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**State of Wisconsin, Public Service Commission of  
Wisconsin, Focus on Energy Evaluation**

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**NET-TO-GROSS SAVINGS ADJUSTMENTS FOR ECM  
FURNACES**

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**To** Oscar Bloch, Public Service Commission of Wisconsin  
cc Sara Van de Grift, WECC

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Acknowledgement: Ralph Prah, Prah & Associates, contributed critical review and  
analysis

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**Date** January 19, 2009

## Summary

This analysis explores issues surrounding net-to-gross adjustments for forced air furnaces (FAFs) with electronically commutated motors (ECMs) rewarded through Efficient Heating and Cooling (EHC) during FY08. For any such analysis, the principle research issue is relatively simple, although the information needed to answer the question with complete certainty can be challenging to obtain. The research involves determining, based on the information available, whether or not the program induced customers to take actions (i.e., install ECM furnaces) that they would not have taken in absence of the program. The report concludes that a net-to-gross adjustment of 38 percent for ECM furnaces is reasonable based on the market data and contractor information available and that this attribution estimate is consistent with the Energy Center of Wisconsin's (ECW) Furnace and AC Tracking (FACTS) data showing ECM market share flattening subsequent to 2005. This means that the program is inducing sales, but at 38 percent of the level of what is being tracked through the program. This result is significantly lower than the previous estimate of 80 percent, but this result does not mean that the program should be terminated nor does it imply that past program efforts have not yielded positive effects on the market for ECM furnaces.<sup>1</sup> While the upcoming Potential Study will address potential market share for ECM furnaces that can be achieved through program efforts, our opinion is that market shares well in excess of the 20 percent range should be a reasonable goal in the near- to mid-term and that efforts should be made to investigate modifications to the ECM program's design and delivery so that it can create momentum to increase market share at an increasing rate, and, with this momentum, achieve more favorable attribution rates.



**focus on energy**<sup>sm</sup>

*The power is within you.*

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<sup>1</sup> The net-to-gross estimate accounts for what the market would have looked like in the absence of the program in 2007 given that the program had been implemented in years prior to 2007.

## Approach

The approach for developing the adjustments involves five steps, which are described briefly below. The approach is the same as the approach that was used previously with the exception of an improvement in how we estimate baseline sales in Step 2.<sup>2</sup>

1. The first step is to use market based information compiled by ECW through the annual Furnace and AC Tracking (FACTS) to estimate the number of program-qualifying units sold in WI during 2007.
2. The second step is to estimate the baseline for the program-qualifying units. This is the number of program-qualifying units that would have been sold in WI in the absence of Focus. In previous analyses, we relied on supplemental FACTS research to estimate the baseline for ECM furnaces. We were unable, however, to estimate equations to project the growth of market share in the absence of Focus because only two pre-program data points were available from this research. Instead, we used the estimate of market share in the year prior to Focus programs as a conservative estimate of the market share of ECM furnaces.<sup>3</sup> The shortcoming of this approach is that ECM market share would likely not stay constant at pre-Focus levels ad infinitum in the absence of the program. Therefore, the estimation of ECM market share in the absence of EHC efforts is necessary because the FACTS market data does not provide an adequate baseline from which to evaluate net impacts. Past analyses have used the pre-program market share estimate as the baseline. While not ideal, this was more acceptable in the early years of the program because not much time had elapsed where natural growth would likely be significant. As more time has elapsed, it is necessary for the baseline to account for natural growth in ECM market share in the absence of program efforts. To remedy this issue, we have modified this step to include data from interviews with HVAC contractors to assess what the market for ECM furnaces would look like in the absence of Focus. In the remainder of this memorandum, we refer to this modified approach as the contractor self-report approach.
3. The third step is to calculate the number of program-qualifying units sold in Wisconsin during 2007 that were Focus-induced. This is the number of program-qualifying units sold in Wisconsin during 2007 above and beyond what would have been sold in the absence of Focus (baseline), which is the result of Step 1 minus the result of Step 2.
4. The fourth step is to calculate the number of program-qualifying units rewarded through Focus (Focus-rewarded). These are the units tracked in the program database.

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<sup>2</sup> *FY05 Net-to-Gross Savings Adjustments for 12/13+ SEER Central Air Conditioners and ECM Furnaces*, memorandum to Oscar Bloch, Wisconsin DOA, dated June 27, 2006; *FY04 Net-to-Gross Savings Adjustments for 12/13+ SEER Central Air Conditioners and ECM Furnaces*, memorandum to Oscar Bloch, Wisconsin DOA, dated November 11, 2005; and *Verified Gross-to-Net Savings Adjustments for 12/13+ Central Air Conditioners and ECM Furnaces*, memorandum to Oscar Bloch, Wisconsin DOA, dated June 16, 2004.

<sup>3</sup> ECW conducted supplemental interviews with distributors involved with FACTS to develop estimates of ECM furnace market share back to 2000. The findings from these interviews are reported in a memo entitled *HVAC Distributor Interview Results* to Jack Jenkins of WECC and Tom Talerico of Glacier Consulting Group, dated April 12, 2004.

5. The fifth and final step is to calculate the net-to-gross adjustment. This is the number of program-qualifying units that were Focus-induced divided by the number of program-qualifying units that were Focus-rewarded, which is the result of Step 3 divided by the result of Step 4. The adjustment will result in (1) a reduction in impacts if the number of Focus-induced units is less than the number of Focus-rewarded units (i.e., the result is less than 100%); (2) an increase in impacts if the number of Focus-induced units is greater than the number of Focus-rewarded units (i.e., the result is greater than 100%); or (3) the same impacts if the number of Focus-induced units is equal to the number of Focus-rewarded units (i.e., the result is equal to 100%).

Before presenting the results, we provide background information on the Energy Center of Wisconsin's (ECW) Furnace and AC Tracking (FACTS) reports, which provide the market-based information on current and historic sales trends required for the first and second steps described above. We also discuss the complications inherent to the analysis and ways in which we address these complications.

FACTS reports contain data on the sales volumes of residential FAFs sold in Wisconsin by distributors who agree to provide data to ECW. From 1997–2002, the reports for FAFs provide sales volumes differentiated by AFUE level (< 90 and 90+). The reports for FAFs, however, did not begin to differentiate between furnaces with and without ECMs until 2003; and because the statewide Focus programs addressing ECM furnaces commenced in FY02, FACTS provides no pre-program data on which to estimate baseline ECM furnace sales. To remedy this problem, ECW conducted supplemental interviews with distributors involved with FACTS to develop estimates of ECM furnace market share back to 2000.

The key advantage of using the FACTS reports is that the reports enable us to look at how the market shares of high efficiency FAFs have changed over time among the distributors who agree to provide data to ECW. An inherent disadvantage to FACTS, however, is that not all distributors in Wisconsin provide data. ECW analyzed the extent to which FACTS represents the residential market for FAFs in Wisconsin and found that FACTS covers roughly 50–60 percent of the Wisconsin market, rather than 80–85 percent, which was the previous understanding.<sup>4</sup> This finding was based on public information available from the Gas Appliance Manufacturers Association (GAMA) on state-level data of annual FAF shipments in Wisconsin. Efforts to improve FACTS market coverage have yielded one additional distributor. We recommend a continuation of the efforts to improve the market coverage of FACTS

Below are the two pieces of information that are needed to complete the net-to-gross analysis:

1. What percent of the FAF market does FACTS represent?
2. How does the market share of ECM furnaces sold by distributors not in FACTS differ from that sold by distributors in FACTS?

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<sup>4</sup> ECW's analysis on FACTS market coverage is reported in a memo entitled *Follow-up on FACTS Market Coverage*, to Jack Jenkins of WECC and Tom Talerico of Glacier Consulting Group, dated April 15, 2004.

With regard to #1, previous analyses have assumed that FACTS represented 62 percent of the FAF market.<sup>5</sup> Because a consensus has been reached that this estimate represents the best estimate for the net-to-gross analysis, and since no new information has been made available, we continue to use this estimate in this analysis.

With regard to #2, we conducted previous analyses separately for three scenarios.

1. The first scenario assumed that the market share of ECM furnaces sold by distributors outside of FACTS was the same as that sold by distributors involved with FACTS. This scenario provided a plausible upper bound for the high efficiency market share in Wisconsin because qualitative information provided by ECW staff and others who have been involved with FACTS indicate that the distributors involved with FACTS are more likely to sell ECM furnaces than distributors outside of FACTS. We labeled this scenario *Scenario 1–Upper Bound*.
2. The second scenario assumed that the market share of ECM furnaces sold by distributors outside of FACTS was the half of that sold by distributors involved with FACTS. We labeled this scenario *Scenario 2–Mid Point*.
3. The third scenario assumed that no ECM furnaces are sold by distributors outside of FACTS. Although this scenario was unlikely, we presented it as a lower bound for the high efficiency market share in Wisconsin. We label this scenario *Scenario 3–Lower Bound*.

