

CEE Motor & Motor Systems Committee Breakout Session

Program Perspectives on the New Scope of Industrial Motor Efficiency Programs

BC Hydro, Power Smart Motor Management Planning

June 11, 2008

POWER SMART

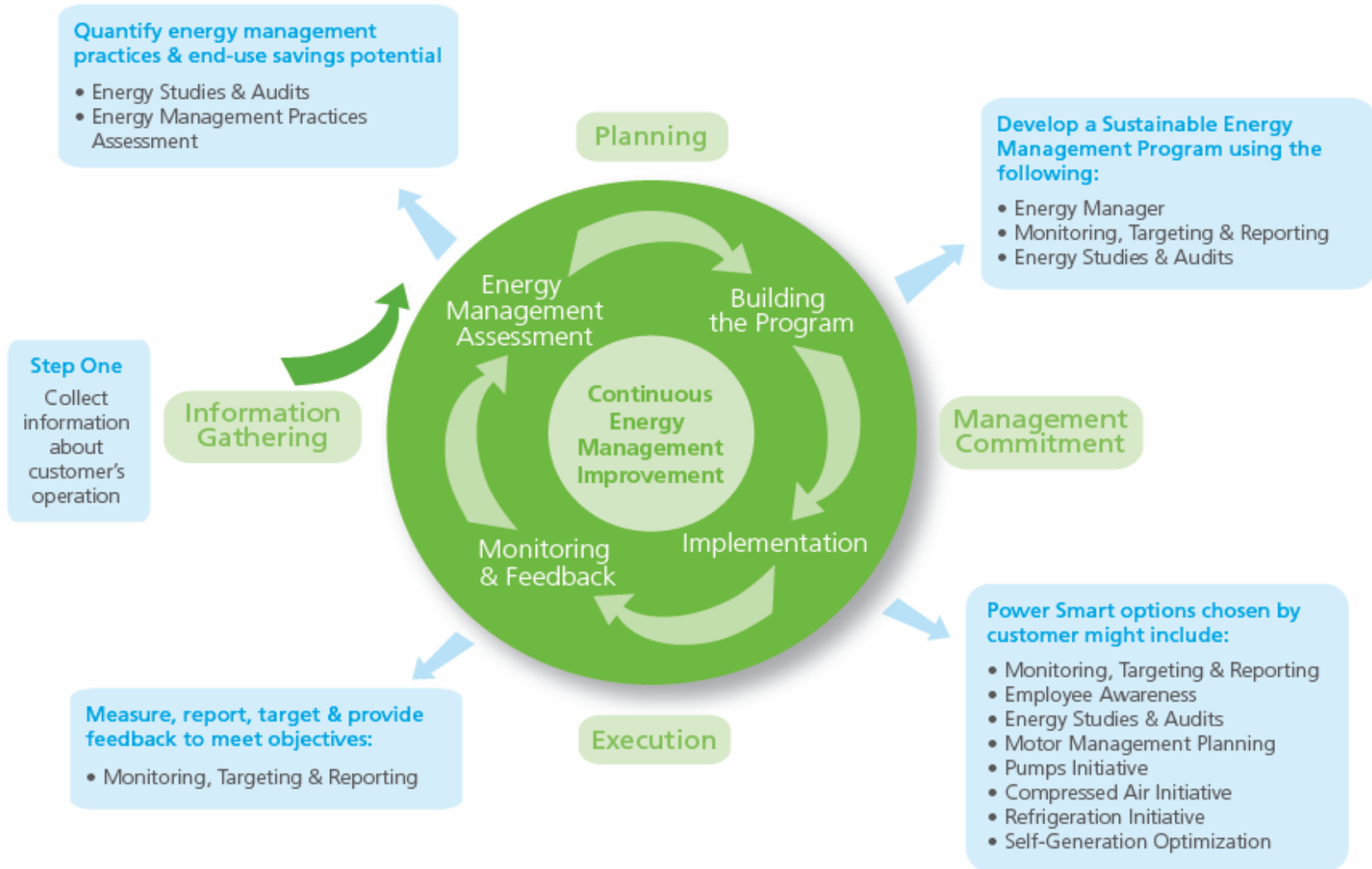


Power Smart Partners for Large Industrial (PSP-T):

- Continuous Improvement model for Industrial Energy Management
- Focused on moving customers “to the right” of the energy management continuum



