Market Progress Evaluation Report

Premium Efficiency Motors

prepared by

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Executive Summary

Introduction

The *Premium Efficiency Motors (PEM) Program*, which began in early 1997, is a regional effort to "increase the quantity of energy efficient motors purchased and used in the region by commercial and industrial facilities by increasing awareness and product availability through dealer incentives, educational tools, support of consistent national motors standards and motor testing." The levels of efficiency for the program qualifying motors (QMs) were set above the new (October 1997) Federal minimum motor efficiency standards and are met only by some of the top-end motors described as "premium motors" by the motor industry. While the primary targets of the PEM program are motor dealers and customers, a subsidiary objective is to increase availability of high efficiency motors from manufacturers. The Program is administered by the Electric League and sponsored by the Northwest Energy Efficiency Alliance, Inc. (NEEA).

Synopsis of Program Activity

The primary activities to date have been marketing and explaining the Program's dealer incentives for sales of motors meeting minimum efficiency levels. Communication has occurred via mail, telephone, and in-person visits with dealers. Promotion began in the I-5 corridor in March. Intensive promotional activity in the remainder of the region began in the summer. The program also offers dealer and customer training and motor testing, but there have only been a handful of formal training sessions and less than ten motors have been tested thus far. As of the end of October, 68 dealers have signed participation agreements, and 24 of these have received total incentives of $20,173 on 451 motors.

Summary of Research Activities

NEEA contracted with Pacific Energy Associates, Inc. (PEA) to conduct an evaluation of the *PEM Program*. This report presents PEA's findings based on research activities to date. The activities completed so far include:

- Brief telephone interviews with all eligible motor dealers in the region that could be reached and were willing to respond (N=152). Among these were 59 very small dealers (selling less than 50 motors per year).

- In-depth in-person and telephone interviews with 49 motor dealers, including a certainty sample of 22 large dealers out of a total of 25.

- In-person interviews with two program staff, one NEEA program manager, and one NEEA board member.

- Telephone interviews with three national motor market experts.

- Analysis of each data set and comparison of findings between data sets.

Based on this work, this report presents a summary of motor sales and stocking patterns in the Pacific Northwest, and a preliminary review of the Program's influence in that market and program process. The program review is preliminary because the Program has only been in the field since last March and also because customer and utility staff interviews have not yet taken place. They are planned as part of a later *Program Progress Evaluation* study and report.

Key Preliminary Conclusions Regarding the Role of the PEM in the Motors Market

1. **The title of the program includes the word "premium efficiency," but not all manufacturer-designated "premium" motors qualify.** While this may be somewhat confusing to readers of this report, it has not caused much confusion in the Program. Dealers are given a list of qualifying efficiencies when introduced to the program and understand that only some "premium" motors qualify. Dealers are accustomed to utility programs with minimum efficiencies, so this is nothing new to them.

2. **There are approximately 34,000 annual sales of general-purpose, integral non-OEM (i.e., program-eligible) motor sales in the region. About 12% of those sales meet the *PEM***

Program's **minimum efficiency standards** (referred to in this report as the Qualifying Motor or QM efficiency level).

3. **Sales receiving dealer incentives under the PEM program were a very small share of the market during the period when the program has been actively marketed** (April through October). NEEA rewarded dealers for sales constituting:

   - Less than three percent of the total sales in the target market (>2 HP).

   - Seven percent of sales of all "premium" motors (>2 HP), as defined by dealers. Premium motors are the manufacturers' most efficient general purpose motor lines. Only some premium motors meet the program efficiency standards.

   - About 21% percent of regional sales of motors meeting the program's minimum qualifying efficiency levels (or QMs). In other words, about 79% of the sales of QMs in the region through October 1997, and 97% of all eligible motor sales, were not awarded dealer incentives under the Program.

4. **The above is one of several clear indicators that, in its first seven months of program field activity (April through October), the program has little influence on the motor sales, stocking or promotion.** Factors possibly explaining the limited program influence include the following:

   - The current program is only seven months old.

