



# CEE Industrial Motors & Motor Systems Committee

## *Lessons Learned from Energy Efficient Motor Rewind Programs*

CEE Winter Meeting  
January 26, 2011  
3:30 – 5:00 pm PT

# Today's Objectives

1. Review CEE M&MS Committee context and program basics
2. Learn from NEEA's program evaluation experience
3. Learn from BPA's experience delivering program

# CEE Member M&MS Profile

- ▶ Working with aggressive savings targets
- ▶ Value prescriptive approaches
  - Low cost to administer; mass market reach
  - Consistency beyond service territory
  - 1-200 hp motors programs achieve(d) savings
- ▶ Motors program strategy in transition
  - Recognize large savings available through systems and management approaches
  - Strategy to cost-effectively capture is unclear

# M&MS Committee Focus Areas

Focus Area	Initial Approach	Work Product	Current Status
<b>1-200 hp motors</b>	<ul style="list-style-type: none"> <li>- Explore potential for advanced spec.</li> <li>- Update brochure</li> </ul>	<ul style="list-style-type: none"> <li>- CEE Premium Eff. "Motors List"</li> <li>- Draft Guidebook</li> </ul>	<ul style="list-style-type: none"> <li>- Update 2x annually</li> <li>- Q2 2011 comp.</li> </ul>
<b>VFDs</b>	Identify industries and applications w/largest achievable potential	TBD	Active development in 2011
<b>Efficient Motor Rewind Programs</b>	Actively monitor	Understand current program approach	Actively monitor
<b>Motor Management Strategies</b>	Utilize MDM resources, identify program opportunity, develop partnerships	Input to MDM sponsors. Explore current programs.	Actively monitor and engage with trade allies
<b>Motor System Program Strategies</b>	Actively monitor	Included Systems in Program Summary	Actively monitor
<b>"Other" motors</b>	Identify motors	Draft "matrix"	Actively monitor, update matrix

# Technical References:

## Electrical Apparatus Service Assoc. (EASA)

- ▶ The Effect of Repair/Rewinding on Motor Efficiency
- ▶ ANSI/EASA AR-100-2010: Recommended Practice for the Repair of Rotating Electrical Apparatus
- ▶ Guidelines for Maintaining Motor Efficiency During Rebuilding (EASA Tech Note 16)
- ▶ Source: [www.easa.com/energy](http://www.easa.com/energy)

# Motor Service Center Certifications

## ▶ Advanced Energy

- Proven Efficiency Verification (PEV) Program
- [www.advancedenergy.org/md/consulting/repair\\_shop\\_selection.php](http://www.advancedenergy.org/md/consulting/repair_shop_selection.php)

## ▶ Green Motors Practices Group (GMPG)

- Green Motors or Green Rewinds Program
- [www.greenmotors.org/](http://www.greenmotors.org/)

# Calculating Potential Savings

- ▶ Best practice\* rewind => nameplate efficiency
  - **Savings = efficiency retention. Baseline = assumed loss.**
  - DOE MotorMaster+ estimates efficiency loss if motor is *not* rewound according to best practices.
    - $\leq 40$  hp => 1.0% efficiency loss from motor nameplate
    - $\geq 50$ hp => 0.5% efficiency loss from motor nameplate
- ▶ Not all motors can be returned to nameplate efficiency
- ▶ 2008 RTF Submittal Estimates\*\*

HP	BP Rewind Est. Savings	BP Rewind Incremental Cost
50 HP	729 kWh	22%, approx. \$230
150 HP	2,254 kWh	20%, approx. \$480
500 HP	8,732 kWh	17%, approx. \$1,000

\*As defined by ANSI/EASA AR 100, [www.easa.com](http://www.easa.com)

\*\*GMPG RTF Submittal, 05/2008, [www.greenmotors.org](http://www.greenmotors.org)

# Third Party Program Design

- ▶ GMPG as Program Implementer
  - Certifies centers that comply w/EASA std.
  - BP rewind is a line item on customer invoice
  - Center submits invoice to GMPG
  - GMPG provides rebate and reports kWh
- ▶ Utility provides rebate + administrative cost
  - \$2/hp rebate, \$1/hp must go to customer
- ▶ GMPG or utility audit service centers