The last analysis concluded that the results for *Scenario 2–Mid Point* represented a more reasonable estimate given the uncertainty surrounding whether FACTS participants are representative of all HVAC contractors. Following this precedent, the results of this year's analysis will be based on *Scenario 2–Mid Point* estimate. While we recommend application of the *Scenario 2–Mid Point* estimate, we present the results for all three scenarios in this memorandum.

A detailed account of how the net-to-gross adjustment was derived is presented next in the *Results* section. The Attachments contain detailed information on the inputs to the analysis. Attachment A presents the data behind Figure 1 in the *Results* section and shows ECM market share trends for all three scenarios. Attachment B presents key findings from the interviews with HVAC contractors who sold ECMs through the program during 2007. The guide for these interviews is presented in Attachment C. Attachment D presents a letter articulating the logic behind the contractor self-report methodology for this analysis and discussing ECM furnace supply-side effects.<sup>6</sup>

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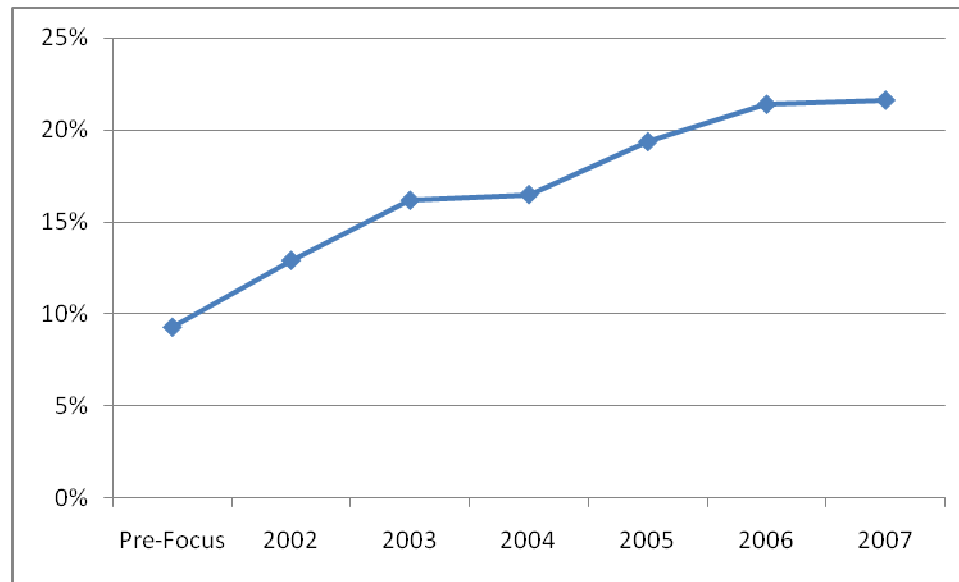
<sup>5</sup> Based on ECW's analysis on FACTS market coverage reported in a memo entitled *Advance Information for July 12 Meeting*, to 7/12/05 FACTS meeting participants (Oscar Bloch, Kathy Kunz, Gregg Newman, Jack Jenkins, Scott Pigg, Rick Winch, Tom Talerico, and David Sumi), dated July 11, 2005.

<sup>6</sup> Although the interview guide was designed prior to the formal review process that occurred in May 2008 regarding self-reports and supply-side effects, the evaluation team attempted to follow the criteria set forth in the policy papers addressing these issues. Moreover, both the interview guide and the letter were reviewed and approved by the evaluation team, PSC staff, and WECC staff.

## Results

To put the results in greater context, we first present annual market share trends for ECM furnaces in Figure 1.

**Figure 1. ECM Market Share Trends<sup>1</sup>**



<sup>1</sup> Based on *Scenario 2–Mid Point* estimates. All three scenarios are presented in Attachment A.

Prior to the onset of Focus, ECM market share was 9.3 percent. During the six years of program activity between 2002 and 2007, market share increased to 21.6 percent, an average increase of two percentage points per year over the program's tenure. As shown in the graph, during the last two years of the program, the increase in market share has flattened. Specifically, market share was 19.4 percent in 2005, 21.4 percent in 2006, and 21.6 percent in 2007. While the upcoming Potential Study will address potential market share for ECM furnaces that can be achieved through program efforts, our opinion is that market shares well in excess of the 20 percent range should be a reasonable goal in the near- to mid-term and that efforts should be made to investigate modifications to the ECM program's design and delivery so that it can create momentum to increase market share at an increasing rate.

While contractors were asked a series of questions about their business operations and FAF sales practices, we highlight the key contractor interview results that factor into the analysis.<sup>7</sup> As discussed earlier in the memo, we supplemented the attribution analysis with HVAC contractor interviews because of shortcomings in how the previous approach estimated the baseline for the program. Specifically, past analyses have used the pre-program market share

<sup>7</sup> We completed interviews with 46 HVAC contractors who sold a total of 3,530 ECM furnaces through Focus during 2007, representing over a third of ECM furnaces rewarded through Focus during 2007. The contractors we interviewed covered a range of sales volumes through the program. The interviews were conducted via telephone by Tom Talerico and Rick Winch of Glacier Consulting Group during March–May of 2008. Please see Attachment B for a detailed presentation of the HVAC contractor interview findings.

estimate as the baseline even though ECM market share would likely not stay constant at pre-Focus levels ad infinitum in the absence of the program. While not ideal, this was more acceptable in the early years of the program because not much time had elapsed where natural growth would likely be significant. As more time has elapsed, it is necessary for the baseline to account for natural growth in ECM market share in the absence of program efforts. To remedy this issue, we included data from interviews with HVAC contractors to assess what the market for ECM furnaces would look like in the absence of Focus.

We asked contractors if they think they would have sold more, fewer, or the same number of ECM furnaces in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available.<sup>8</sup> Thirty-nine of the 46 interviewed contractors (85%) reported that they would have sold fewer ECM furnaces and six (13%) said that they would have sold the same number of ECM furnaces. Results are presented below in Table 1.

**Table 1. More, Less, or Same Number of ECMs in Program's Absence**

| Level in Program's Absence | # of Contractors | % of Contractors |
|----------------------------|------------------|------------------|
| More                       | 0                | 0%               |
| Fewer                      | 39               | 85%              |
| Same                       | 6                | 13%              |
| Does not know              | 1                | 2%               |

We then asked contractors who reported that they would have sold fewer ECM furnaces to estimate the decrease in ECM sales in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available.<sup>9</sup> We recorded a zero percent decrease for the six contractors who reported that they would have sold the same number of ECM furnaces in the program's absence. No interviewed contractors reported more than a 50 percent decrease in sales in the program's absence, and almost two-thirds of interviewed contractors (63%) mentioned a decrease of 30 percent or less. The results are presented below in Table 2.

<sup>8</sup> Based on discussions with WECC staff, we concluded that the rebate is the primary means through which the program is currently affecting the market for ECM furnaces. Although initial program efforts to distributors may have helped to facilitate growth in ECM market share beyond the share prior to the program, program staff acknowledged, and the evaluation team agreed, that these initial effects would no longer have a major influence on today's sales. Finally, outreach efforts directed at end-users has been tangential and not a force driving ECM sales. Therefore, when assessing ECM sales in the absence of the program, the interviews and subsequent analysis focused primarily on the effect of the rebate on ECM sales. Please see Attachment D for more details.

<sup>9</sup> Many contractors reported a percent decrease in sales, but some reported a raw number. In either case, we confirmed the response with each interviewed contractor. In cases where a raw number was reported, we converted the response to a percent decrease for reporting purposes (we were able to make this conversion because we had the contractor's rebated sales total from the program database and confirmed this total with the contractor).



**Table 2. Decrease in ECMs during 2007 in Program's Absence**

| Percent Decrease | # of Contractors | % of Contractors |
|------------------|------------------|------------------|
| 0%               | 6                | 13%              |
| 4%-10%           | 5                | 11%              |
| 12%-20%          | 8                | 17%              |
| 22%-30%          | 10               | 22%              |
| 33%-37%          | 7                | 15%              |
| 50%              | 7                | 15%              |
| Does not know    | 3                | 7%               |

On average, the contractors we interviewed reported that in the absence of the Efficient Heating and Cooling program and the \$150 rebate the number of ECM furnaces sold during 2007 would have dropped by 22 percent when weighted by sales and by 24 percent when unweighted by sales. This means that sales would have been 78 percent (weighted by sales) or 76 percent (unweighted by sales) of 2007 levels in the program's absence.

