



1375 Walnut Street
Suite 200
Boulder CO 80302
303.728.2500 phone
303.728.2501 fax

Memorandum

To: Don Jones Jr., PacifiCorp/Rocky Mountain Power
From: David Basak, Navigant
Date: November 13, 2014
Re: Cost Effectiveness for the Washington See Ya Later Refrigerator Program

Navigant has developed this memo in response to PacifiCorp’s proposed See Ya Later Refrigerator Program cost effectiveness modeling needs in the state of Washington.

This memo presents the cost effectiveness results of individual analysis runs for the state of Washington. Each scenario is analyzed using modeled assumptions provided by PacifiCorp. These scenarios utilize the following assumptions:

- **Avoided Costs:** Navigant utilized the “West” 49% Residential Whole House load factor decrement provided in the 2013 PacifiCorp Integrated Resource Plan along with the Washington Residential Whole House load shape to calculate avoided costs.
- **Modeling Inputs:** Navigant utilized individual measure savings provided by PacifiCorp in the file *SYLR WA Forecast 2014-2024 Res + CI + SMI 140903+ DLJ CE inputs 102114.xlsx*.
- **Energy Rates:** Navigant utilized the 2013 rates provided by PacifiCorp and applied an escalation of 1.9% to arrive at estimated rates for PY2015.
- **Line Loss Factors:** Navigant utilized the residential line loss factor throughout the analysis.
- **Evaluation Period:** The evaluation period for this analysis uses program year 2015 as year one.

This memo will begin by addressing the inputs used in the analysis of the Washington See Ya Later Program. The cost-effectiveness inputs are as follows:

Table 1 –Cost Effectiveness Analysis Inputs

| Parameters | Inputs |
|---------------------------------|---------|
| Discount Rate for all B/C Tests | 6.88% |
| Line Loss Factor - Energy (%) | 9.67% |
| Energy Rate (\$/kWh) | \$0.086 |
| Net-to-Gross Ratio | 100% |
| Escalation Rate | 1.9% |

Table 2 – Measure Level Inputs (Source: PacifiCorp)

| Measure | Incentive (\$) | Implementation (\$) | Gross Annual Energy Savings at Site (kWh) | Realization Rate | Adjusted Gross Savings (kWh) | Net to Gross Percentage | Net Savings (kWh) | Measure Life |
|--------------------------|----------------|---------------------|---|------------------|------------------------------|-------------------------|-------------------|--------------|
| Refrigerators-Res | \$30 | \$107 | 583 | 100% | 583 | 100% | 583 | 7 |
| Freezers-Res | \$30 | \$107 | 495 | 100% | 495 | 100% | 495 | 5 |
| Refrigerators-SMI | \$20 | \$72 | 583 | 100% | 583 | 100% | 583 | 7 |
| Freezers-SMI | \$20 | \$72 | 495 | 100% | 495 | 100% | 495 | 5 |

The PY2015 cost/benefits results at the measure level are as follows:

Table 3 – Measure Level Cost/Benefit Test Results by Program Year without Implementation Costs

| Washington See Ya Later Refrigerator Measure Level | Channel | P-TRC Benefits (\$) | P-TRC Costs (\$) | P-TRC Test | TRC Benefits (\$) | TRC Costs (\$) | TRC Test | Utility PV Benefits (\$) | Utility PV Costs (\$) | Utility Cost Test | Ratepayer PV Benefits (\$) | Ratepayer PV Costs (\$) | RIM Test | Part. PV Benefits (\$) | Part. PV Cost (\$) | Part. Cost Test |
|--|--------------------|---------------------|------------------|-------------|-------------------|----------------|-------------|--------------------------|-----------------------|-------------------|----------------------------|-------------------------|------------|------------------------|--------------------|-----------------|
| Refrigerators | Residential | \$271 | \$30 | 9.0 | \$247 | \$30 | 8.2 | \$247 | \$30 | 8.2 | \$247 | \$343 | 0.7 | \$343 | \$0 | n/a |
| Freezers | Residential | \$172 | \$30 | 5.7 | \$156 | \$30 | 5.2 | \$156 | \$30 | 5.2 | \$156 | \$229 | 0.7 | \$229 | \$0 | n/a |
| Overall/unit | Residential | \$251 | \$30 | 8.4 | \$229 | \$30 | 7.6 | \$229 | \$30 | 7.6 | \$229 | \$320 | 0.7 | \$320 | \$0 | n/a |
| Refrigerators | SMI | \$271 | \$20 | 13.6 | \$247 | \$20 | 12.3 | \$247 | \$20 | 12.3 | \$247 | \$333 | 0.7 | \$333 | \$0 | n/a |
| Freezers | SMI | \$172 | \$20 | 8.6 | \$156 | \$20 | 7.8 | \$156 | \$20 | 7.8 | \$156 | \$219 | 0.7 | \$219 | \$0 | n/a |
| Overall/unit | SMI | \$251 | \$20 | 12.6 | \$229 | \$20 | 11.4 | \$229 | \$20 | 11.4 | \$229 | \$310 | 0.7 | \$310 | \$0 | n/a |

Table 4 – Measure Level Cost/Benefit Test Results by Program Year with Implementation Costs

| Washington See Ya Later Refrigerator Measure Level | Channel | P-TRC Benefits (\$) | P-TRC Costs (\$) | P-TRC Test | TRC Benefits (\$) | TRC Costs (\$) | TRC Test | Utility PV Benefits (\$) | Utility PV Costs (\$) | Utility Cost Test | Ratepayer PV Benefits (\$) | Ratepayer PV Costs (\$) | RIM Test | Part. PV Benefits (\$) | Part. PV Cost (\$) | Part. Cost Test |
|--|--------------------|---------------------|------------------|------------|-------------------|----------------|------------|--------------------------|-----------------------|-------------------|----------------------------|-------------------------|------------|------------------------|--------------------|-----------------|
| Refrigerators | Residential | \$271 | \$137 | 2.0 | \$247 | \$137 | 1.8 | \$247 | \$137 | 1.8 | \$247 | \$450 | 0.5 | \$343 | \$0 | n/a |
| Freezers | Residential | \$172 | \$137 | 1.3 | \$156 | \$137 | 1.1 | \$156 | \$137 | 1.1 | \$156 | \$336 | 0.5 | \$229 | \$0 | n/a |
| Overall/unit | Residential | \$251 | \$137 | 1.8 | \$229 | \$137 | 1.7 | \$229 | \$137 | 1.7 | \$229 | \$427 | 0.5 | \$320 | \$0 | n/a |
| Refrigerators | SMI | \$271 | \$92 | 2.9 | \$247 | \$92 | 2.7 | \$247 | \$92 | 2.7 | \$247 | \$405 | 0.6 | \$333 | \$0 | n/a |
| Freezers | SMI | \$172 | \$92 | 1.9 | \$156 | \$92 | 1.7 | \$156 | \$92 | 1.7 | \$156 | \$291 | 0.5 | \$219 | \$0 | n/a |
| Overall/unit | SMI | \$251 | \$92 | 2.7 | \$229 | \$92 | 2.5 | \$229 | \$92 | 2.5 | \$229 | \$382 | 0.6 | \$310 | \$0 | n/a |