|  |
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| Appendix 1 |
| Cost Effectiveness  2010 Washington-Demand Side Management Annual Report |
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# Total Portfolio

Date: April 6, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington 2010 DSM Portfolio Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness analysis for the Washington Energy Efficiency Portfolio based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan. Individual program cost effectiveness provided in separate memos.

The portfolio is cost effective cost effective from all perspectives.

Table 1: Common Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Residential Line Loss | 8.867% |
| Commercial Line Loss | 8.729% |
| Industrial Line Loss | 7.543% |
| Residential Energy Rate ($/kWh) | $0.0723 |
| Commercial Energy Rate ($/kWh) | $0.0684 |
| Industrial Energy Rate ($/kWh) | $0.0581 |

Table 2: CFL Adjustment

|  |  |
| --- | --- |
| **Program** | **Value** |
| kWh | (941,195) |
| Incremental Cost | ($30,687) |

Table 3: NEEA

|  |  |
| --- | --- |
| **Program** | **Value** |
| kWh | 4,380,000 |
| Incremental Cost | $963,501 |

Table 4: 2010 Total Portfolio Including NEEA and CFL Adjustment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0496 | $12,177,833 | $33,301,155 | $21,123,323 | 2.735 |
| Total Resource Cost Test (TRC) No Adder | 0.0496 | $12,177,833 | $30,273,778 | $18,095,945 | 2.486 |
| Utility Cost Test (UCT) | 0.0309 | $7,580,583 | $30,273,778 | $22,693,195 | 3.994 |
| Rate Impact Test (RIM) |  | $29,770,938 | $30,273,778 | $502,840 | 1.017 |
| Participant Cost Test (PCT) |  | $4,597,250 | $22,190,355 | $17,593,105 | 4.827 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000098438) |  |

Table 5: 2010 C&I Energy Efficiency Portfolio

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0437 | $7,110,850 | $20,538,171 | $13,427,321 | 2.888 |
| Total Resource Cost Test (TRC) No Adder | 0.0437 | $7,110,850 | $18,671,065 | $11,560,214 | 2.626 |
| Utility Cost Test (UCT) | 0.0239 | $3,886,556 | $18,671,065 | $14,784,509 | 4.804 |
| Rate Impact Test (RIM) |  | $16,392,515 | $18,671,065 | $2,278,550 | 1.139 |
| Participant Cost Test (PCT) |  | $3,224,295 | $12,505,959 | $9,281,664 | 3.879 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000339937) |  |

Table 6: 2010 Residential Energy Efficiency Portfolio   
(including NEEA and CFL Adjustment)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0636 | $5,066,982 | $12,762,984 | $7,696,002 | 2.519 |
| Total Resource Cost Test (TRC) No Adder | 0.0636 | $5,066,982 | $11,602,713 | $6,535,730 | 2.290 |
| Utility Cost Test (UCT) | 0.0464 | $3,694,027 | $11,602,713 | $7,908,686 | 3.141 |
| Rate Impact Test (RIM) |  | $13,378,423 | $11,602,713 | ($1,775,710) | 0.867 |
| Participant Cost Test (PCT) |  | $1,372,955 | $9,684,396 | $8,311,441 | 7.054 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000491792 |  |

The following tables reflect the cost-effectiveness analysis with non-energy benefits.

Table 7: 2010 Total Portfolio Including NEEA, CFL Adjustment, and Non-Energy Benefits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0496 | $12,177,833 | $35,180,416 | $23,002,583 | 2.889 |
| Total Resource Cost Test (TRC) No Adder | 0.0496 | $12,177,833 | $32,153,038 | $19,975,206 | 2.640 |
| Utility Cost Test (UCT) | 0.0309 | $7,580,583 | $30,280,178 | $22,699,595 | 3.994 |
| Rate Impact Test (RIM) |  | $29,770,938 | $30,280,178 | $509,240 | 1.017 |
| Participant Cost Test (PCT) |  | $4,597,250 | $23,888,008 | $19,290,759 | 5.196 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000099691) |  |

Table 8: 2010 C&I Energy Efficiency Portfolio with Non-Energy Benefits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0437 | $7,110,850 | $20,538,171 | $13,427,321 | 2.888 |
| Total Resource Cost Test (TRC) No Adder | 0.0437 | $7,110,850 | $18,671,065 | $11,560,214 | 2.626 |
| Utility Cost Test (UCT) | 0.0239 | $3,886,556 | $18,671,065 | $14,784,509 | 4.804 |
| Rate Impact Test (RIM) |  | $16,392,515 | $18,671,065 | $2,278,550 | 1.139 |
| Participant Cost Test (PCT) |  | $3,224,295 | $12,505,959 | $9,281,664 | 3.879 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000339937) |  |

Table 9: 2010 Residential Energy Efficiency Portfolio with Non-Energy Benefits  
(including NEEA and CFL Adjustment)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | |  | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0636 | $5,066,982 | $14,642,245 | $9,575,263 | 2.890 |
| Total Resource Cost Test (TRC) No Adder | 0.0636 | $5,066,982 | $13,481,974 | $8,414,991 | 2.661 |
| Utility Cost Test (UCT) | 0.0464 | $3,694,027 | $11,609,113 | $7,915,086 | 3.143 |
| Rate Impact Test (RIM) |  | $13,378,423 | $11,609,113 | ($1,769,310) | 0.868 |
| Participant Cost Test (PCT) |  | $1,372,955 | $11,382,049 | $10,009,094 | 8.290 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000490020 |  |

The tables below summarize the non-energy benefits for the Home Energy Savings and Low Income Weatherization programs.

