ACEEE Delegation
Extended Motor Product Label Initiative

Label Criteria Section Workshop
Portland, OR
December 4-5, 2013

Labeling of Extended Motor Products for Energy Efficiency Programs
In support of DOE standards for electric motors, pumps, fans and compressors,

- ACEEE and Product Manufacturers recognize opportunities for motor system energy savings much greater than savings from individual components.

- Suggested that industry may develop voluntary labels for the efficiency of driven component as well as an extended product label that includes (e.g., fan, pump or compressor), the motor and associated controls to reflect the relative efficiency of the equipment as it is installed into a motor system application.
Extended Product: Pumps

Extended Product

Fluid Outlet

Fluid Inlet

Pump

Coupling

Electric Motor

Terminal box, or VSD

Mains

Load profile
Control

Terminal box or VSD

Electric Motor

Extended Product Approach

EEI

Figure 4 Definition of Extended Product Approach

EP for Pumps Includes: Pump + Motor + Drive + Feedback Loop
Extended Products - Motor- Load- Control

- HI (Hydraulic Institute)
- NEMA
- AMCA (Air Moving and Control Association)
- CAGA (Compressed Air and Gas Institute)
Labeling Scheme Coalition Participants

Trade associations
- NEMA
- HI (Hydraulic Institute)
- AMCA (Air Moving and Control Association)
- CAGA (Compressed Air and Gas Institute)
- ACEEE
- Energy Trust of Oregon
- Test Labs
- NEEA
- TVA
- VEIC
- SDG&E
- NYSERDA

Utilities and program management
- PG & E
- Com Ed
- North East Utilities
- Advanced Energy
- National Grid
- Northwest Power Council
- Bonneville Power Administration
- Southern California Edison
The energy efficiency community has long been aware of the large opportunity that exists from optimizing motor systems.

Programs to realize these savings have been largely restricted to larger systems which justify investment in analysis and monitoring as required for a custom rebate program.

Prescriptive rebates have been restricted to efficient products, such as NEMA Premium motors, which have modest savings opportunity relative to the system opportunity. Energy efficiency programs need a way to give incentives for improved motor system efficiency through prescription.
Development of a driven component or extended product label combined with implementation data can be the basis for prescriptive rebate programs with deemed savings values.

Accomplishing this goal requires motor, pump, fan and compressor equipment industries to work with energy efficiency programs on several elements as described.
This project will facilitate a process for interested trade associations, including NEMA (motors and drives), HI (pumps), AMCA (fans), and CAGI (compressors) and interested energy efficiency programs to work together to address the following elements. The trade associations have committed to working collaboratively with energy efficiency programs to accomplish these goals.
## Goals

- Identify of label and supporting data needed to meet evaluation criteria for programs requiring to qualify products for deemed savings;
- **Develop the testing and labeling specifications** that meet these criteria;
- Collect field performance data required to estimate the savings realized on average from the installation of label products in different actual configurations. This may result in the need to restrict the applications of labeled products for which saving can be deemed;

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### Ref: Research Prospectus - August 2013

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Labeling of Extended Motor Products for Energy Efficiency Programs

Goals

- Work with the technical associations to establish these labels and encourage adoption by their companies;
- Develop model energy efficiency programs that can use these labels to incentivize motor system efficiency, with supporting educational materials.
- Where component labels do not exist in the market, such as for pumps, work with the trade association (e.g. Hydraulic Institute) to help establish programs supportive of prescriptive rebate/incentives appropriately linked to extended-product labels used by energy efficiency programs to incentivize motor systems efficiency.

Ref: Research Prospectus - August 2013
The project will produce the following outcomes:

1. **Roadmap to implementation** and acceptance of an extended-product label for two or more motor system products;

2. **Working group of stakeholders** from manufacturers and energy efficiency programs to advance this process, and work with trade associations on the creation and market adoption of component labels;

3. **Discussion with DOE** on how this process could complement the ongoing product regulatory standards process;

4. **Report** and other documentation materials that can be used to form the basis of adoption by energy efficiency programs.
Hydraulic Institute Extended Product Committee agreed to support the ACEEE initiative subject to Board Approval.

Hydraulic Institute Board Members approved to join the ACEEE Extended Product Labeling Coalition December 2013.