This result suggests that ECM sales would not have dropped significantly during 2007 in the absence of the program during 2007. While interviewed contractors reported using the \$150 Focus rebate and cited the rebate as a factor influencing ECM sales, results primarily suggest that the \$150 Focus rebate is one of many factors influencing ECM sales and likely a secondary factor. Below are interview results that corroborate and explain this finding.<sup>10</sup>

- When asked about the factors driving the growth in ECM market share, energy savings/rising energy costs (33%), increased consumer awareness (30%), and ECMs being an established technology/premium product (30%) were the top three factors cited. Manufacturer and distributor promotions and rebates were mentioned by seven interviewed contractors (15%), and Focus rebates were mentioned by five interviewed contractors (11%).
- When asked about how they promote ECM furnaces, strategies that focused on electrical savings/energy efficiency were cited by 44 of the 46 interviewed contractors (96%). Other commonly cited promotion strategies included balanced temperature/comfort (57%), quiet operation (35%), indoor air quality/filtration (33%), and extended warranty (26%). Rebates were mentioned by only six interviewed contractors (13%). We asked contractors about the reasons why customers install ECM furnaces. The responses were consistent with the promotion strategies that were cited by interviewed contractors.

<sup>10</sup> We also note that the verbatim responses, which are presented in Attachment B (Table B-12), provide a strong preponderance of evidence that supports this finding.

- Forty-four of the 46 interviewed contractors (96%) reported that their manufacturers and distributors influence their sales of ECMs. Manufacturer/distributor rebates were the most common type of influence, reported by 39 of the 44 contractors (89%). Extended warranties were also cited by seven of the 44 contractors (16%).
- The reported ECM furnace incremental cost averaged \$910, ranging from a low of \$450 to a high of \$1,800. This indicates that on average the rebate may only represent roughly 16 percent of the incremental cost, excluding any manufacturer or distributor rebates. This helps to explain why contractors reported that ECM sales would not have dropped significantly during 2007 in the absence of the \$150 Focus rebate.

The remainder of the *Results* section presents each of the five steps for making net-to-gross adjustments using the contractor self-report methodology and the resulting attribution adjustments. We describe how the contractor interview results were incorporated into the estimation of the adjustments as part of the discussion for Step 2.

**Table 3. Net-to-Gross Adjustment Steps and Results—Contractor Self-Report Methodology**

|           |  | Scenario 1—<br>Upper<br>Bound | Scenario 2—<br>Mid Point | Scenario 3—<br>Lower<br>Bound |
|-----------|--|-------------------------------|--------------------------|-------------------------------|
| Step<br>1 | FAFs Sold in WI during 2007 (FACTS)                | 50,754                        |                          |                               |
|           | Ratio of FACTS to Market                           | 62%                           |                          |                               |
|           | FAFs Sold in WI during 2007 (Market)               | 82,382                        |                          |                               |
|           | Market Share of ECMs in WI during 2007             | 26.74%                        | 21.60%                   | 16.47%                        |
|           | Number of ECMs Sold in WI during 2007              | 22,026                        | 17,798                   | 13,750                        |
| Step<br>2 | Baseline Market Share of ECMs in WI during 2007    | 20.85%                        | 16.85%                   | 12.85%                        |
|           | # of ECMs Sold in WI during 2007 in Focus' Absence | 17,180                        | 13,883                   | 10,585                        |
| Step<br>3 | # of Focus-Induced ECMs during 2007                | 4,846                         | 3,916                    | 2,985                         |
| Step<br>4 | # of ECMs Rewarded during 2007 (Overall)           | 10,300                        |                          |                               |
| Step<br>5 | Net-to-Gross Adjustment                            | 47%                           | 38%                      | 29%                           |
|           | Focus-Induced Non-Rewarded Units                   | 0                             | 0                        | 0                             |



### Step 1

The first step is to use market-based information to estimate the number of forced air furnaces (FAFs) sold in Wisconsin during 2007. According to FACTS reports, a total of 50,754 residential FAFs were sold in Wisconsin during 2007 (1<sup>st</sup> row of Table 3). Based on supplemental information from ECW, we estimate that FACTS represents 62 percent of the Wisconsin market (2<sup>nd</sup> row of Table 3). Based on this percentage, we estimate 82,382 FAFs ( $50,754 \div 0.62$ ) sold in Wisconsin during 2007 (3<sup>rd</sup> row of Table 3). FACTS reports indicate that ECMs comprise 26.74 percent of residential FAFs sold during 2007. Depending on the scenario, this results in an overall Wisconsin market share of 26.74 percent for *Scenario 1–Upper Bound*, 21.60 percent for *Scenario 2–Mid Point*, and 16.47 percent for *Scenario 3–Lower Bound* (4<sup>th</sup> row of Table 3).<sup>11</sup> Applying these market shares to the total FAFs sold in Wisconsin during 2007 (82,382) yields the total number of ECMs sold in Wisconsin during 2007. The estimates, which vary by scenario, are 22,026 for *Scenario 1–Upper Bound*, 17,798 for *Scenario 2–Mid Point*, and 13,570 for *Scenario 3–Lower Bound* (5<sup>th</sup> row of Table 3).

### Step 2

As discussed earlier in the *Results* section, the contractors we interviewed reported that in the absence of the Efficient Heating and Cooling program and the \$150 rebate the number of ECM furnaces sold during 2007 would have dropped by 22 percent when weighted by sales. This means that sales would have been 78 percent of 2007 levels in the program's absence. We apply this 78 percent estimate to calculate the baseline market share in WI during 2007. Again, this is the number of ECM furnaces that would have been sold in Wisconsin during 2007 in the absence of Focus. For simplification purposes, we discuss below the application of the 78 percent for *Scenario 2–Mid Point*.

From Step 1, the Market Share of ECMs in WI during 2007 is 21.60 percent (4<sup>th</sup> row of Table 3). Because contractors report sales that would be 78 percent of 2007 levels in the program's absence, we multiply the 21.60 percent estimate of ECM market share by 78 percent to yield a baseline market share estimate of 16.85 percent (6<sup>th</sup> row of Table 3). Applying this baseline market share to the total FAFs sold in Wisconsin during 2007 (82,382) yields the total number of ECM furnaces sold in Wisconsin during 2007 in the absence of Focus. The estimate is 13,883 for *Scenario 2–Mid Point* (7<sup>th</sup> row of Table 3). The results for the other two scenarios are 17,180 for *Scenario 1–Upper Bound* and 10,585 for *Scenario 3–Lower Bound*.

### Step 3

The third step is to calculate the number of ECMs sold in Wisconsin during 2007 that were Focus-induced. This is the number of ECMs sold in Wisconsin during 2007 above and beyond what would have been sold in the absence of Focus (baseline), which is the result of the first step minus the result of the second step. The results, which vary by scenario, are 4,846 for

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<sup>11</sup> As discussed earlier, *Scenario 1–Upper Bound* assumes that the market share of ECMs sold by distributors outside of FACTS is the same as that sold by distributors involved with FACTS; *Scenario 2–Mid Point* assumes that the market share of ECMs sold by distributors outside of FACTS is the half of that sold by distributors involved with FACTS; and *Scenario 3–Lower Bound* assumes that no ECMs are sold by distributors outside of FACTS.

*Scenario 1–Upper Bound*, 3,916 for *Scenario 2–Mid Point*, and 2,985 for *Scenario 3–Lower Bound* (8<sup>th</sup> row of Table 3).

#### Step 4

The fourth step is to calculate the number of ECMs rewarded through Focus. These are the units tracked in the program database. In all, 10,300 ECMs were rewarded through Focus during 2007 (9<sup>th</sup> row of Table 3).

#### Step 5

The fifth and final step is to calculate the net-to-gross adjustment. This is the number of ECMs that were Focus-induced divided by the number of ECMs that were Focus-rewarded, which is the result of the third step divided by the result of the fourth step. The results, which vary by scenario, are 47 percent for *Scenario 1–Upper Bound*, 38 percent for *Scenario 2–Mid Point*, and 29 percent for *Scenario 3–Lower Bound* (10<sup>th</sup> row of Table 3).

When we compare the net-to-gross adjustments based on the contractor self-report methodology to the adjustments from the previous analysis, the net-to-gross estimate using the contractor self-report approach is significantly lower (38 percent versus 80 percent, respectively, for *Scenario 2–Mid Point*). This is because the previous analysis applied a baseline that assumed market share would have remained constant in the program's absence, which, for a program no longer in its early years, is an unrealistic assumption that would underestimate baseline market share and overestimate attribution.