Table 10. Low Income Weatherization Non-Energy Benefits

|  |  |  |
| --- | --- | --- |
| **Non-Energy Benefit** | **Program Impact** | **Perspective Adjusted** |
| Mobility | $14,000 | TRC |
| Arrearage | $6,400 | UCT, RIM, TRC |
| Economic | $161,207 | TRC |
| **Total** | **$181,607** |  |

Table 11. Home Energy Savings (Appliance) Non-Energy Benefits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Non-Energy Benefit** | **Non-Energy Benefits per Measure** | **Total Installs** | **Measure Life** | **Total Present Value Benefits** |
| Clothes Washer – Tier One (1.72 – 1.99 MEF) | $45.74 | 271 | 14 | $105,854 |
| Clothes Washer – Tier Two (2.0+ MEF) | $60.26 | 2,118 | 14 | $1,089,882 |
| Dishwasher | $0.31 | 832 | 9 | $1,626 |
| **Total** |  |  |  | **$1,197,362** |

Table 12. Energy Education Non-Energy Benefits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Non-Energy Benefit** | **Non-Energy Benefits per Measure** | **Total Installs** | **Measure Life** | **Total Present Value Benefits** |
| Energy Education | $24.92 | 4,127 | 6.25 | $500,291 |

# 

# Home Energy Savings

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington Home Energy Savings 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington Home Energy Savings program based on 2010costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(Draftl 3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 35% west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from all perspectives.

Table 1: Home Energy Savings   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Line Loss | 8.867% |
| Residential Energy Rate ($/kWh) | $0.0723 |

Table 2: Home Energy Savings   
Annual Program Costs and Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Program Costs** | **Utility Admin** | **Evaluation** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| Lighting | $87,257 | $41,632 | $0 | $236,527 | $365,416 | $946,488 |
| Appliance | $147,758 | $70,498 | $0 | $274,110 | $492,367 | $685,615 |
| Home Improvement | $60,611 | $28,919 | $0 | $156,129 | $245,659 | $246,402 |
| HVAC | $152,930 | $72,966 | $0 | $117,850 | $343,745 | $405,558 |
| New Construction | $15,012 | $7,163 | $0 | $17,416 | $39,591 | $48,369 |
| Total | $463,568 | $221,177 | $0 | $802,032 | $1,486,777 | $2,332,431 |

Table 3: Home Energy Savings   
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Lighting | 7,655,490 | 100% | 7,655,490 | 100% | 7,655,490 | 6.63 |
| Appliance | 847,980 | 99% | 839,500 | 100% | 839,500 | 14.79 |
| Home Improvement | 347,847 | 90% | 313,062 | 100% | 313,062 | 45.00 |
| HVAC | 877,658 | 99% | 868,882 | 100% | 868,882 | 18.00 |
| New Construction | 86,154 | 99% | 85,292 | 100% | 85,292.07 | 18.50 |
| Total | 9,815,128 |  | 9,762,226 |  | 9,762,226 |  |

Table 4: IRP 35% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0666 | $3,017,177 | $6,802,153 | $3,784,976 | 2.254 |
| Total Resource Cost Test (TRC) No Adder | 0.0666 | $3,017,177 | $6,183,775 | $3,166,598 | 2.050 |
| Utility Cost Test (UCT) | 0.0328 | $1,486,777 | $6,183,775 | $4,696,998 | 4.159 |
| Rate Impact Test (RIM) |  | $6,654,472 | $6,183,775 | ($470,696) | 0.929 |
| Participant Cost Test (PCT) |  | $1,530,400 | $5,167,694 | $3,637,295 | 3.377 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000114812 |  |
| Discounted Participant Payback (years) |  |  |  | 2.41 |  |

Table 5: 2010- Lighting

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-Lighting** | | | | **AC: IRP 35% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $1,075,377 | $4,020,168 | $2,944,791 | | 3.738 |
| Total Resource Cost Test (TRC) No Adder | $1,075,377 | $3,654,698 | $2,579,321 | | 3.399 |
| Utility Cost Test (UCT) | $365,416 | $3,654,698 | $3,289,283 | | 10.001 |
| Rate Impact Test (RIM) | $3,593,753 | $3,654,698 | $60,945 | | 1.017 |
| Participant Cost Test (PCT) | $709,961 | $3,228,338 | $2,518,377 | | 4.547 |
| Discounted Participant Payback (years) |  |  | NA | |  |