   - PEA found a significant baseline penetration of premium motors. About a third of annual sales are premium motors.

   - After the initial marketing visits, there has been a limited number of follow-up calls by program personnel to dealers to date.

   - The incentives are equal to only about 22% of incremental cost, on average.

- Training efforts for dealers and customers are just getting underway.

- There is limited availability of QMs from manufacturers (explained below).

5. **Most dealers are aware of the program and have few or no objections to it. However, most dealers are not yet participating and have not actively thought about how they will use the program in their operations**. A very small share of the region's dealers (24 out of 182) have received rebates. All but one of the dealers who received rebates were in the I-5 corridor or Montana. Only 11 dealers have submitted applications for more than ten motors. There is some confusion among dealers between NEEA's program and current and former utility retail motor rebate programs. This is not surprising, considering that NEEA's program is a follow-up to utility retail rebate programs and reimbursement is coordinated with some current utility retail rebates.

6. **NEEA planned its incentive as a stocking payment, or bonus, for dealers, yet the majority of dealers pass the incentive on to customers as a reduction in cost.** As a consequence, the Program does not financially reward most dealers from sales of QMs. Dealers may still make more money on the QM motor sale because the price is higher, resulting in a higher dollar value profit margin.

7. **In the I-5 corridor, where 70% of motor sales occur, most dealers can obtain premium motors quickly enough to close a sale with them.** Outside the I-5 corridor, dealer premium stocks are lower and there may be added delays and shipping charges for access to premium motors.

8. **Beyond the I-5 corridor, dealers claim that availability is more of a constraint to premium motor sales than on the I-5 corridor. We assume that this also applies to QMs since they are a subset of premium motors**. However, the smaller stocks of premiums outside of the I-5 corridor do not appear to have resulted in a smaller proportion of premium sales. This ambiguity leaves unclear the importance of improved stocking of QMs in these areas as a step toward higher QM sales.

9. **Only about 35% of premium motors (the top standard motor line from each manufacturer) sold in the region meet the minimum efficiency levels required for the program.** This represents only 12% of all program-applicable motors sold in the region. Most manufacturer lines meet the QM level for only some sizes, speeds, and types. There is only one or two brands of QMs available for many lower-volume motor types, which cumulatively add up to a significant share of the market. Many dealers heavily promote only one or two manufacturers, since the price they pay for motors depends on the volume sold; additionally, some customers have strong brand preferences. Consequently, dealer promotion of QMs will be somewhat limited until the best-selling manufacturers offer complete lines which meet the QM levels.

10. **The market will be more open to program influence next year, due to Federal standards which are raising minimum efficiencies of available motors and the consequent price hikes for standard motors.** These price hikes will reduce the incremental costs for QMs. The Federal standards also mean that savings per motor will be less, but costs appear to be decreasing faster than savings. If left unchanged, NEEA's incentives will cover a much larger share of incremental cost in 1998, perhaps slightly more than 50% on average. However, dealers report clear barriers to increased sales of QMs and premium motors in general. Many customers are first-cost oriented, do not understand the life-cycle benefits of QMs, and tend not to buy QMs at current prices. There are also some unsubstantiated rumors about inferior reliability and performance of premium motors among a small minority of dealers.

11. **Based on reports from national experts, there are opportunities in 1998-99 to improve market conditions for QM sales.** They require that QM sales volumes across the country be sufficient in that time period to:

    - Convince manufacturers, many of whom are planning to retool their premium lines, to uniformly offer premium motors which meet the QM standard.

- Convince NEMA, the motor manufacturer's association, to define "energy efficient motor" consistently with the standards used to set the PEM qualifying efficiency levels.

- Reduce incremental costs of QMs by increasing volume and competition. Two national sources indicated that there is some room for QM prices to go down under these conditions.

NEEA cannot do this alone, but NEEA is also one of several entities promoting the CEE motor efficiency standard through a variety of programs.

12. **While PEA has not yet completed customer or utility interviews, we see indications of a large need for further customer education and marketing.** In particular, there may be opportunities to influence large customers which do not yet have procurement policies specifying premium motors.

