrigerator
- Server Virtualization
- Convection Ovens
- The following *Market Solutions* bundles and elective measures:
 - *Market Solutions* good bundle for the retail sector with electric heating
 - *Market Solutions* schools package upgrade from good to better
 - Multifamily package from good to better
 - *Market Solutions* schools, bi-level lighting; Offices 25 percent LPD

Do not approve ETO's request for exceptions for the following measures:

- Solar water heating
- 1 hp motors for commercial installations
- Wheel line levelers for irrigation

Finally, require Energy Trust to file a new request for exceptions for the following non-cost effective insulation measures following resolution of UM 1622 and in the meantime, allow the measures to continue:

- Duct insulation for electrically heated homes
- Multifamily attic insulation
- Multifamily floor insulation

Appendix A: Measures with exception reasoning

| Measure Name | Program | 2013 Savings (kWh) | % 2013 electric program savings | 20 yr achievable potential | UCT BCR | TRC BCR | Exception Criteria |
|--|---------------------------|---------------------|---------------------------------|----------------------------|---------|---------|--------------------|
| Duct Insulation | Existing Homes | 32,877 | 0.09% | small | 5.13 | 0.92 | A,D |
| Freezer Recycling | Products | 2,495,942 | 4.1% | medium | 1.00 | 0.95 | D |
| Zonal Electric Advanced Builder Option Package (BOP) | New Homes | 3,426 | 0.01% | small | 2.10 | 0.80 | C, D |
| Commercial LED A-Lamp (310-740 lumens) | Existing Buildings | new measure in 2014 | | large | 2.06 | 0.90 | B |
| Ozone laundry, motel, gas water heat | New & Existing Commercial | - | - | small | 1.86 | 0.92 | D |
| Multifamily attic insulation | Existing multifamily | 31,956 | 0.09% | small | 1.80 | 0.53 | A |
| Multifamily floor insulation | Existing multifamily | 23,316 | 0.06% | small | 2.50 | 0.46 | A |
| Heat Pump, AAHP, 5 Ton | New Commercial | - | - | small | 2.91 | 0.65 | D |
| Heat Pump, Ground Source, 2 ton | New Commercial | - | - | small | 2.87 | 0.79 | D |
| Heat Pump, Water Source, 2 Ton | New Commercial | - | - | small | 2.87 | 0.79 | D |
| AC Unit 12.5 ton 2010 Code | New Commercial | - | - | small | 2.50 | 0.78 | D |

Appendix B: Measures to be reworked for 2015

| Measure Name | Program | 2013 Savings (kWh) | % 2013 electric program savings | 20 yr achievable potential | UCT BCR | TRC BCR | Exception Criteria |
|--|------------------------------|----------------------------|---------------------------------|----------------------------|---------|---------|---------------------------|
| Ductless heat pumps - residential Zone 1 | Existing Homes | 4,374,650 | 12.1% | large | 3.79 | 0.75 | C, 2014 - rework for 2015 |
| Ductless heat pumps - residential Zone 2 | Existing Homes | 634,296 | 1.8% | large | 3.83 | 0.76 | C, 2014 - rework for 2015 |
| Ductless heat pumps - multifamily | Existing Multifamily | 30,852 | 0.1% | medium | 3.80 | 0.66 | C, 2014 - rework for 2015 |
| Single family rim joist insulation | Existing Homes | 10,488 | 0.03% | small | 7.60 | 0.60 | C, 2014 - rework for 2015 |
| CEE Tier III refrigerator - Products | Products, Existing & New MF, | 235,678 | 0.39% | medium | 1.00 | 0.85 | C, 2014 - rework for 2015 |
| Server Virtualization | Existing Buildings | 356,602 | 0.44% | medium | 1.30 | 0.50 | C, 2014 - rework for 2015 |
| Estar convection ovens | New & Existing Commercial | 45,103 | 0.06% | small | 2.60 | 0.84 | C, 2014 - rework for 2015 |
| Market Solutions - Package | | | | | | | |
| Retail Market Solutions Good (electric) | New Commercial | no savings in 2013, future | | growth | 3.20 | 0.94 | E, 2014 - rework for 2015 |
| Market Solutions - Increments of packages | | | | | | | |
| School Market Solution Better- Good | New Commercial | no savings in 2013, future | | growth | 1.40 | 0.86 | E, 2014 - rework for 2015 |
| Multi-family Market Solutions Better-Good (electric) | New Commercial | no savings in 2013, future | | growth | 2.19 | 0.87 | E, 2014 - rework for 2015 |
| Market Solutions - electives | | | | | | | |
| School Market Solution bi-level lighting elective | New Commercial | no savings in 2013, future | | growth | 3.86 | 0.92 | E, 2014 - rework for 2015 |
| Offices Market Solutions 25% better than code lighting | New Commercial | no savings in 2013, future | | growth | 3.40 | 0.61 | E, 2014 - rework for 2015 |