Table 6: 2010- Appliance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-Appliance** | | | | **AC: IRP 35% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $903,872 | $949,025 | $45,154 | | 1.050 |
| Total Resource Cost Test (TRC) No Adder | $903,872 | $862,750 | ($41,122) | | 0.955 |
| Utility Cost Test (UCT) | $492,367 | $862,750 | $370,383 | | 1.752 |
| Rate Impact Test (RIM) | $1,155,702 | $862,750 | ($292,952) | | 0.747 |
| Participant Cost Test (PCT) | $411,505 | $663,336 | $251,831 | | 1.612 |
| Discounted Participant Payback (years) |  |  | NA | |  |

Table 7: 2010– Home Improvement

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-Home Improvement** | | | | **AC: IRP 35% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $335,932 | $595,642 | $259,710 | | 1.773 |
| Total Resource Cost Test (TRC) No Adder | $335,932 | $541,493 | $205,561 | | 1.612 |
| Utility Cost Test (UCT) | $245,659 | $541,493 | $295,834 | | 2.204 |
| Rate Impact Test (RIM) | $662,021 | $541,493 | ($120,529) | | 0.818 |
| Participant Cost Test (PCT) | $90,273 | $416,362 | $326,089 | | 4.612 |
| Discounted Participant Payback (years) |  |  | NA | |  |

Table 8: 2010– HVAC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-HVAC** | | | **AC: IRP 35% LF Decrement** | | | |
|  | Costs | Benefits | | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $631,453 | $1,126,712 | | $495,259 | 1.784 |
| Total Resource Cost Test (TRC) No Adder | $631,453 | $1,024,284 | | $392,831 | 1.622 |
| Utility Cost Test (UCT) | $343,745 | $1,024,284 | | $680,539 | 2.980 |
| Rate Impact Test (RIM) | $1,126,560 | $1,024,284 | | ($102,276) | 0.909 |
| Participant Cost Test (PCT) | $287,708 | $782,815 | | $495,107 | 2.721 |
| Discounted Participant Payback (years) |  |  | | - |  |

Table 9: 2010– New Construction

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-New Construction** | | | | **AC: IRP 35% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $70,543 | $110,606 | $40,062 | | 1.568 |
| Total Resource Cost Test (TRC) No Adder | $70,543 | $100,551 | $30,007 | | 1.425 |
| Utility Cost Test (UCT) | $39,591 | $100,551 | $60,959 | | 2.540 |
| Rate Impact Test (RIM) | $116,435 | $100,551 | ($15,884) | | 0.864 |
| Participant Cost Test (PCT) | $30,952 | $76,843 | $45,891 | | 2.483 |
| Discounted Participant Payback (years) |  |  | - | |  |

The results above do not reflect non-energy benefits. Appliances in this program have significant non-energy benefits (water). Those benefits, by measure, are outlined in the table below.

Table 10. Non-Energy Benefits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Non-Energy Benefit** | **Non-Energy Benefits per Measure** | **Total Installs** | **Measure Life** | **Total Present Value Benefits** |
| Clothes Washer – Tier One (1.72 – 1.99 MEF) | $45.74 | 271 | 14 | $105,854 |
| Clothes Washer – Tier Two (2.0+ MEF) | $60.26 | 2,118 | 14 | $1,089,882 |
| Dishwasher | $0.31 | 832 | 9 | $1,626 |
| **Total** |  |  |  | **$1,197,362** |

When these non-energy benefits are incorporated in the cost-effectiveness analysis for appliances, the TRC improves to 2.279, as shown in Table 11.

Table 11: 2010- Appliance with Non-Energy Benefits

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2010-Appliance** | | | | **AC: IRP 35% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $903,872 | $2,146,387 | $1,242,516 | | 2.375 |
| Total Resource Cost Test (TRC) No Adder | $903,872 | $2,060,112 | $1,156,241 | | 2.279 |
| Utility Cost Test (UCT) | $492,367 | $862,750 | $370,383 | | 1.752 |
| Rate Impact Test (RIM) | $1,155,702 | $862,750 | ($292,952) | | 0.747 |
| Participant Cost Test (PCT) | $411,505 | $1,860,698 | $1,449,183 | | 4.522 |
| Discounted Participant Payback (years) |  |  | - | |  |

Similarly, the overall program TRC improves to 2.446 when non-energy benefits are included, as shown in table 12.

Table 12: IRP 35% Load Factor Decrement with Non-Energy Benefits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0666 | $3,017,177 | $7,999,515 | $4,982,338 | 2.651 |
| Total Resource Cost Test (TRC) No Adder | 0.0666 | $3,017,177 | $7,381,138 | $4,363,961 | 2.446 |
| Utility Cost Test (UCT) | 0.0328 | $1,486,777 | $6,183,775 | $4,696,998 | 4.159 |
| Rate Impact Test (RIM) |  | $6,654,472 | $6,183,775 | ($470,696) | 0.929 |
| Participant Cost Test (PCT) |  | $1,530,400 | $6,365,057 | $4,834,657 | 4.159 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000114812 |  |
| Discounted Participant Payback (years) |  |  |  | 2.41 |  |

# See-Ya-Later-Refrigerator

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington See-Ya-Later Refrigerator 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington See-Ya-Later Refrigerator program based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE( 3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 35% west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from the TRC, UCT and PCT perspectives. The benefit/cost ratio for the RIM test is less than 1, indicating the program will have an upward influence on rates.