## Conclusions and Recommendations

Our opinion is that the contractor self-report approach provides a reasonable picture of baseline market share in the program's absence and that the resulting attribution estimate is consistent with FACTS data showing ECM market share flattening subsequent to 2005. Therefore, we recommend use of the adjustment from the contractor self-report approach going forward. Applying the precedent established in previous years of using the *Scenario 2–Mid Point* estimate, this means a net-to-gross adjustment of 38 percent. This result is significantly lower than the previous estimate of 80 percent, but this result does not mean that the program should be terminated nor does it imply that past program efforts have not yielded positive effects on the market for ECM furnaces.<sup>12</sup> While the upcoming Potential Study will address potential market share for ECM furnaces that can be achieved through program efforts, our opinion is that market shares well in excess of the 20 percent range should be a

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<sup>12</sup> The net-to-gross estimate accounts for what the market would have looked like in the absence of the program in 2007 given that the program had been implemented in years prior to 2007. Regarding the effects of past program efforts, growth in market share is a market effects indicator, and the stagnant market share in recent years, as indicated by FACTS, would seem to suggest that to the extent past efforts have yielded market effects, they were probably caused by the early years of the program. This is supported by the characterization of EHC efforts by program staff. Staff stated that the \$150 incentive is the driving force for ECM sales, but said that when EHC first started the program had a role in helping distributors work with their contractors to overcome hesitancy to sell ECMs because ECMs were a relatively new technology. Since then, according to staff, the distributors have been doing much of the legwork and the program has not had to provide much marketing or sales support.

reasonable goal in the near- to mid-term and that efforts should be made to investigate modifications to the ECM program's design and delivery so that it can create momentum to increase market share at an increasing rate, and, with this momentum, achieve more favorable attribution rates.

**Attachment A  
ECM Market Share Trends  
for All Three Scenarios**

Attachment A presents the data behind Figure 1 in the *Results* section and shows ECM market share trends for all three scenarios (Table A-1).<sup>13</sup>

**Table A-1. ECM Market Share Trends for All Three Scenarios**

| Year                   | Scenario 1–<br>Upper<br>Bound | Scenario 2–<br>Mid Point | Scenario 3–<br>Lower<br>Bound |
|------------------------|-------------------------------|--------------------------|-------------------------------|
| Pre-Focus <sup>1</sup> | 11.52%                        | 9.31%                    | 7.10%                         |
| 2002                   | 16.00%                        | 12.93%                   | 9.86%                         |
| 2003                   | 20.03%                        | 16.18%                   | 12.34%                        |
| 2004                   | 20.41%                        | 16.49%                   | 12.57%                        |
| 2005                   | 23.96%                        | 19.36%                   | 14.76%                        |
| 2006                   | 26.46%                        | 21.38%                   | 16.30%                        |
| 2007                   | 26.74%                        | 21.60%                   | 16.47%                        |

<sup>1</sup> The statewide programs addressing ECM furnaces commenced in FY02 (July 1, 2001, to June 30, 2002). The pre-Focus baseline estimate for ECMs is based on a weighted average of market share estimates from 2000 and 2001 and is the same exact estimate that has been used in previous analyses.

<sup>13</sup> As discussed earlier, *Scenario 1–Upper Bound* assumes that the market share of ECMs sold by distributors outside of FACTS is the same as that sold by distributors involved with FACTS; *Scenario 2–Mid Point* assumes that the market share of ECMs sold by distributors outside of FACTS is the half of that sold by distributors involved with FACTS; and *Scenario 3–Lower Bound* assumes that no ECMs are sold by distributors outside of FACTS.

**Attachment B  
Participating HVAC Contractor  
Key Interview Results**



Attachment B presents key findings from the interviews with HVAC contractors who sold ECMs through the program during 2007. The guide for these interviews is presented in Attachment C. Attachment D presents a letter articulating the logic behind the updated methodology for this analysis and discussing ECM furnace supply-side effects.<sup>14</sup>

## Key Results

We completed interviews with 46 HVAC contractors who sold a total of 3,530 ECM furnaces through Focus during 2007, representing over a third of ECM furnaces rewarded through Focus during 2007. The contractors we interviewed covered a range of sales volumes through the program.<sup>15</sup> The interviews were conducted via telephone by Tom Talerico and Rick Winch of Glacier Consulting Group during March–May of 2008.

Before presenting the key survey results, we discuss two inconsistencies that we found between the contractor interview data and FACTS. First, when asked about the percent of furnaces sold in 2007 that were ECM furnaces, interviewed contractors reported, on average, that almost 60 percent of the furnaces sold in 2007 were ECM furnaces, which is significantly higher than the ECM market share reported in FACTS. Second, we found (see later discussion surrounding Table B-7) that almost 80 percent of interviewed contractors thought that the market share trend for ECMs is increasing, which is also inconsistent with FACTS data trends that show ECM market share staying the same in recent years. Unfortunately, we do not currently have information available to reconcile these inconsistencies.<sup>16</sup> We recommend that these inconsistencies be discussed with ECW, which oversees FACTS, and that the evaluation team investigates these inconsistencies further as part of any future HVAC contractor-related research. In the meantime, FACTS and the data from these interviews represent the best available market information for ECM furnaces. Moreover, these inconsistencies do not affect our overall conclusions regarding attribution, which are supported by a strong preponderance of the overall interview results (in particular, the verbatim responses, which are presented later in Table B-12).

After confirming the number of ECMs rebated through Focus, we asked HVAC contractors if they sold ECM furnaces outside of Focus during 2007. Fourteen of the 46 interviewed

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<sup>14</sup> Although the interview guide was designed prior to the formal review process that occurred in May 2008 regarding self-reports and supply-side effects, the evaluation team attempted to follow the criteria set forth in the policy papers addressing these issues. Moreover, both the interview guide and the letter were reviewed and approved by the Evaluation Team, PSC staff, and WECC staff.

<sup>15</sup> We analyzed the key attribution question both weighted and unweighted by sales through the program to investigate whether program sales volume had an effect on the key result. The results were almost identical. The contractors we interviewed reported that in the absence of the Efficient Heating and Cooling program and the \$150 rebate the number of ECM furnaces sold during 2007 would have dropped by 22 percent when weighted by sales and by 24 percent when unweighted by sales. This means that sales would have been 78 percent (weighted by sales) or 76 percent (unweighted by sales) of 2007 levels in the program's absence.

<sup>16</sup> Possible explanations include, but are not limited to, the following: (1) the 46 participating contractors we interviewed have substantially higher ECM market shares; (2) nonparticipating HVAC contractors, who were not interviewed, have substantially lower ECM market shares; and (3) the FACTS data is inaccurate.

- B2 -

contractors (30%) reported that they did. Among these 14 contractors, the ECMs sold outside of Focus represented an additional 32 percent to what they sold through Focus. The primary reason for selling ECM furnaces outside of Focus is that they sell furnaces in municipal or co-op areas that are not participating in Focus.

Forty-three of the 46 interviewed contractors (93%) reported that they promote ECM furnaces to all customers. Exceptions mentioned included rentals where owners do not pay the utilities, customers with low incomes, and customers who are thinking about selling their homes within the next year. When asked about how they promote ECM furnaces, strategies that focused on electrical savings/energy efficiency were cited by 44 of the 46 interviewed contractors (96%). Other commonly cited promotion strategies included balanced temperature/comfort (57%), quiet operation (35%), indoor air quality/filtration (33%), and extended warranty (26%). Rebates were mentioned by only 6 interviewed contractors (13%). Results are presented below in Table B-1.

**Table B-1. How Promote ECM Furnaces**

| Promotion Strategies                 | # of Contractors | % of Contractors |
|--------------------------------------|------------------|------------------|
| Electrical savings/Energy efficiency | 44               | 96%              |
| Balanced temperature/Comfort         | 26               | 57%              |
| Quiet operation                      | 16               | 35%              |
| Indoor air quality/Filtration        | 15               | 33%              |
| Extended warranty                    | 12               | 26%              |
| Rebates                              | 6                | 13%              |
| Higher end product/Reliability       | 5                | 11%              |
| Tax credits                          | 1                | 2%               |

We asked contractors about the reasons why customers install ECM furnaces. The responses were consistent with the promotion strategies that were cited by interviewed contractors (Table B-2).

**Table B-2. Why Customers Install ECM Furnaces**

| Reasons Why Customers Install ECM Furnaces | # of Contractors | % of Contractors |
|--|------------------|------------------|
| Electrical savings/Energy efficiency       | 42               | 91%              |
| Balanced temperature/Comfort               | 25               | 54%              |
| Quiet operation                            | 13               | 28%              |
| Indoor air quality/Filtration              | 12               | 26%              |
| Extended warranty                          | 8                | 17%              |
| Rebates                                    | 5                | 11%              |
| Higher end product/Reliability             | 5                | 11%              |
| Tax credits                                | 1                | 2%               |

When asked about the reasons why customers do not install ECM furnaces, money/cost was mentioned by 43 of the 46 interviewed contractors (93%). Other commonly cited reasons included rentals (26%) and not being in house long enough to recover costs (20%). Results are presented below in Table B-3.