| Appendix C: Measures to continue exceptions | | | | | | | |
|---|---|----------------------------|---------------------------------|----------------------------|---------|---------|--------------------|
| Measure Name | Program | 2013 Savings (kWh) | % 2013 electric program savings | 20 yr achievable potential | UCT BCR | TRC BCR | Exception Criteria |
| Market Solutions - Measures | | | | | | | |
| Radiant heating and cooling in offices | New Commercial | no savings in 2013, future | | growth | 2.34 | 0.94 | A,B,E |
| Air Barriers in offices | New Commercial | no savings in 2013, future | | growth | 4.46 | 0.80 | D,E |
| Fan static pressure reduction, office and retail | New Commercial | no savings in 2013, future | | growth | 4.19 | 0.87 | B,E |
| Phantom plug load, offices | New Commercial | no savings in 2013, future | | growth | 2.14 | 0.89 | B |
| NEST Pilot | Existing Homes | no savings in 2013, future | | growth | 1.75 | 0.80 | F |
| Solar water heating - residential | Existing Homes | 62,529 | 0.17% | small | 2.32 | 0.41 | A |
| 1hp motor | Existing Commercial | 0 | 0% | small | 2.08 | 0.32 | D |
| Commercial vent hoods with VFD, <2HP | New & Existing Commercial | 13,310 | 0.01% | small | 1.80 | 0.83 | D |
| Irrigation prescriptive measure group | | | | | | | |
| Irrigation: Wheel Line Leveler | Production Efficiency | 528 | 0.00% | small | 0.67 | 0.15 | C,D |
| Irrigation: Drain Replacement | | 41,914 | 0.03% | small | 8.21 | 0.60 | C,D |
| Irrigation: Drop Tube or Hose Extension | | 6,713 | 0.00% | small | 1.51 | 0.70 | C,D |
| Irrigation: New or Rebuilt Brass Impact Sprinkler | | 119,679 | 0.09% | small | 1.45 | 0.44 | C,D |
| Irrigation: Rotating Sprinkler for low-pressure | | 750,543 | 0.54% | small | 2.07 | 0.45 | C,D |
| 4', 1 lamp T8 (high performance, 0.85<BF<1.0) | Existing Commercial & Production Efficiency | 62,498 | 0.1% | medium | >1 | 0.85 | C,D |
| 4', 3 lamp T8 (high performance, 0.85<BF<1.0) | | 453,826 | 0.5% | medium | >1 | 0.91 | C,D |
| 4', 1 lamp T8 (25 watt high performance, BF<0.85) | | 12,289 | 0.0% | medium | >1 | 0.47 | C,D |
| 4', 1 lamp T8 (28 watt high performance, 0.85<BF<1.0) | | 31,181 | 0.0% | medium | >1 | 0.66 | C,D |
| 4', 1 lamp T8 (28 watt high performance, BF<0.85) | | 132,386 | 0.2% | medium | >1 | 0.61 | C,D |
| 4', 2 lamp T8 (25 watt high performance, 0.85<BF<1.0) | | 39,857 | 0.0% | medium | >1 | 0.87 | C,D |
| 4', 3 lamp T8 (25 watt high performance, 0.85<BF<1.0) | | 20,977 | 0.0% | medium | >1 | 0.83 | C,D |
| 4', 3 lamp T8 (25 watt high performance, BF<0.85) | | 117,086 | 0.1% | medium | >1 | 0.85 | C,D |
| 4', 3 lamp T8 (28 watt high performance, BF>1.01) | | 291,311 | 0.3% | medium | >1 | 0.88 | C,D |
| 4', 4 lamp T8 (25 watt high performance, 0.85<BF<1.0) | | 1,179 | 0.0% | medium | >1 | 0.49 | C,D |