Table 1: See-Ya-Later   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Line Loss | 8.867% |
| Residential Energy Rate ($/kWh) | $0.0723 |

Table 2: See-Ya-Later  
Annual Program Costs and Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Program Costs** | **Utility Admin** | **Evaluation** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| Refrigerators | $198,197 | $6,384 | $0 | $44,520 | $249,100 | $0 |
| Freezers | $78,995 | $2,544 | $0 | $11,970 | $93,510 | $0 |
| Kits | $13,409 | $432 | $0 | $0 | $13,840 | $0 |
| Total | $290,600 | $9,360 | $0 | $56,490 | $356,450 | $0 |

Table 3: See-Ya-Later  
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Refrigerators | 1,855,000 | 100% | 1,855,000 | 100% | 1,855,000 | 5 |
| Freezers | 739,347 | 100% | 739,347 | 100% | 739,347 | 5 |
| Kits | 125,496 | 100% | 125,496 | 100% | 125,496 | 6.6 |
| Total | 2,719,843 |  | 2,719,843 |  | 2,719,843 |  |

Table 4: IRP 35% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0319 | $299,960 | $1,041,115 | $741,154 | 3.471 |
| Total Resource Cost Test (TRC) No Adder | 0.0319 | $299,960 | $946,468 | $646,507 | 3.155 |
| Utility Cost Test (UCT) | 0.0379 | $356,450 | $946,468 | $590,017 | 2.655 |
| Rate Impact Test (RIM) |  | $1,258,268 | $946,468 | ($311,800) | 0.752 |
| Participant Cost Test (PCT) |  | ($56,490) | $901,818 | $958,308 | NA |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000141628 |  |
| Discounted Participant Payback (years) |  |  |  | NA |  |

Table 5: Refrigerators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 35% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $204,580 | $705,452 | $500,872 | 3.448 |
| Total Resource Cost Test (TRC) No Adder | $204,580 | $641,320 | $436,740 | 3.135 |
| Utility Cost Test (UCT) | $249,100 | $641,320 | $392,220 | 2.575 |
| Rate Impact Test (RIM) | $861,222 | $641,320 | ($219,902) | 0.745 |
| Participant Cost Test (PCT) | ($44,520) | $612,122 | $656,642 | NA |
| Discounted Participant Payback (years) |  |  | NA |  |

Table 6: Freezers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 35% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $81,540 | $281,172 | $199,632 | 3.448 |
| Total Resource Cost Test (TRC) No Adder | $81,540 | $255,611 | $174,071 | 3.135 |
| Utility Cost Test (UCT) | $93,510 | $255,611 | $162,101 | 2.734 |
| Rate Impact Test (RIM) | $337,483 | $255,611 | ($81,872) | 0.757 |
| Participant Cost Test (PCT) | ($11,970) | $243,973 | $255,943 | NA |
| Discounted Participant Payback (years) |  |  | (0.24) |  |

Table 7: Kits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 35% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $13,840 | $54,490 | $40,650 | 3.937 |
| Total Resource Cost Test (TRC) No Adder | $13,840 | $49,536 | $35,696 | 3.579 |
| Utility Cost Test (UCT) | $13,840 | $49,536 | $35,696 | 3.579 |
| Rate Impact Test (RIM) | $59,563 | $49,536 | ($10,026) | 0.832 |
| Participant Cost Test (PCT) | $0 | $45,722 | $45,722 | NA |
| Discounted Participant Payback (years) |  |  | (0.05) |  |

# Low Income Weatherization

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington Low Income Weatherization 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington Low Income Weatherization program based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 35% west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is not cost effective from the TRC, UCT, or RIM perspectives. The benefit/cost ratio for the RIM test is less than 1, indicating the program will have an upward influence on rates.

Table 1: Low Income Weatherization   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Line Loss | 8.867% |
| Residential Energy Rate ($/kWh) | $0.0723 |

Table 2: Low Income Weatherization   
Annual Program Costs and Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Program Costs** | **Utility Admin** | **Evaluation** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| Low Income weatherization | $50,026 | $8,802 | $0 | $388,493 | $447,320 | $388,493 |

Table 3: Low Income Weatherization   
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Low Income weatherization | 184,000 | 100% | 184,000 | 100% | 184,000 | 30 |

Table 4: IRP 35% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.1068 | $447,320 | $315,212 | ($132,108) | 0.705 |
| Total Resource Cost Test (TRC) No Adder | 0.1068 | $447,320 | $286,557 | ($160,764) | 0.641 |
| Utility Cost Test (UCT) | 0.1068 | $447,320 | $286,557 | ($160,764) | 0.641 |
| Rate Impact Test (RIM) |  | $666,831 | $286,557 | ($380,274) | 0.430 |
| Participant Cost Test (PCT) |  | $0 | $219,510 | $219,510 | NA |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000022086 |  |
| Discounted Participant Payback (years) |  |  |  | NA |  |

However, these results do not incorporate the non-energy benefits that were analyzed in the 2006 program evaluation, including the Program’s impact on forced mobility, arrearages, and economic impacts. These benefits are presented in Table 5.