13. **We heard concerns from national sources about whether NEEA's testing, performed in a laboratory which has not had national accreditation, will be very credible with motor dealers.** We have not studied NEEA's motor testing program in depth yet. That will be done as part of the 1998 Program Evaluation. However, motor testing laboratory accreditation is a sticky issue which needs to be further clarified at national levels; only one independent (from manufacturers) laboratory in the country is fully accredited.

14. PEA developed an estimate of energy savings and incremental motor costs for motors which received program incentives. This analysis was based on the best available data, but no new load data analysis was conducted for program participants.

    Given the absence of indications that the program is having influence beyond directly participating dealers, no quantitative analysis of net market effects was conducted. Participating dealers indicated that the program had only a modest impact on motor availability. Most would have carried qualifying motors without the program, but a few increased their level of stocking and promotion. Since PEA has not yet interviewed customers, it is less clear

whether the level of *sales* was significantly impacted by the program.

Estimated costs and savings for participants are provided in *Table ES-1*, below.

Table ES-1

PEM Program Results: January Through October, 1997	
ANNUAL kWH SAVED	714,981
MEASURE LIFETIME kWH SAVED	14,299,619
COST TO NEEA FOR INCENTIVES	$20,173
INCREMENTAL COST OF QMS OVER STANDARD MOTORS*	$91,919
NEEA INCENTIVE COST/LIFETIME kWH**	1.4 mills
INCREMENTAL COST/kWH**	6.4 mills
PERCENT OF INCREMENTAL COST PAID BY NEEA	22%

* Excludes program administrative, marketing, and evaluation costs; these costs will be considered in the Program Evaluation report, to follow this Market Progress Report in 1998.

** Simple $/kWh; not levelized.

Recommended Program Improvements

These recommendations assume that NEEA wishes to continue to influence both stocking and sales of motors meeting the PEM efficiency level, and wishes to continue to try to influence the reliability of manufacturers' motor efficiency ratings. Some of the recommended improvements assume that NEEA has an objective of increasing the percent of manufacturer's premium lines which meet the QM efficiency level, and are therefore eligible for the program. We understand that NEEA will reassess its goals in light of the market and program information provided in this study.

1. **To increase QM motor retail sales, more education needs to be directed at customers and dealers**. Dealers want technical case study information and simple graphics showing benefits versus cost

over the lifetime of motors that they can share with customers. There may be some need for fine tuning of existing materials and careful selection to meet specific needs of various dealers, such as tying the analysis to local utility rates.

2. **To increase QM retail sales, develop a targeted marketing/ education strategy with sustained efforts that aim for high level decision makers** (e.g., procurement officers). Peer marketing (e.g., utility VP to customer VP) may be an important complement to program personnel marketing, if this effort is to succeed.

3. **To increase QM stocking and sales, target program marketing in areas with lower participation or lower levels of premium sales (e.g., medium-sized dealers and those East of the Cascades).** Continual follow-through (repeated contact) with dealers is important to initiate and sustain program participation, particularly in non-I-5 areas where there is less history of program participation.

4. **To increase QM stocking and sales in late 1997 and early 1998, market as if starting from the beginning with interested but reactive medium to large dealers**. At that time they will be engaged in changing their motor sales lines in response to new the new Federal motor efficiency standard (EPACT). Earlier efforts did not sink in because they were not yet planning to change or were caught up in the confusion of pending changes in standards.

5. **To increase QM sales, integrate or find synergisms with other current or proposed NEEA efforts**, such as the *Building Operator Certification Program* or compressor training, to get to maintenance and operations staff. Promoting quality facility management will create the analytic capability and tools to help promote efficient motors.

6. **To increase QM sales, either obtain approval from utilities to make customer contacts directly, or obtain commitment from utilities to make a more concerted effort to do so themselves, particularly with key accounts.** Although we have not yet done utility surveys, the dealers do not report that utilities, or anyone

else, is pushing consumer demand or infusing the market with life-cycle costing.

