

# Green Motors Lessons Learned



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# Who is Bonneville Power Administration?

- Established in 1937 as a Federal Power Marketing Agency – Department of Energy (i.e., WAPA).
- Markets and transmits power generated from the Federal Columbia River Power System (FCRPS).
  - BPA's service territory covers Washington, Oregon, Idaho, Western Montana, and small parts of Wyoming, Nevada, Utah and California.
  - FCRPS = 31 Federal hydro project dams, one non-federal nuclear plant and several small non-federal power plants (includes wind).
- Self-financed ~\$3.5 billion/year; pays US Treasury \$1 billion/year.

# Bonneville Power Administration

- Owns, operates and maintains over 15,000 circuit miles of high voltage transmission lines (~80 percent of PNW capacity).
- Supplies over 8,000 aMW (40%) of the electricity in the PNW.
  - Serves 140 utility customers (PUDs, Municipals, REA Coops, DSIs, etc.).
  - Sells power at cost - \$0.03/kWh.
- BPA Energy Efficiency programs work with utility customers, not directly with end-users.

# What is a Green Motor Rewind?

- Rewinding a motor in such a way to **maintain the original efficiency**, commonly called a *Green Motor Rewind*.
- Applies to Induction Motors from 15 HP to 5,000 HP.
- Key requirement for Green Motor Rewind is no damage to the motor's core.
  - Core Loss Test is conducted in accordance with EASA Tech Note 16.
- Motor Rewind is in accordance with EASA best practices.

# Example of Core Damage



# Green Motors Initiative: Participation

- 82 Public Power Utilities
- 7 Investor-Owned Utilities
  - Not part of the BPA program, they contract directly with Green Motor Practices Group (GMPG).
- Certified Service Centers:
  - 44 within BPA service area
  - 16 in British Columbia & Alberta
  - 8 in other areas of the country

# Results

<b>Program Totals</b>	<b>2009</b>		<b>2010</b>	
	<b>BPA</b>	<b>Region</b>	<b>BPA</b>	<b>Region</b>
<b>Total Motors</b>	<b>183</b>	<b>286</b>	<b>248</b>	<b>534</b>
<b>Total HP</b>	<b>36,405</b>	<b>55,745</b>	<b>65,945</b>	<b>99,730</b>
<b>Total kWh savings</b>	<b>580,815</b>	<b>903,327</b>	<b>1,142,164</b>	<b>1,637,346</b>

# Lessons Learned: General

- The program has higher start-up costs than other similar sized programs:
  - Certify motor service centers,
  - Develop marketing materials for service centers, and
  - Provide training on the importance of motor efficiency.
- The program requires early marketing of the program
  - Requires marketing to both motor service centers and utility customers.

**Do not rely on motor service center to market the Program!**

# Lessons Learned: Service Centers

- A good working relationship with the motor service center is vital.
  - Educate the key sales and delivery people on incentive programs.
- Offering programs through a motor service center takes work!
  - Establish the program in their accounting system.
  - Train and educate shop and sales personnel.
  - Set-up internal systems to track and document qualifying motors.
  - Document compliance in accord with certification requirements.

# Lessons Learned: Service Centers, cont'd

- Even certified motor service centers may campaign against the program.
- Non-participating motor service centers may actively work to discredit or eliminate the program.
- Mistakes with motors will be found:
  - Shops may try to discredit each other's work based on both real and perceived mistakes.

# Lessons Learned: Customers

- Typically use two to four motor service centers.
- Motors not always sent to the local service center.
  - May not have capability to service the size of motor.
  - Less expensive to ship and repair.
  - Bad experience with local shop
- Decisions on where to send motor are not always made by those operating or repairing the motor.
- Customers rarely inspect a motor shop before sending them a motor.

# Lessons Learned / Take-a-ways

- Incentives offered to both service centers and customers will drive up participation.
- Maintain ongoing communication with service centers
  - Helps guarantee program participation
  - Service centers able to provide feedback on other incentive programs
- Program is a door opener to other incentive offers.

**Motor Service Centers typically do more than rewind and sell motors.**

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