Table 5. Total Program Non-Energy Benefits

|  |  |  |
| --- | --- | --- |
| **Non-Energy Benefit** | **Program Impact** | **Perspective Adjusted** |
| Mobility | $14,000 | TRC |
| Arrearage | $6,400 | UCT, RIM, TRC |
| Economic | $161,207 | TRC |
| **Total** | **$181,607** |  |

When these benefits are included in the analysis the Program becomes more cost effective. As presented in Table 6, the Program passes TRC with a benefit cost ratio of 1.111.

Table 6: IRP 35% Load Factor Decrement with Non Energy Benefits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.1068 | $447,320 | $496,820 | $49,499 | 1.111 |
| Total Resource Cost Test (TRC) No Adder | 0.1068 | $447,320 | $468,164 | $20,844 | 1.047 |
| Utility Cost Test (UCT) | 0.1068 | $447,320 | $292,957 | ($154,364) | 0.655 |
| Rate Impact Test (RIM) |  | $666,831 | $292,957 | ($373,874) | 0.439 |
| Participant Cost Test (PCT) |  | $0 | $219,510 | $219,510 | NA |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000021715 |  |
| Discounted Participant Payback (years) |  |  |  | NA |  |

# Energy Education

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington Energy Education 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington Energy Education program based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(Draftl 3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 35% west residential whole house load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from the TRC, UCT and PCT perspectives. The benefit/cost ratio for the RIM test is less than 1, indicating the program will have an upward influence on rates.

Table 1: Energy Education   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Line Loss | 8.867% |
| Residential Energy Rate ($/kWh) | $0.0723 |

Table 2: Energy Education   
Annual Program Costs and Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Program Costs** | **Utility Admin** | **Evaluation** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| Energy Education | $366,466 | $3,245 | $0 | $70,267 | $439,978 | $0 |

Table 3: Energy Education   
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Energy Education | 2,400,316 | 100% | 2,400,316 | 100% | 2,400,316 | 6.25 |

Table 4: IRP 35% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0318 | $369,711 | $1,128,463 | $758,752 | 3.052 |
| Total Resource Cost Test (TRC) No Adder | 0.0318 | $369,711 | $1,025,876 | $656,165 | 2.775 |
| Utility Cost Test (UCT) | 0.0378 | $439,978 | $1,025,876 | $585,898 | 2.332 |
| Rate Impact Test (RIM) |  | $1,369,452 | $1,025,876 | ($343,576) | 0.749 |
| Participant Cost Test (PCT) |  | ($70,267) | $929,474 | $999,741 | NA |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000128995 |  |
| Discounted Participant Payback (years) |  |  |  | - |  |

The results above do not reflect non-energy benefits. Appliances in this program have significant non-energy benefits (water). Those benefits, by measure, are outlined in the table below.

Table 5. Non-Energy Benefits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Non-Energy Benefit** | **Non-Energy Benefits per Measure** | **Total Installs** | **Measure Life** | **Total Present Value Benefits** |
| Energy Education | $24.92 | 4,127 | 6.25 | $500,291 |

When these non-energy benefits are incorporated in the cost-effectiveness analysis for appliances, the TRC improves to 4.128, as shown in Table 11.

Table 6: IRP 35% Load Factor Decrement with Non-Energy Benefits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 35% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0318 | $369,711 | $1,628,754 | $1,259,043 | 4.405 |
| Total Resource Cost Test (TRC) No Adder | 0.0318 | $369,711 | $1,526,167 | $1,156,456 | 4.128 |
| Utility Cost Test (UCT) | 0.0378 | $439,978 | $1,025,876 | $585,898 | 2.332 |
| Rate Impact Test (RIM) |  | $1,369,452 | $1,025,876 | ($343,576) | 0.749 |
| Participant Cost Test (PCT) |  | ($70,267) | $1,429,765 | $1,500,032 | NA |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | $0.0000128995 |  |
| Discounted Participant Payback (years) |  |  |  | - |  |

# FinAnswer Express

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington FinAnswer Express 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington FinAnswer Express program based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(Draftl 3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 67% west system load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from all perspectives.