**Table B-3. Why Customers Do Not Install ECM Furnaces**

| Reasons Why Customers Do Not Install ECM Furnaces   | # of Contractors | % of Contractors |
|---|------------------|------------------|
| Money/Cost  | 43               | 93%              |
| Rentals   | 12               | 26%              |
| Not be in house long enough to recover costs/Moving | 9                | 20%              |
| Concerns about repair                               | 3                | 7%               |
| Small homes   | 3                | 7%               |
| Not see need for the features                       | 2                | 4%               |
| Not know enough about it                            | 1                | 2%               |

We asked contractors about the extra cost for a 90+ AFUE ECM furnace compared to a 90+ AFUE single stage furnace without an ECM. Results are presented below in Table B-4. The

- B4 -

reported incremental cost averaged \$910, ranging from a low of \$450 to a high of \$1,800. This indicates that on average the rebate may only represent roughly 16 percent of the incremental cost, excluding any manufacturer or distributor rebates. This helps to explain why contractors reported that ECM sales would not have dropped significantly during 2007 in the absence of the \$150 Focus rebate (This result is presented later in Table B-11).

**Table B-4. ECM Furnace Incremental Cost**

| Incremental Cost | # of Contractors | % of Contractors |
|------------------|------------------|------------------|
| \$450-\$550      | 5                | 11%              |
| \$600-\$675      | 5                | 11%              |
| \$700-\$750      | 6                | 13%              |
| \$800-\$850      | 4                | 9%               |
| \$900            | 5                | 11%              |
| \$1,000          | 10               | 22%              |
| \$1,100          | 4                | 9%               |
| \$1,200          | 3                | 7%               |
| \$1,350-\$1,800  | 4                | 9%               |

We asked contractors about the factors that influence their sales of ECMs. Manufacturer and distributor promotions and rebates were cited most frequently (35%), followed closely by Focus rebates (33%). Other commonly cited factors included comfort (17%), energy savings (17%), quiet operation (15%), and tax credits (15%). Results are presented below in Table B-5.

**Table B-5. Factors Influencing ECM Sales**

| Influencing Factor                                  | # of Contractors | % of Contractors |
|---|------------------|------------------|
| Manufacturer and distributor promotions and rebates | 16               | 35%              |
| Focus rebates                                       | 15               | 33%              |
| Comfort   | 8                | 17%              |
| Energy savings                                      | 8                | 17%              |
| Quiet operation                                     | 7                | 15%              |

- B5 -

| Influencing Factor           | # of Contractors | % of Contractors |
|------------------------------|------------------|------------------|
| Tax credits                  | 7                | 15%              |
| Premium product              | 3                | 7%               |
| Filtration                   | 2                | 4%               |
| Increased consumer awareness | 2                | 4%               |
| Reliability                  | 2                | 4%               |
| Warranty                     | 2                | 4%               |

Forty-four of the 46 interviewed contractors (96%) reported that their manufacturers and distributors influence their sales of ECMs. Rebates were the most common type of influence, reported by 39 of the 44 contractors (89%). Manufacturer and distributor rebate amounts vary, ranging from \$100–\$500 for only an ECM to upwards of \$1,000–\$1,750 for total high efficiency system installations (e.g., installing both an ECM furnace and a 15+ CAC). Extended warranties were also cited by 7 of the 44 contractors (16%). The typical extended warranty mentioned was an upgrade to 10-year parts and labor warranty from a 5-year warranty. Results are presented below in Table B-6.

**Table B-6. Manufacturer and Distributor Influence on ECM Furnace Sales**

| Type of Influence   | # of Contractors | % of Contractors |
|---------------------|------------------|------------------|
| Rebates             | 39               | 89%              |
| Extended Warranties | 7                | 16%              |
| Financing           | 1                | 2%               |

We asked contractors if they thought the market share trend for ECMs is increasing, decreasing, or staying the same. Results are presented below in Table B-7. Almost 80 percent of interviewed contractors thought that the market share trend for ECMs is increasing and 17 percent thought that the trend is staying the same. Only one contractor (2%) thought that the trend is decreasing.

**Table B-7. ECM Market Share Trends**

| ECM Market Share Trend | # of Contractors | % of Contractors |
|------------------------|------------------|------------------|
| Increasing             | 36               | 78%              |
| Decreasing             | 1                | 2%               |
| Staying the same       | 8                | 17%              |
| Not sure               | 1                | 2%               |

When asked about the factors driving the trend in ECM market share, energy savings/rising energy costs (33%), increased consumer awareness (30%), and ECMs being an established technology/premium product (30%) were the top three factors cited. Manufacturer and distributor promotions and rebates were mentioned by seven interviewed contractors (15%), and Focus rebates were mentioned by five interviewed contractors (11%). Results are presented below in Table B-8.

**Table B-8. Factors Driving ECM Market Share Trends**

| Influencing Factor                                  | # of Contractors | % of Contractors |
|---|------------------|------------------|
| Energy savings/Rising energy costs                  | 15               | 33%              |
| Increased consumer awareness                        | 14               | 30%              |
| Established technology/Premium product              | 14               | 30%              |
| Manufacturer and distributor promotions and rebates | 7                | 15%              |
| Focus rebates                                       | 5                | 11%              |
| Economy   | 5                | 11%              |
| ECM more expensive                                  | 3                | 7%               |
| Comfort   | 1                | 2%               |
| Indoor air quality                                  | 1                | 2%               |
| Quiet operation                                     | 1                | 2%               |



The last set of questions relevant to the net-to-gross analysis focuses on the effect of the \$150 Focus rebate.<sup>17</sup> Because these questions are critical to assessing the level of ECM sales in the absence of the \$150 Focus rebate, we provide not only an overview of the responses to these questions in Tables B-9 through B-11 but also disclose the verbatim responses (masked where necessary to maintain confidentiality) in Table B-12 to provide context for reviewers and stakeholders.

We first asked contractors how much they use the \$150 Focus rebate as a sales tool for ECM furnaces. Two-thirds of interviewed contractors reported that they use the rebate all of the time and 26 percent said that they use the rebate and it has an important role. Only one contractor (2%) said that he does not use the rebate as a sales tool. Results are presented below in Table B-9. Please also refer to Table B-12 (Columns A and B) for the verbatim responses given by interview contractors about the role that the \$150 Focus rebate has on the customer's decision to install an ECM furnace.

**Table B-9. Use of \$150 Focus Rebate as Sales Tool**

| How Use Rebate                           | # of Contractors | % of Contractors |
|--|------------------|------------------|
| Uses rebate all the time                 | 31               | 67%              |
| Uses rebate – Important Role             | 12               | 26%              |
| Uses rebate – Not As Important of a Role | 2                | 4%               |
| Does not use rebate                      | 1                | 2%               |

We then asked contractors if they think they would have sold more, fewer, or the same number of ECM furnaces in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available. Thirty-nine of the 46 interviewed contractors (85%) reported that they would have sold fewer ECM furnaces and six (13%) said that they would have sold the same number of ECM furnaces. Results are presented below in Table B-10. Please also refer to Table B-12 (Columns C and D) for the verbatim responses given by interview contractors about the level of ECM furnace sales in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available.

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<sup>17</sup> The interview guide also addresses furnace fan operation, but these questions are not relevant to this net-to-gross analysis. Instead, these questions play a supporting role in estimating verified gross savings estimates, which are presented in a separate report.

**Table B-10. More, Less, or Same Number of ECMs in Program's Absence**

| Level in Program's Absence | # of Contractors | % of Contractors |
|----------------------------|------------------|------------------|
| More                       | 0                | 0%               |
| Fewer                      | 39               | 85%              |
| Same                       | 6                | 13%              |
| Does not know              | 1                | 2%               |

Finally, we asked contractors who reported that they would have sold fewer ECM furnaces to estimate the decrease in ECM sales in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available.<sup>18</sup> We recorded a zero percent decrease for the six contractors who reported that they would have sold the same number of ECM furnaces in the program's absence. No interviewed contractors reported more than a 50 percent decrease in sales in the program's absence, and almost two-thirds of interviewed contractors (63%) mentioned a decrease of 30 percent or less. The results are presented below in Table B-11.

**Table B-11. Decrease in ECMs during 2007 in Program's Absence**

| Percent Decrease | # of Contractors | % of Contractors |
|------------------|------------------|------------------|
| 0%               | 6                | 13%              |
| 4%-10%           | 5                | 11%              |
| 12%-20%          | 8                | 17%              |
| 22%-30%          | 10               | 22%              |
| 33%-37%          | 7                | 15%              |
| 50%              | 7                | 15%              |
| Does not know    | 3                | 7%               |

On average, the contractors we interviewed reported that in the absence of the Efficient Heating and Cooling program and the \$150 rebate the number of ECM furnaces sold during 2007 would have dropped by 22 percent when weighted by sales and by 24 percent when

<sup>18</sup> Many contractors reported a percent decrease in sales, but some reported a raw number. In either case, we confirmed the response with each interviewed contractor. In cases where a raw number was reported, we converted the response to a percent decrease for reporting purposes (we were able to make this conversion because we had the contractor's rebated sales total from the program database and confirmed this total with the contractor).

unweighted by sales. This means that sales would have been 78 percent (weighted by sales) or 76 percent (unweighted by sales) of 2007 levels in the program's absence. Please also refer to Table B-12 (Columns E and F) for the verbatim responses given by interviewed contractors about the level of ECM furnace sales in 2007 if the Efficient Heating and Cooling program and the \$150 rebate were not available.