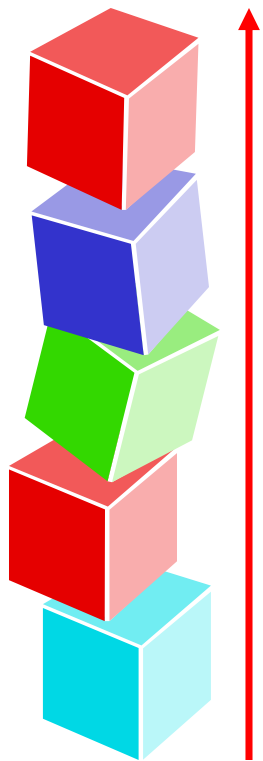
THE PSP-T PROGRAM



MOTOR MANAGEMENT PLANNING (MMP)

BC Hydro
power smart

Best Practice



Poor Practice

- The purpose of this program is to move customers from current practice to best practice in all areas of motor management
 - Purchase policy
 - Repair/Replace decision making
 - Repair Standards
 - Inventory tracking
- The benefits of doing so include saving electricity, improving reliability, and streamlining current processes.

MMP – THE PROCESS



Stage 1 – MMP Data Collection

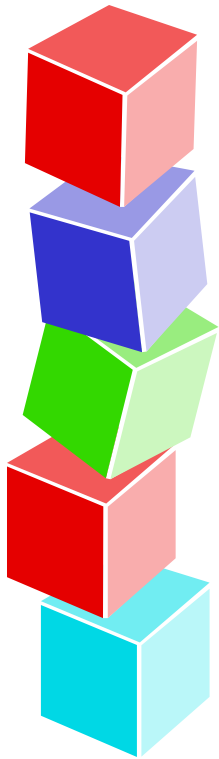
Customer completes a survey to assess current motor management practices and provides a motor list

Stage 2 – MMP Opportunity Assessment

Motor specialist analyzes survey responses and motor list to generate an Opportunity Assessment.

Stage 3 – Motor Management Plan

Site visit by motor specialist to generate a plant specific Motor Management Plan.



THE MOTOR MANAGEMENT PLAN



While on-site, the motor specialist will provide:

- Training
- A motor audit (adding data to the current motor list)
- Site-visit of the motor repair shop(s), if possible

Post site visit, the motor specialist will provide:

- MMP report (provides the business case for each recommendation)
- Implementation Plan
- Ongoing consultation

THE MOTOR AUDIT



- Developed baseline of ‘critical motors’ from best data available including:
 - Horsepower
 - Speed
 - Voltage
 - Type
 - Efficiency class
 - Motor load
 - Operating hours

The screenshot shows a software interface with three tabs: "Company Information", "Motor Efficiency Data", and "Facility Ranking". The "Motor Efficiency Data" tab is active and displays two tables and summary statistics.

Horsepower	1-3	5	7.5	10	15	20	25	30	40	50	60	75	
Premium	0	0	0	0	0	0	0	0	0	0	0	30	39
Energy Efficient	0	0	0	0	0	0	0	0	0	0	0	7	12
Standard	0	0	0	0	0	0	0	0	0	0	0	15	43

Horsepower	100	125	150	200	250	300	350	400	450	500	Total
Premium	24	7	6	14	5	0	0	0	0	0	125
Energy Efficient	7	13	2	13	1	0	0	0	0	0	55
Standard	22	21	31	21	6	0	2	0	0	0	161

Data Not Current
Recalc

	Energy efficient	Premium efficiency
% by number	16.1	36.7
% by horsepower	17.1	32.6
% by load served		0.0
	(Incomplete)	

MOTOR REPLACEMENT RECOMMENDATIONS



Description of Energy Savings Opportunity	Annual Energy Savings, kWh	Demand Reduction, kW	Annual Dollar Savings ¹	Simple Payback, years ¹
Replace 120 Standard Efficiency General Purpose Motors	2,221,850	344.2	\$139,480	2.3
Replace 29 in-service Energy Efficient Motors	237,170	36.4	\$14,870	4.4
Replace 6 old U-Frame Motors	125,430	19.2	\$7,870	---
Replace 6 1800 RPM Vertical Shaft Pump Drive Motors	86,830	13.3	\$5,440	2.4
Replace 25 Standard Efficiency Medium Voltage Motors ²	443,370 to 804,555		\$26,030 to \$50,660	5.6 to 11.0
Totals for Recommended Measures	2,671,280	413.1	\$167,660	