Table 1: FinAnswer Express   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Commercial Line Loss | 8.729% |
| Industrial Line Loss | 7.543% |
| Commercial Energy Rate ($/kWh) | $0.0684 |
| Industrial Energy Rate ($/kWh) | $0.0571 |

Table 2: FinAnswer Express   
Annual Program Costs and Savings

|  | **Program Costs** | **Utility Admin** | **Evaluation** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| --- | --- | --- | --- | --- | --- | --- |
| Building Shell | $657 | $347 | $0 | $3,174 | $4,178 | $10,387 |
| Dairy & Farm | $11,847 | $4,925 | $0 | $47,720 | $64,492 | $121,220 |
| Envelope | $19 | $10 | $0 | $100 | $129 | $199 |
| Food Service | $399 | $210 | $0 | $1,290 | $1,899 | $5,076 |
| HVAC | $9,304 | $4,913 | $0 | $75,787 | $90,004 | $232,393 |
| Lighting | $441,724 | $196,048 | $0 | $731,804 | $1,369,576 | $2,342,248 |
| Motor | $11,052 | $4,891 | $0 | $10,200 | $26,143 | $28,701 |
| Irrigation | $356 | $103 | $0 | $276 | $735 | $1,164 |
| Total | $475,359 | $211,447 | $0 | $870,351 | $1,557,157 | $2,741,388 |

Table 3: FinAnswer Express   
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Building Shell | 18,487 | 97% | 17,932 | 100% | 17,932 | 14 |
| Dairy & Farm | 255,694 | 97% | 248,023 | 100% | 248,023 | 14 |
| Envelope | 546 | 97% | 529 | 100% | 529 | 14 |
| Food Service | 11,213 | 97% | 10,877 | 100% | 10,877 | 14 |
| HVAC | 352,559 | 72% | 253,842 | 100% | 253,842 | 14 |
| Lighting | 10,153,022 | 98% | 9,949,962 | 100% | 9,949,962 | 14 |
| Motor | 161,129 | 154% | 248,139 | 100% | 248,139 | 14 |
| Irrigation | 5,060 | 97% | 4,908 | 100% | 4,908 | 14 |
| Total | 10,957,710 |  | 10,734,212 |  | 10,734,212 |  |

Table 4: IRP 67% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 67% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0403 | $3,428,193 | $11,774,365 | $8,346,172 | 3.435 |
| Total Resource Cost Test (TRC) No Adder | 0.0403 | $3,428,193 | $10,703,969 | $7,275,775 | 3.122 |
| Utility Cost Test (UCT) | 0.0183 | $1,557,157 | $10,703,969 | $9,146,812 | 6.874 |
| Rate Impact Test (RIM) |  | $9,008,858 | $10,703,969 | $1,695,111 | 1.188 |
| Participant Cost Test (PCT) |  | $1,871,037 | $7,451,701 | $5,580,664 | 3.983 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000063158) |  |
| Discounted Participant Payback (years) |  |  |  | 2.97 |  |

Table 5: Building Shell

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $11,391 | $19,761 | $8,370 | | 1.735 |
| Total Resource Cost Test (TRC) No Adder | $11,391 | $17,964 | $6,573 | | 1.577 |
| Utility Cost Test (UCT) | $4,178 | $17,964 | $13,786 | | 4.299 |
| Rate Impact Test (RIM) | $17,081 | $17,964 | $884 | | 1.052 |
| Participant Cost Test (PCT) | $7,213 | $12,902 | $5,689 | | 1.789 |
| Discounted Participant Payback (years) |  |  | NA | |  |

Table 6: Dairy Farm

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | | | |
|  | Costs | Benefits | | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $137,992 | $252,179 | | $114,187 | 1.827 |
| Total Resource Cost Test (TRC) No Adder | $137,992 | $229,254 | | $91,262 | 1.661 |
| Utility Cost Test (UCT) | $64,492 | $229,254 | | $164,762 | 3.555 |
| Rate Impact Test (RIM) | $233,808 | $229,254 | | ($4,554) | 0.981 |
| Participant Cost Test (PCT) | $73,500 | $169,316 | | $95,816 | 2.304 |
| Discounted Participant Payback (years) |  |  | | 5.43 |  |

Table 7: Envelope

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $229 | $583 | 354 | | 2.546 |
| Total Resource Cost Test (TRC) No Adder | $229 | $530 | 301 | | 2.314 |
| Utility Cost Test (UCT) | $129 | $530 | 401 | | 4.098 |
| Rate Impact Test (RIM) | $510 | $530 | 20 | | 1.039 |
| Participant Cost Test (PCT) | $100 | $381 | 281 | | 3.818 |
| Discounted Participant Payback (years) |  |  | NA | |  |

Table 8: Food Service

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $5,685 | $11,804 | $6,119 | | 2.076 |
| Total Resource Cost Test (TRC) No Adder | $5,685 | $10,731 | $5,046 | | 1.888 |
| Utility Cost Test (UCT) | $1,899 | $10,731 | $8,832 | | 5.650 |
| Rate Impact Test (RIM) | $9,725 | $10,731 | $1,006 | | 1.103 |
| Participant Cost Test (PCT) | $3,786 | $7,826 | $4,040 | | 2.067 |
| Discounted Participant Payback (years) |  |  | - | |  |