Table B-12. Verbatim Responses to Key Attribution Questions

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?  | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?  | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less? | (F)<br><br>% in Absence of Program |
|--|---|---|---|--|------------------------------------|
| Uses the rebate all of the time. They advertise it at trade shows and newsletters.   | The rebate has somewhat of an impact. The combination of the Focus rebate with the manufacturer rebates has a benefit. People like rebates. For some, the Focus rebate provides credibility. Thinks that rebates influence the decision for 50% of customers. | Less  | The rebate has somewhat of an impact. The combination of the Focus rebate with the manufacturer rebates has a benefit. People like rebates. For some, the Focus rebate provides credibility. Thinks that rebates influence the decision for 50% of customers. | Sales would decrease by 50%.           | 50%                                |
| All the time.  | Not sure. It depends on the person. People like getting rebates.  | Less  | The rebates help offset the extra cost.   | Decrease of 50%.                       | 50%                                |
| Every job.   | It is a huge deal. Credibility is the biggest thing. When talking about a few thousand dollars, \$150 helps some, but the credibility factor is huge.   | Less  | The rebate lends credibility.   | Decrease of 50%.                       | 50%                                |
| All the time.  | It's okay. Thinks rebate should be higher.  | Less  | The rebate puts some people over the edge.  | Cut in half.                           | 50%                                |
| Uses it on every sale.   | Rebate makes a big difference when upselling equipment.   | Less  | Rebate makes a big difference when upselling equipment.   | Cut in half.                           | 50%                                |
| The \$150 brings the extra cost from \$700 to \$550. They do all the paperwork and processing of the rebate for their customers. | Everyone likes a rebate. The \$150 helps to push the customer over the top, but some customers like to have the best equipment. \$700 extra is pricey so the \$150 helps.   | Less  | The extra \$150 helps push customers over the edge. Most people want top of the line and the \$150 helps then justify it in their mind.   | Half of what did in 2007.              | 50%                                |
| Makes rebate part of every quote.  | Rebates matter for some people, but some people do not care about the rebate.   | Less  | Rebates matter for some people.   | Cut in half.                           | 50%                                |

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?  | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?                                | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less?  | (F)<br><br>% in Absence of Program |
|--|---|---|---|---|------------------------------------|
| All the time.  | It has a pretty good sized role.  | Less  | Can show a reasonable payback with the rebate. For customers who operate fan continuously, the payback is 3 years.  | Decrease from XX to YY (37% decrease).  | 63%                                |
| \$150 is a big factor but sold a lot of ECMs prior to Focus. Has been selling top of the line of HVAC equipment for a long time now. | The focus \$150 has helped, but they have been selling ECM furnaces for a long time now. Manufacturer has had ECMs since the early 1990s. | Less  | Because rebates help reduce the incremental cost and make it less out-of-pocket for customers.  | Decline from XX to YY if it went away (37% decline).  | 63%                                |
| Everyone.  | The rebate is an added benefit and gives the customer one more reason to go with the ECM.   | Less  | The rebate is an added benefit and gives the customer one more reason to go with the ECM.   | Drop of 35%.  | 65%                                |
| They will use everything that is available to them and it is easy and quick and helps them get the sale.                             | It definitely has some impact.  | Less  | It is difficult to say what impact will be, but it would be fewer. Said best guess is drop of 1/3.  | It will probably drop by 1/3.   | 67%                                |
| They try to sell the ECM furnace on its own merits and use the rebates to help close the deal.                                       | It helps people get over the top and buy it.  | Less  | Simply would need more dollars from the customer without the rebate. Any time the customer has to pay more you are increasing the likelihood that they won't buy the ECM. | Decrease by 33 percent, but said this is very hypothetical because they could see their distributor trying to fill the gap if the Focus reward went away. Also said that they might reduce their own price to get the ECM sale. | 67%                                |

- B12 -

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?                                   | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?  | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less? | (F)<br><br>% in Absence of Program |
|---|---|---|---|--|------------------------------------|
| Always offer it. It really resonates with the customer. Homeowners are aware of ENERGYSTAR and rebates get their attention. | Always helps them on retrofit jobs but probably not a factor on new construction.   | Less  | Thinks it would drop by 1/3 but said they would work really hard to try to not have it drop at all. But, for some people, it will increase their out-of-pocket expenditure and, therefore, they might not do it.  | Decrease by 33 percent.                | 67%                                |
| All the time.   | The rebate is what pushes it over.  | Less  | The rebate justifies the extra expenditure for those looking at first cost instead of lifetime costs. The rebate also gives the salesperson confidence.   | Decrease of one third.                 | 67%                                |
| All the time.   | The rebate is paper-ridden. It was nicer when the rebate was \$300. The ECM sells itself because of the energy savings.                           | A little less but not that much   | Energy savings are the main factor.   | Decrease from XX to YY (30% decrease). | 70%                                |
| He thinks it is real important, especially when it is coupled with the manufacturer rebate of \$200.                        | It's an important part of their decision.   | Less  | Makes it more expensive for the consumer and, therefore, some of them will no longer do it.   | 30 percent decline.                    | 70%                                |
| Offers it every time and has built the rebates into the sales process.  | Rebates do help, but if the salesman truly explains the benefits the customer will go with it.  | Less  | A good percentage will still buy without the rebate. They still sell ECMs year-round even when the manufacturer rebates go away. Cost is a factor so the rebate makes it easier to swallow for some. Also offers financing so people go with higher efficiency and are able to use savings on utility bill to help with the payments. | Drop 25-30%.                           | 73%                                |
| Puts rebate on every proposal.  | Seems like they look at everything including rebate. Puts price on proposal, less discount, and shows the next cost so the rebate is highlighted. | Less  | Some customers like to get cash back but lots of people call them already knowing that they want the highest efficiency.  | Decrease from XX to YY (27% decrease). | 73%                                |



| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?  | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?  | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less?   | (F)<br><br>% in Absence of Program |
|--|---|---|---|--|------------------------------------|
| It is part of the equation. Helps when you really couple it with \$150 CAC and \$150 system credit (all Focus). It is one part of a total of \$1,450 that can be made available (\$1,000 through mfr and \$450 through Focus). | It is part of the equation, but a small part when selling systems.  | Less  | Said that it would especially hurt his sales where he is only sell people the ECM furnace (this happens about 50% of the time). Said that the other 50% of the time he is selling a total system replacement (both FAF and CAC) and, in these situations, the lack of a Focus rebate would not be that big of a deal. | 20-30 percent.   | 75%                                |
| It is pretty important. It makes it a "no brainer" to go from a 2-stage unit to the ECM because all the rebates (Focus and manufacturer) cover nearly all the incremental cost.  | It is a factor; it certainly helps. The \$150 from Focus and the \$150 from manufacturer means the customer only pays about \$100 more to go to an ECM (compared to a 2-stage 90% ECM). | Less  | Makes it more expensive for the consumer and, therefore, some of them will no longer do it.   | Said it would cut it some. At most it would be a 25% decline. Said it is hard to say exactly how much. He would hope that they would still be able to sell them. | 75%                                |
| All the time.  | It definitely helps.  | Less  | Would just cause a few people to have too big a hurdle to get over with respect to the upfront cost.  | Decrease by 25 percent.  | 75%                                |
| Every time.  | Talks about long-term energy savings but the rebate makes the deal more attractive to the customer.   | Less  | Even without the Focus rebate, there would be manufacturer rebates during certain times of the year.  | Drop of 25%.   | 75%                                |
| Uses it but not as a high criteria.  | The reward has minor influence. \$150 is not a lot when spending \$4,000-\$4,500 on a complete system. Electrical savings, comfort, and indoor air quality are the key factors.         | Less  | Still would promote ECMs without the rebate.  | Drop from XX to YY (23% decrease).   | 77%                                |