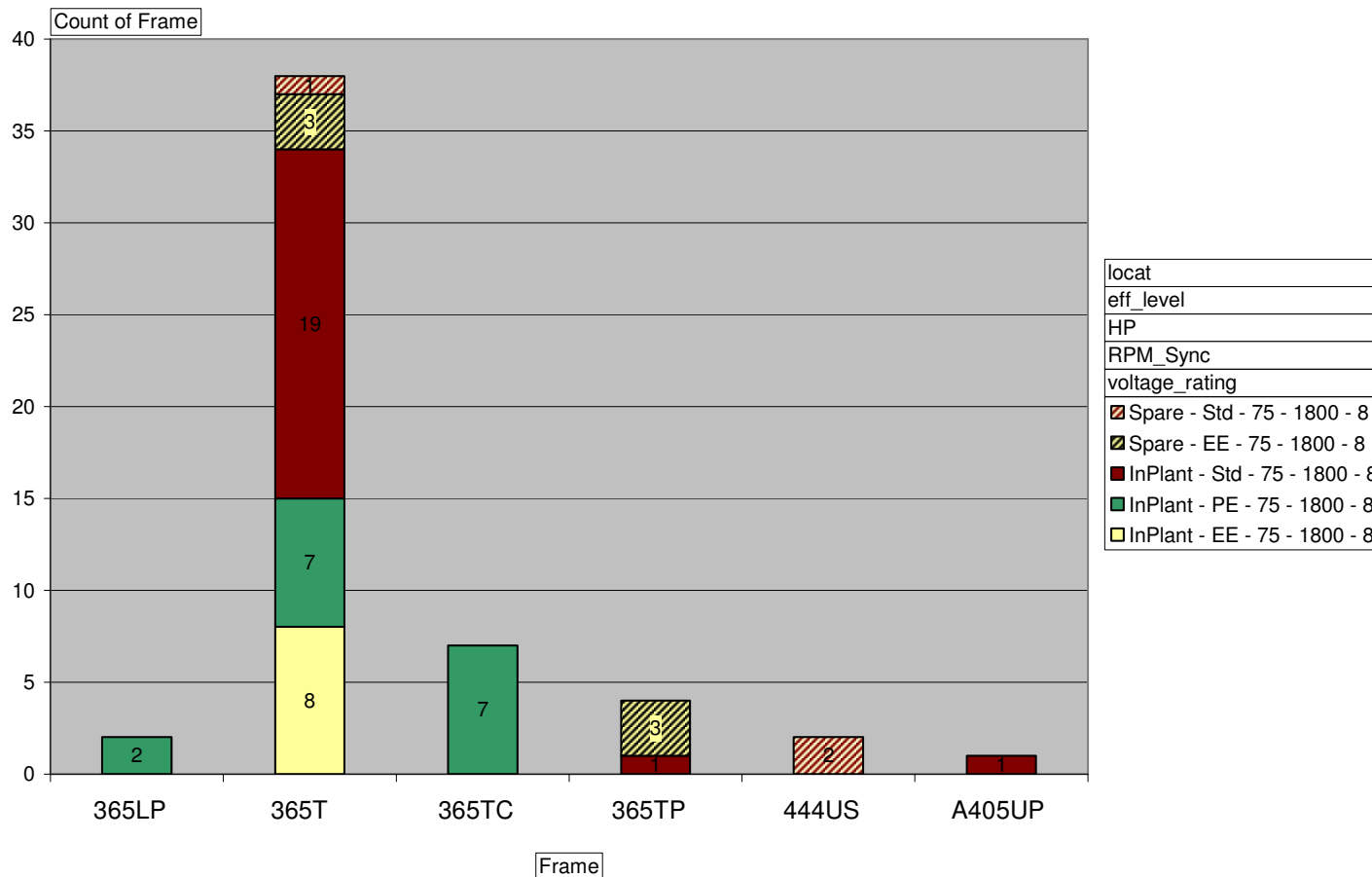
1. Based on BC Hydro stepped electrical rates (\$0.054/kWh, \$4.72/kW-mo)