Table 9: HVAC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | | | |
|  | Costs | Benefits | | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $246,609 | $279,726 | | 33,117 | 1.134 |
| Total Resource Cost Test (TRC) No Adder | $246,609 | $254,297 | | 7,687 | 1.031 |
| Utility Cost Test (UCT) | $90,004 | $254,297 | | 164,293 | 2.825 |
| Rate Impact Test (RIM) | $272,643 | $254,297 | | -18,346 | 0.933 |
| Participant Cost Test (PCT) | $156,606 | $182,639 | | 26,033 | 1.166 |
| Discounted Participant Payback (years) |  |  | | - |  |

Table 10: Lighting

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $2,980,020 | $10,944,455 | $7,964,435 | | 3.673 |
| Total Resource Cost Test (TRC) No Adder | $2,980,020 | $9,949,505 | $6,969,485 | | 3.339 |
| Utility Cost Test (UCT) | $1,369,576 | $9,949,505 | $8,579,928 | | 7.265 |
| Rate Impact Test (RIM) | $8,273,218 | $9,949,505 | $1,676,286 | | 1.203 |
| Participant Cost Test (PCT) | $1,610,443 | $6,903,642 | $5,293,198 | | 4.287 |
| Discounted Participant Payback (years) |  |  | 2.75 | |  |

Table 11: Motor

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $44,644 | $260,904 | $216,260 | | 5.844 |
| Total Resource Cost Test (TRC) No Adder | $44,644 | $237,186 | $192,542 | | 5.313 |
| Utility Cost Test (UCT) | $26,143 | $237,186 | $211,043 | | 9.073 |
| Rate Impact Test (RIM) | $198,191 | $237,186 | $38,995 | | 1.197 |
| Participant Cost Test (PCT) | $18,501 | $172,048 | $153,547 | | 9.299 |
| Discounted Participant Payback (years) |  |  | 1.23 | |  |

Table 12: Irrigation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **AC: IRP 67% LF Decrement** | | |
|  | Costs | Benefits | Net Benefits | | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $1,623 | $4,953 | $3,330 | | 3.052 |
| Total Resource Cost Test (TRC) No Adder | $1,623 | $4,503 | $2,880 | | 2.775 |
| Utility Cost Test (UCT) | $735 | $4,503 | $3,768 | | 6.127 |
| Rate Impact Test (RIM) | $3,683 | $4,503 | $820 | | 1.223 |
| Participant Cost Test (PCT) | $888 | $2,948 | $2,060 | | 3.321 |
| Discounted Participant Payback (years) |  |  | - | |  |

# Energy FinAnswer

Date: March 23, 2011

To: Shawn Grant

From: Brian Hedman

Re: Washington Energy FinAnswer 2010 Program Cost Effectiveness @ 100% NTG

The tables below present the cost effectiveness findings of the Washington Energy FinAnswer program based on 2010 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled “WA 2010 Tables and Charts CE(3\_17\_11)”. The Utility discount rate is from the 2008 PacifiCorp Integrated Resource Plan.

Cost effectiveness was tested using the 2008 IRP 67% west system load factor decrement. Table 1 lists modeling inputs.

The program is cost effective from all perspectives.

Table 1: Energy FinAnswer   
Inputs

|  |  |
| --- | --- |
| **Parameter** | **Value** |
| Discount Rate | 7.4% |
| Commercial Line Loss | 8.729% |
| Industrial Line Loss | 7.543% |
| Commercial Energy Rate ($/kWh) | $0.0684 |
| Industrial Energy Rate ($/kWh) | $0.0571 |

Table 2: Energy FinAnswer   
Annual Program Costs and Savings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Program Costs** | **Utility Admin** | **Engineering** | **Incentives** | **Total Utility Costs** | **Net Participant Incremental Cost** |
| Additional Measures | $25,838 | $12,710 | $61,081 | $53,494 | $153,123 | $94,589 |
| HVAC | $29,021 | $53,761 | $75,269 | $77,068 | $235,119 | $244,088 |
| Lighting | $2,655 | $4,964 | $6,894 | $6,245 | $20,758 | $8,845 |
| Motors | $43,182 | $67,137 | $109,826 | $192,349 | $412,494 | $442,576 |
| Refrigeration | $208,581 | $102,603 | $493,085 | $673,179 | $1,477,449 | $1,534,295 |
| Building Shell | $3,577 | $8,817 | $9,646 | $8,416 | $30,455 | $39,616 |
| Total | $312,854 | $249,992 | $  755,802 | $1,010,751 | $2,329,399 | $2,364,009 |

Table 3: Energy FinAnswer   
Savings by Measure Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Gross kWh Savings** | **Realization Rate** | **Adjusted Gross Savings** | **Net to Gross Percentage** | **Net kWh Savings** | **Measure Life** |
| Additional Measures | 798,765 | 97% | 774,802 | 100% | 774,802 | 14 |
| Building Shell | 572,396 | 100% | 572,396 | 100% | 572,396 | 14 |
| HVAC | 51,519 | 101% | 52,034 | 100% | 52,034 | 14 |
| Lighting | 1,281,979 | 74% | 948,664 | 100% | 948,664 | 14 |
| Motors | 6,192,772 | 101% | 6,254,700 | 100% | 6,254,700 | 14 |
| Refrigeration | 54,017 | 100% | 54,017 | 100% | 54,017 | 14 |
| Total | 8,951,448 |  | 8,656,613 |  | 8,656,613 |  |