Extended Motor Product Label Initiative Label Criteria Selection Workshop held in Portland, Oregon December 4th and 5th, 2013

Attended by HI Member Delegation.
  - Henri Azibert, Mick Cropper, Brent Ross, Greg Towsley,
The utilities provided an overview of their incentive programs: funding, technical requirements, metric requirements, program implementation.

The workshop provided trade associations with an opportunity to make presentations in which they described their products, test methods, efficiency metrics and share general ideas of how they might integrate into a utility incentive program.

Association members and staff members gave the utility attendees insight into the current test methods and metrics [MEI, EEI and FEG] in place today, used by OEM’s and users of driven loads to determine savings to make comparisons between ratings and suppliers.
The product portion of the workshop opened the discussion to product scope.

Each of the trade associations will provide test standards and metrics to be used for their products and labels.

Harmonization of labels could be beneficial to the utilities, particularly in reaching hundreds of utilities that are not directly involved with this project.

Methods covering their use will belong to the respective trade association.
Labeling of Extended Motor Products for Energy Efficiency Programs

- **Report from Workshop**

- Actions – Workgroups assigned for Pumps, Fans, Compressors

Each product working group recommended one or two sub-categories to start in developing a working paper template that each product work group could use to satisfy needs of a qualified program.

Each workgroup completed the template and discussed required data.

**Action 3:** In progress - First pass at the template using the product[s] as selected in action one.

**Action 4:** In plan : Discuss first draft template at group conference call Feb 13th 2014
Labeling of Extended Motor Products for Energy Efficiency Programs

Pumps Team

**Neal Elliott** – ACEEE

**Erin Hope** - Bonneville Power Administration (BPA)

**Amanda Gonzalez** - Energy Solutions / PG&E

**Greg Towsley** - HI / Grundfos Pumps

**Henri Azibert** - HI (FSA)/ Chesterton Seals

**Mick Cropper** - HI / Sulzer

**Brent Ross** - HI / Armstrong Pump

**Facilitator**

**Rob Boteler** - NEMA / NIDEC Motors / ACEEE
Pump Considerations

- Choose one area to start with and then expand
  - Building Services chosen as first choice
  - Agriculture Services second
  - Confirmed ok by pump committee utility members
  - Need confirmation of HI Membership

- Use of HI EEI, test standard and test accreditation is viable

- Need EEI levels for
  - Baseline, incentive, high incentive
  - Perhaps different by market
Pump Considerations

- Use method of calculation to determine population levels
  - Utility field data available.
- HI to provide input on channels to market
- Utility test labs may confirm EP performance.
- Confirm manufacturer label by EP (string) test
  - or individual component test and calculations.
Building Services

Applications

- Condenser
- Primary chilled water
- Secondary chilled water (chosen for first pass)
- Primary Heating water
- Secondary Heating water (chosen for first pass)
- Pressure booster
- Ashrae 2010 is base line

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Agriculture

Applications

- Western regions
- Vertical turbine deep well
- Centrifugal shallow well
- Pressure boosters
Utilities need to know the channel(s) to market to determine where to incent and how much
- Building owner
- Consultant writes spec
- Schedule with application, flow / head
- Contractor buys and installs
- Above process defined in template
Labeling of Extended Motor Products for Energy Efficiency Programs

- Next Steps

Trade Organizations & Members
- Select or Develop Test Standards
  - Performance Metrics Chosen
- Determine Scope of Covered Product
  - Product Classes Defined
  - Extended Product Classes Defined
- Development of Standard Product Specifications for Label
  - Comparative Indices Defined and Selected
  - Development of Brand
- Develop Data Collection Protocols
  - Identify and select Data Aggregator
- Conduct Lab and Field Studies
  - Collect Data
  - Report Findings
- Launch Label(s)
  - Manufacturers include Standard Product Specifications (Label) in marketing materials

Efficiency Programs
- Determine Scope of New Programs
  - Identify Covered Products
  - Suggest: metrics to be included in Label
- Adopt labels for Incentive Programs
  - Select Criteria to be included in Label
- Proof of Concept
  - Collect Data
- Program Design
  - Analyze Data
  - Develop Program Models
- Report Findings
  - Report
- Program Launch
  - Pilot Programs
  - Presentation to Stakeholders Event Dec 2014
  - Public Launch Event Mar 2015
Work Template

- **Next Steps**
- **Confirm Product Types**
- **Data gathering**
- **Pump data**
- **Site data**
- **Market data**

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Adjournment

Q & A