- B14 -

| (A)  | (B)   | (C)  | (D)   | (E)  | (F)                     |
|--|---|--|---|--|-------------------------|
| Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?   | Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?   | Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | Q13. Why?   | Q13. How much more or less?                          | % in Absence of Program |
| All the time.  | It definitely plays a role and helps the customer get over the upfront cost concern.  | Less   | Without rebate, people will not be as comfortable investing extra cost in ECM.  | Decrease by 20 to 25 percent from the current level. | 78%                     |
| Thinks the \$150 is very important because it helps bring the payback down. A/C is much harder to sell because the payback is not there. | It definitely helps.  | Less   | It would be more difficult to sell ECM furnaces without the rebates.  | Decrease by 20 percent.                              | 80%                     |
| Includes rebate on every proposal.   | Doesn't know. Have to ask the customer about that.  | Less   | The program is influencing sales but the ECM has more bells and whistles than just the ECM motor. For example, the ECM offers the benefit of two-stage heat. Also, the manufacturer rebates would still be available. | Decrease from XX to YY (20% decrease).               | 80%                     |
| Always.  | The rebate shows that Wisconsin is encouraging energy efficiency.   | A little less  | It is the whole package that matters, not just the \$150 rebate. The rebate signals that the state is involved and that it is a good deal.  | Decrease from XX to YY (19% decrease).               | 81%                     |
| Uses it a lot.   | The rebate is a big thing and makes the ECM look more attractive to the customer.   | Less   | If the Focus rebate were to go away then he would create his own rebate to make up for it.  | Sell 15-20% less.                                    | 83%                     |
| Every time.  | Rebates have a significant role. Rebates show backing by an outside source with no ties to the contractor and this carries a lot of weight. | Less   | Some people put emphasis on an outside source, like Focus and the rebate, to help drive decision.   | 15% decrease.  | 85%                     |
| Offers it every chance he gets.  | The rebate is always a little bit of a lever. It brings the price down and makes it more palatable.   | Would sell a few less if no rebate, but not a substantial amount less  | Has been selling ECMs since 1989 when they first came out. Always promotes them. Also promotes two-stage CAC so need a two-stage furnace anyway.  | Drop from XX to YY (15% decrease).                   | 85%                     |

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?   | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?   | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less?   | (F)<br><br>% in Absence of Program |
|---|--|---|---|--|------------------------------------|
| Said the \$150 really sweetens the pot. They advertise \$1,750 for a complete system change out (\$1,000 Carrier, \$450 Focus, \$300 air quality products such as humidifier and filtration). | Sweetens the pot. Make it more likely that a person will buy the ECM.  | Less  | Customers would have to pay more and some would decide not to.  | Drop 10-15 percent.  | 88%                                |
| It certainly helps but would be pushing the ECM furnace regardless. He has always been a big proponent of continuous fan operation.   | Really helps when coupled with the manufacturer rebate.  | Less  | He really is not sure how much less he would sell without the program.  | 10-15 percent. Said he would hope, given the emphasis they have always put on comfort, that he would continue to sell the same number. | 88%                                |
| All the time.   | Every ECM quoted has the rebate written on it. The \$150 rebate helps bring the price point down closer to the standard 90% non-ECM furnace.       | Slightly less   | The \$150 makes some people jump the fence but some people will buy ECM regardless of rebate.                   | 10% less.  | 90%                                |
| Big part of the process is selling to customers. Said that 50% of the time he is getting a total system replacement because of the rebate.  | It is important. Very important when you couple it with other rebate offerings. Said that Focus or manufacturer rebate on their own is not enough. | Less  | Said it is hard to say by how much but that he would guess about 10% fewer if the Focus \$150 were not around.  | 10 percent.  | 90%                                |
| Helps quite a bit.  | It definitely helps.   | Less  | Would lose some sales, but people are looking for ways to reduce consumption because of environmental concerns. | Decrease by 10 percent.  | 90%                                |
| All the time.   | Honestly, it tips them over the edge to go with it. They get some immediate gratification from the \$150.  | Less  | For some folks, the rebate helps with that final decision point.  | Decrease by 5 percent.   | 95%                                |

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace? | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?   | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?   | (E)<br><br>Q13. How much more or less? | (F)<br><br>% in Absence of Program |
|---|--|---|--|--|------------------------------------|
| Every time.   | The door opens easier with the rebate.   | Slightly less   | Whether or not the customer buys an ECM is based on the benefits not the rebate.   | Decrease from XX to YY (4% decrease).  | 96%                                |
| Every day.  | Anytime customer gets money back, it is good. The rebate steers customer toward ECM. People also buy on comfort. ECM is becoming standard.   | Less  | Anytime customer gets money back, it is good. The rebate steers customer toward ECM. People also buy on comfort. ECM is becoming standard.   | Does not know how much less.           | DK                                 |
| Always.   | The customer likes the rebate.   | Less  | If not have the rebate the customer may still go with the ECM. The rebate is an extra bone/treat. ECM sales would go down a little bit but would still be pretty close to the same amount because manufacturer has rebates. Is also selling comfort and quietness so the extra \$150 from Focus is frosting on the cake. Does not think that would lose that many sales. | Does not know how much less.           | DK                                 |
| Not use the rebate.   | Does not think they need the rebate anymore. Can justify the ECM sale based on the energy savings. The \$150 does not make the deal. 90% of the time, the customer has already made the decision to go with the ECM before the rebate is discussed. Most people need furnace when they call so they are already in the market to replace | Same  | Buying the ECM because of the energy savings, not the rebate   |  | 100%                               |

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?  | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?   | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less? | (F)<br><br>% in Absence of Program |
|--|--|---|---|--|------------------------------------|
| They use it every day of the week.   | By itself it would not be enough because giving someone \$150 toward what will cost \$700 more is not going to be enough. Said it becomes worth it for people who are going to run their fan continuously. Said it will take \$400-\$500 to get people who do not plan to run their fan continuously to make the ECM purchase. | Same  | While he is not really sure what it would do, he said he would hope that it would have little to no impact. Said that he sells them effectively in co-op areas (where no rebates apply) which leads him to believe he could do it without the Focus rebate.   |  | 100%                               |
| It helps close the cost gap for people. When you couple is with the manufacturer rebate of \$200 then the increased customer cost is only \$150. | The \$150 plays a huge role because it really helps close the cost gap between an ECM furnace and a two-stage unit without an ECM. The cost gap is \$500 and the Focus plus manufacturer rebates provide \$350, reducing the customer cost to \$150.   | Same  | Said she would hope that they could still sell the high-end equipment without the rebate. They would sell it hard on the 10 year warranty on parts and labor (which is much better than the warranty on other equipment). Said she would like to think that they would sell the same number because of the emphasis they have always put on it. |  | 100%                               |
| Every time.  | It means quite a bit. It helps narrow the gap especially with system sales.  | About the same  | \$150 in the scheme of what it costs does not make much of a difference. People are committed to what they want to buy before he shows up.  |  | 100%                               |
| Everyone.  | It is hard to isolate the effect of the Focus rebate from the effect of the manufacturer rebate, extended parts and labor warranty, and energy savings. People are saying that they are saving \$25/month.   | Same  | Believes in ECM furnace and will still promote it without the rebate. In northern WI, you need to put the best furnace in that you can.   |  | 100%                               |

| (A)<br><br>Q11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?                                   | (B)<br><br>Q12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?   | (C)<br><br>Q13. If the EHC program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007? | (D)<br><br>Q13. Why?  | (E)<br><br>Q13. How much more or less? | (F)<br><br>% in Absence of Program |
|---|--|---|---|--|------------------------------------|
| Uses the rebate all of the time.  | Rebate does not have much of a role. People who are looking at the ECM can afford it anyways and want top of the line equipment. On the other hand, it is always nice to say to the customer that they will get a little money back and the rebate lends credibility to the furnace. | Probably about the same.  | Of the XX ECMs sold through the program in 2007, thinks that could have done most of them because if they jump an extra \$1,000 anyway \$150 will not have much of an effect. |  | 100%                               |
| \$150 is very important. Coupled with manufacturer's \$200 it really helps. It gets their sales guy to recognize the value. | Big difference, really helps.  | Not sure  | Said it is very difficult to say what will happen. A lot of people are really stretching to afford the ECM but would like to think they will still be able to sell them.      | Does not know.                         | DK                                 |



**Attachment C  
Participating HVAC Contractor  
Interview Guide**

Attachment C presents the interview guide we used for the HVAC contractor interviews. This guide was reviewed and approved by the evaluation team, PSC staff, and WECC staff.

## HVAC Contractor Interview Guide

**Contractor:** \_\_\_\_\_

**Contact:** \_\_\_\_\_

### Introduction

Hello, may I please speak to \_\_\_\_\_. My name is \_\_\_\_\_. I am calling on behalf of the State of Wisconsin's Focus on Energy program to talk with you for 15-20 minutes about your involvement with selling ECM furnaces through the Efficient Heating and Cooling rebate program. The feedback you provide is very valuable to improving the program, and your individual responses will be kept confidential.

### Furnace Promotional Practices

Let's start with how you promote ECM furnaces.

1. According to program records, you have sold about **XXX** ECM furnaces through the rebate program in 2007 and **YYY** in 2006. Does that sound about right?

2. Do you sell ECM furnaces outside the rebate program?

*If yes:*

- About how many did you sell outside the program in 2007?
- Why do these units not get a rebate?