Table 4: IRP 67% Load Factor Decrement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **All Measures** | | | | **AC: IRP 67% LF Decrement** | |
|  | Levelized $/kWh | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | 0.0557 | $3,682,657 | $8,763,806 | $5,081,149 | 2.380 |
| Total Resource Cost Test (TRC) No Adder | 0.0557 | $3,682,657 | $7,967,096 | $4,284,439 | 2.163 |
| Utility Cost Test (UCT) | 0.0353 | $2,329,399 | $7,967,096 | $5,637,697 | 3.420 |
| Rate Impact Test (RIM) |  | $7,383,657 | $7,967,096 | $583,439 | 1.079 |
| Participant Cost Test (PCT) |  | $1,353,258 | $5,054,258 | $3,701,000 | 3.735 |
| Lifecycle Revenue Impacts ($/kWh) |  |  |  | ($0.0000094717) |  |
| Discounted Participant Payback (years) |  |  |  | 3.18 |  |

Table 5: Additional Measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $194,218 | $814,932 | $620,714 | 4.196 |
| Total Resource Cost Test (TRC) No Adder | $194,218 | $740,847 | $546,629 | 3.815 |
| Utility Cost Test (UCT) | $153,123 | $740,847 | $587,724 | 4.838 |
| Rate Impact Test (RIM) | $618,494 | $740,847 | $122,353 | 1.198 |
| Participant Cost Test (PCT) | $41,095 | $465,371 | $424,276 | 11.324 |
| Discounted Participant Payback (years) |  |  | NA |  |

Table 6: HVAC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $402,139 | $627,515 | $225,376 | 1.560 |
| Total Resource Cost Test (TRC) No Adder | $402,139 | $570,468 | $168,329 | 1.419 |
| Utility Cost Test (UCT) | $235,119 | $570,468 | $335,349 | 2.426 |
| Rate Impact Test (RIM) | $614,843 | $570,468 | ($44,374) | 0.928 |
| Participant Cost Test (PCT) | $167,020 | $379,723 | $212,703 | 2.274 |
| Discounted Participant Payback (years) |  |  | 5.51 |  |

Table 7: Lighting

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $23,358 | $57,081 | $33,723 | 2.444 |
| Total Resource Cost Test (TRC) No Adder | $23,358 | $51,892 | $28,534 | 2.222 |
| Utility Cost Test (UCT) | $20,758 | $51,892 | $31,134 | 2.500 |
| Rate Impact Test (RIM) | $55,339 | $51,892 | ($3,447) | 0.938 |
| Participant Cost Test (PCT) | $2,600 | $34,581 | $31,981 | 13.300 |
| Discounted Participant Payback (years) |  |  | 0.85 |  |

Table 8: Motors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $662,721 | $628,310 | ($34,411) | 0.948 |
| Total Resource Cost Test (TRC) No Adder | $662,721 | $571,191 | ($91,530) | 0.862 |
| Utility Cost Test (UCT) | $412,494 | $571,191 | $158,697 | 1.385 |
| Rate Impact Test (RIM) | $791,436 | $571,191 | ($220,245) | 0.722 |
| Participant Cost Test (PCT) | $250,227 | $378,942 | $128,715 | 1.514 |
| Discounted Participant Payback (years) |  |  | 8.91 |  |

Table 9: Refrigeration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $2,338,565 | $6,578,655 | $4,240,090 | 2.813 |
| Total Resource Cost Test (TRC) No Adder | $2,338,565 | $5,980,595 | $3,642,030 | 2.557 |
| Utility Cost Test (UCT) | $1,477,449 | $5,980,595 | $4,503,146 | 4.048 |
| Rate Impact Test (RIM) | $5,234,224 | $5,980,595 | $746,371 | 1.143 |
| Participant Cost Test (PCT) | $861,116 | $3,756,776 | $2,895,660 | 4.363 |
| Discounted Participant Payback (years) |  |  | - |  |

Table 10: Building Shell

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | **AC: IRP 67% LF Decrement** | |
|  | Costs | Benefits | Net Benefits | Benefit/Cost  Ratio |
| Total Resource Cost Test (PTRC) + Conservation Adder | $61,655 | $57,313 | ($4,343) | 0.930 |
| Total Resource Cost Test (TRC) No Adder | $61,655 | $52,102 | ($9,553) | 0.845 |
| Utility Cost Test (UCT) | $30,455 | $52,102 | $21,647 | 1.711 |
| Rate Impact Test (RIM) | $69,321 | $52,102 | ($17,218) | 0.752 |
| Participant Cost Test (PCT) | $31,200 | $38,865 | $7,665 | 1.246 |
| Discounted Participant Payback (years) |  |  | - |  |