7. **To refine the strategy for motor testing, follow the national debate on accreditation of motor laboratories for production testing.** This will help assess what direction is best for NEEA's efforts in this regard (no short-term change recommended).

8. **If NEEA decides that 1998-99 volume sales are important to influencing manufacturer offerings and NEMA's definition of "energy-efficient motor," program incentive levels might need to be reconsidered.** NEEA's current incentives may influence sales volume, but only modestly so (no more than 10% over two years under the best marketing scenario). Current program incentives distributed through September average only about 22% of incremental cost of QMs.

For purposes of comparison, a group of Northeast US utilities (Northeast Energy Efficiency Partnerships) will be offering incentives in 1998 equivalent to the incremental cost of QMs. Their program is expected to cost only $1.1 million in 1998, and $1.6 million in 1999, in a combined utility service territory with more motor sales than the Pacific Northwest (69,000 three-phase integral direct customer sales per year). This is projected to result in program incentives for sales representing 11% of the market in 1998, and 19% in 1999. Additional QM sales are projected to occur outside the program.

9. **Continue use of dealer incentives for at least another six to eight months to allow enough time to observe influences**, regardless of any decision to incorporate retail rebates (or not). At that point, if the program appears to be building a client base or re-enforcing buying behavior, it may make sense to continue it for longer. It is unrealistic to expect this type of market intervention to have its full effect in less than three years.

   Finally, it should be emphasized that the next 6-8 months is a crucial marketing window because EPACT is forcing changes in dealer awareness, stocking practices, and promotional strategies. Efforts during this period should be particularly intensive.

1997 Program Participation - Further Details

Dealer Participation Rates

Dealer participation data is summarized in Table ES-2, below, for the Program through October 1997.

Table ES-2

Dealer Participation Rates		
DEALERS CONTACTED	228	
ELIGIBLE DEALERS	182	
VISITED	119	(65% of eligible)
SIGNED AGREEMENT	68	(37% of eligible)
AGREEMENT POSSIBLY PENDING	85	(47% of eligible)
SENT IN REBATE APPLICATIONS THRU OCTOBER	24	(13% of eligible, 35% of signed)
MOTORS SOLD WITH INCENTIVES	451	

All of the dealers but one, with one motor (plus one direct utility purchase) were in the I-5 corridor of Washington and Oregon or in Montana Power's service territory.

Program Penetration Rates: These 24 participating dealers received, by the end of October, cash incentives on 451 motors totaling $20,173.

Customer Participation: Customer participation is dominated by a variety of industrial concerns, although there are a sprinkling of commercial businesses as well. Through September, four firms bought about one-third of the motors receiving incentives directly through the Program.

Utility Participation: About half of the *PEM Program* sales through September were in the service territories of utilities which are not offering retail rebates. Thus, it appears that the Program is having some impact on sales, independent of retail rebates, albeit a very small effect thus far.

Motor Size: The average motor rebated in the program was about 20 horsepower, with 92% being 50 HP or less. Thus, program incentives appear to be focused, as intended, on smaller motors. Yet, 35% of the horsepower of participating motors is in motors over 50 HP. Given the survey finding that premium motors are less common among very small (1-2 HP) motors, and no more common either among medium or larger motors, this appears to be a useful application of program funds.

Market Practices: Motor Stocking

Types of Motors Stocked: According to the dealer survey, most of the motors in stock (90%) are Totally Enclosed Fan Cooled (TEFC) compared to Open Drip Proof (ODP). The vast majority of motors in stock are 1800 RPM (84%). There were slightly more 1200 RPM motors (9%) than 3600 RPM (7%). By size, 3-20 HP motors represent nearly one-third of the total stock (29%) followed by 1-2 HP (19%). As expected, a small percent of the motors in stock are larger, including 25-50 HP (8%) and over 60 HP (7%).

Stocking by Geographic Area: Over two-thirds (69%) of the stock in the region is concentrated with dealers along the I-5 corridor. About one quarter (23%) of the stock is held by Inland Empire dealers. Very little of the regional stock is with Spokane/Boise (5%) or Montana (3%) dealers. The regional stock to sales ratio is 25%. It is highest in the Inland Empire (36%) and Montana (25%), where dealers tend to be farther away from regional stocking warehouses.