3. Thinking about all of the furnaces you installed in 2007, what percent were ECM furnaces? (*Confirm total sales*)

4. Do you promote ECM furnaces to all customers?

*If yes:*

- How? (*Probe for sales pitch*)

*If no:*

- Why not? (*Probe for attitudes toward ECMs*)

5. Why do customers choose to install ECM furnaces?

6. Why do customers choose not to install ECM furnaces?

7. Thinking about 90+ AFUE furnaces, what is the extra cost for an ECM furnace compared to a furnace without an ECM?
8. What are the factors that influence your sales of ECM furnaces?
9. What influence do your manufacturers and distributors have on your sales of ECM furnace?
10. Do you think that the market share trend for ECM furnaces is increasing, decreasing, or staying the same? What do you think is driving this trend?
11. How much do you use the \$150 rebate as a sales tool for the ECM furnace?
12. What role does the \$150 rebate have in the customer's decision to install an ECM furnace?
13. If the Efficient Heating and Cooling program and the \$150 rebate were not available, do you think that you would have sold more, less, or the same number of ECM furnaces in 2007?

*Ask everyone:*

- Why?

*If more or less:*

- How much more or less?

*Clarify and confirm response:*

- That means that **XX** percent of the ECM furnaces you sold in 2007 would still have been sold even without the \$150 rebate?

### Furnace Fan Operation

Let's talk about what you tell customers who install a new furnace about furnace fan operation. Let's start with customers who install an ECM furnace.

14. How often do you recommend continuous fan operation to customers who install ECM furnaces?
15. Why do you recommend continuous fan operation to customers who install ECM furnaces?  
*(Probe for situations)*

Now let's talk about customers who install furnaces without ECMs.

16. How often do you recommend continuous fan operation to customers who install furnaces without ECMs?

17. Why do you recommend continuous fan operation to customers who install furnaces without ECMs? (*Probe for situations*)

Let's go back to ECM furnace purchasers for a minute.

18. Do you recommend continuous fan operation to ECM furnace purchasers who were previously operating their fan in auto mode with their old furnace?

*If yes:*

- Why?
- Do you tell these customers that they will save money by changing from auto to continuous fan operation? If yes, how do they save money?

*If no:*

Why not?

Finally, let's talk about non-ECM furnace purchasers again.

19. Do you recommend continuous fan operation to non-ECM furnace purchasers who were previously operating their fan in auto mode with their old furnace?

*If yes:*

- Why?
- Do you tell these customers that they will save money by changing from auto to continuous fan operation? If yes, how do they save money?

*If no:*

Why not?

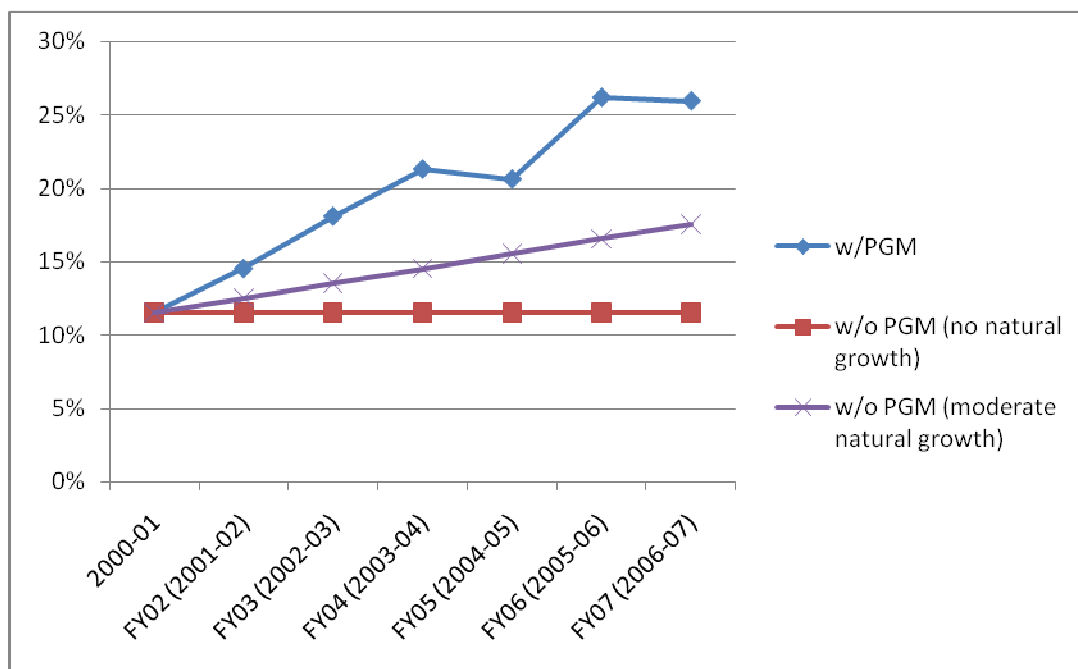
**Attachment D  
Contractor Self-Report Methodology and  
Supply-side Effects**

Attachment D presents a letter articulating the logic behind the contractor self-report methodology for this analysis and discussing ECM furnace supply-side effects. This letter was reviewed and approved by the Evaluation Team, PSC staff, and WECC staff. Based on discussions with WECC staff, we concluded that the rebate is the primary means through which the program is currently affecting the market for ECM furnaces. Although initial program efforts to distributors may have helped to facilitate growth in ECM market share beyond the share prior to the program, program staff acknowledged, and the evaluation team agreed, that these initial effects would no longer have a major influence on today's sales. Finally, outreach efforts directed at end-users has been tangential and not a force driving ECM sales. Therefore, when assessing ECM sales in the absence of the program, the interviews and subsequent analysis focused primarily on the effect of the rebate on ECM sales.

## Contractor Self-Report Methodology and Supply-side Effects

The evaluation team will be interviewing HVAC contractors to estimate market share of ECM furnaces in the absence of the Efficient Heating and Cooling (EHC) program and to assess the types of furnace fan operation advice contractors are giving to customers who replace their furnace. The estimation of ECM market share in the absence of EHC efforts is necessary because the FACTS market data does not provide an adequate baseline from which to evaluate net impacts. Past analyses have used the pre-program market share estimate as the baseline. While not ideal, this was more acceptable in the early years of the program because not much time had elapsed where natural growth would likely be significant. As more time has elapsed, it is necessary for the baseline to account for natural growth in ECM market share in the absence of program efforts. See figure D-1 for an example.

**Figure D-1.**



On February 12<sup>th</sup>, we met with Bobbi Fey and Jill Cornelius to gain an understanding of the role of the program's interaction in the ECM furnace market. Below is a summary of the program's activities with distributors/contractors and customers (end-users).

### **Distributor/Contractor Sales Training**

WECC includes one copy of a Fact Sheet in the EHC Program Guide that is given to each participating contractor. The Fact Sheet is meant to be a sales tool for the contractors and describes the benefits of energy efficiency and the types of energy efficient systems available. WECC's intent is for the contractor to give the Fact Sheet to the customer. Program staff said that the Program Guides have a form that contractors can use to order program materials, such as applications and Fact Sheets. Program staff said that additional Fact Sheets are rarely ordered leading staff to believe that the Fact Sheets are not being used by contractors.

Program staff stated that the \$150 incentive is the driving force for ECM sales, but said that when EHC first started the program had a role in helping distributors work with their contractors to overcome hesitancy to sell ECMs because ECMs were a relatively new technology. Since then, the distributors have been doing much of the legwork and the program has not had to provide much marketing or sales support. Beyond provision of the Fact Sheet, the program does not provide any sales training directly to contractors. What the program does provide is program training. This includes working with contractors who call in and have questions about the program. Program staff indicated that the program runs on its own now that the program is mature. The program still works with distributors because they are a reliable source for the program to get exposure to mass contractor meetings/trainings and because they help to promote the program to contractors. In fall of 2007, program staff attended several trainings that various distributors were conducting for their contractors. These distributors provided training that was oriented to discussing new models and products, but not on sales approaches. During the training, program staff gave a 15-minute presentation on what is available through EHC but did not address sales practices.

### **Customer-Oriented Outreach**

In January 2008, WECC did a customer based marketing e-mail blast about rebates on forced air furnaces and boilers. This effort was targeted to purchasers of Energy Star appliances through Focus and leads obtained from other sources, such as the booth at the State Fair. WECC also has handout cards available that summarize energy efficiency options. These handouts are made available at CFL sales events and for HPWES consultants to distribute during assessments.

### **Conclusion**

Based on the above information, we conclude that the rebate is the primary means through which the program is currently affecting the market for ECM furnaces. Although initial program efforts to distributors may have helped to facilitate growth in ECM market share beyond the share prior to the program, program staff acknowledged, and the evaluation team agrees, that these initial effects would no longer have a major influence on today's sales. Finally, outreach efforts directed at end-users has been tangential and not a force driving ECM sales. Therefore, when assessing ECM sales in the absence of the program, the interviews and subsequent analysis will focus primarily on the effect of the rebate on ECM sales.