Premium and QM Motor Stocking: Regionally, about 18% of the motors in stock are premium efficiency. I-5 dealer stock has about the same proportion. Other regions are much lower (about 10%), except in Montana which is a lot higher at 41% premium.

Because QMs are a scattered subset of dealers' premium lines, and dealers do not separately track QMs, they could not provide detailed stocking information specifically on QMs. Based on reported sales of QMs versus premium motors, we estimate that about 10% of the motors stocked are QMs. We further assume that QM stock shares by size and type of motor are very roughly a third of the premium motor stock shares discussed in the next few paragraphs.

A higher percentage of premium motors were found among larger motors such as 25-50 HP (28%) and over 50 HP (25%), and lower proportions were found among smaller 1-2 HP motors (7%) and 3-20 HP (20%). The proportion of stocked motors that are premium is much lower than the proportion of sales that are premium (18% versus 33%).

Larger dealers tend to have a higher proportion of premiums in stock (22%) than medium (9%) or small dealers (11%). A larger-than-expected number of dealers (17 dealers, or 35% of those interviewed) did not have any premium motors in stock. Most of these were medium or small dealers in the Inland Empire.

A smaller proportion of premiums come from stock (46% of sales) than standard motors (73% of sales). By region, more premiums were sold out of stock by I-5 dealers (51%) than dealers East of the Cascades. Yet, the market share held by premium motors is at least as high in these areas as in the I-5 corridor.

Stocking Decisions: In general, stocking decisions appear to be driven by sales (i.e., customer demand). Increases were commonly attributed to an improved economic climate. Little difference was found between participants and non-participants in terms of stocking.

Dealer Access to Premium Motors and QMs: Access to (or availability of) premium motors was generally not a problem. All dealers felt they could get motors within a short enough time frame, although there may be exceptions in some emergency situations, and dealers who do not stock premiums may see some added delivery costs for low-volume orders. While this would indicate that low premium stocks might be a market barrier outside of the I-5 corridor, premium sales appear to be at least as high as for the I-5 corridor in those areas. And in all areas, the proportion of premium sales is at least twice the ratio among stock.

Since program-eligible QMs are a subset of most manufacturers' lines of premium motors, we assume that access to QMs follows access to premium motors, for those models in each manufacturer's line which happen to meet the *PEM Program* efficiency standards. That is, in the I-5 corridor, the primary issue limiting availability of QMs is that only portions of manufacturers' premium lines meet the QM efficiency level. Elsewhere,

stocking levels of premium motors may be an additional barrier, but do not appear to be resulting in lower premium (and presumably, QM) sales.

Market Practices: Motor Sales

Sales of all motors have generally increased in the region for over half of the dealers. The main reason for this is an improved economy resulting in expansion and increased capital for purchases.

Sales By Geographic Area: Over two-thirds (70%) of sales of program-applicable motors in the region were from dealers along the I-5 corridor. The Inland Empire (excluding Spokane and Boise) accounted for 16% of sales. Spokane and Boise dealers sold 11% and Montana dealers sold 3% of the regional sales.

Sales By Motor Size: Motor sales weighted by size (HP) shows clearly that larger motors represent the majority of regional horsepower (51%). This decreases to 31% for 25-50 HP and 17% for 3-20 HP. The 1-2 HP motors sold in the region only make up 1% of total regional horsepower.

Premium Motor Sales Trends: The sales of premium motors has increased in the last year for 38% of the dealers. The most common reason given for this increase in sales of premiums among participants in the NEEA program is that there is increased customer demand for premium efficiency motors, rather than as a result of program influence. This contrasts with dealer opinions that further penetration of premium motors into the market is limited by customer interest.

Since program-eligible QMs are a subset of most manufacturers' lines of premium motors, and roughly a third of premium sales, QM sales growth is likely to be proportional to premium sales growth.