2. Measure not recommended due to uncertainty in energy savings and extended simple payback periods.

STRATEGIC SPARES INVENTORY

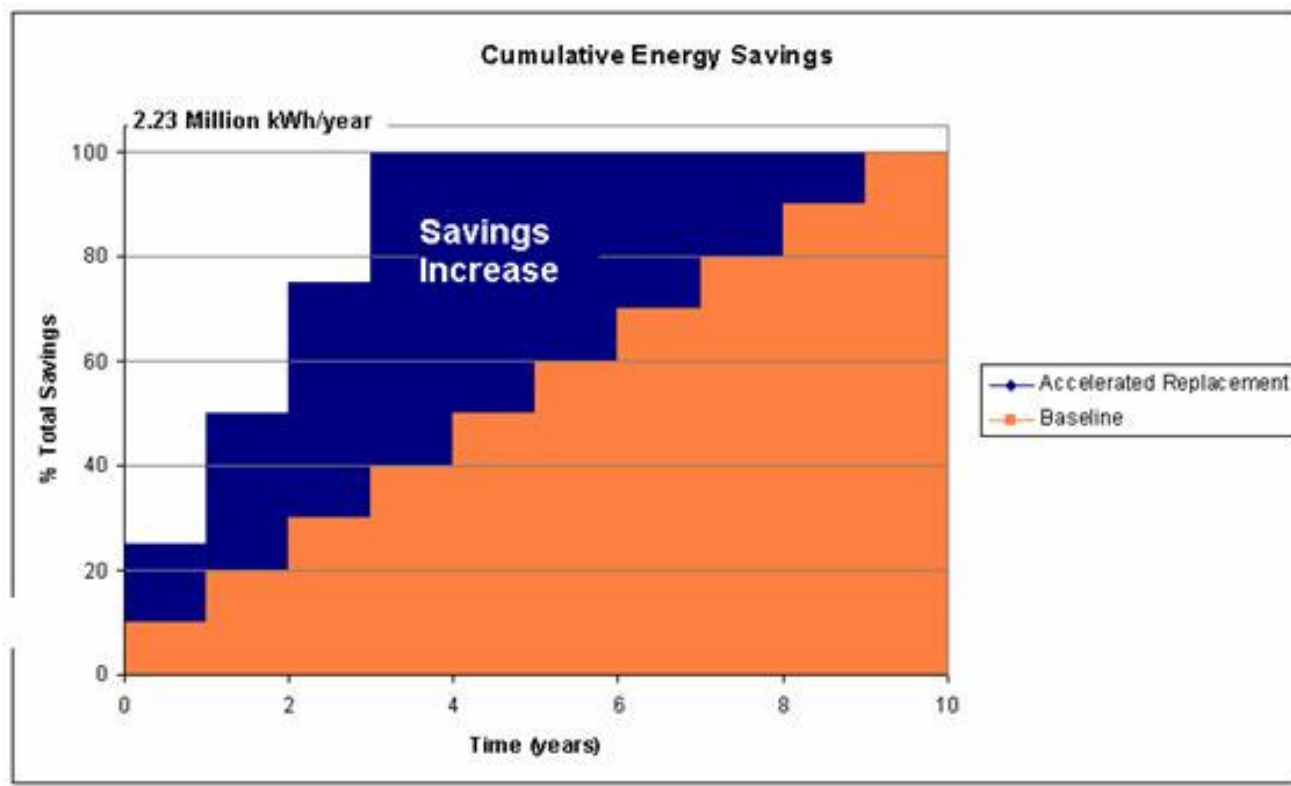


In-Service and Spare, 75 hp, 1800 RPM Motors by Efficiency Class



ACCELERATED REPLACEMENT

- Presenting the lost opportunity
 - Status quo 10 year total energy savings = 12.25 GWh
 - Accelerated 10 year total energy savings = 18.9 GWh



OTHER RECOMMENDATIONS



- Motor repair practices (Green Motors)
- Review of low hp replacement policy
- Large medium voltage purchasing specification

LESSONS LEARNED



- Clear understanding of current practices
 - *Business as usual*
- Customized to business practices
 - *Hurdle rate, purchasing standards, maintenance cycle, replace break-point*
- Motor Management is not a quick win
 - *Management support is essential*
- Credibility of MotorMaster+
 - *And training in its use with customer's actual motor data*

LESSONS LEARNED



- Gauge interest before finalizing recommendations
 - *Preliminary recommendations meeting before leaving the site*
 - *Customize MMP to customer need*
- Strategic spares inventory – saving energy sooner
 - *The motors in the spares inventory are the next in line*
 - *To take any of these motors out of line is going against 'business as usual'*
- Motor Management doesn't end with the delivery of a report
 - *Implementation plan with clearly assigned tasks is required with available consultation and gradual hand-off of responsibilities*

MMP DEVELOPMENTS



- Green Motor repair incentives
 - Upstream incentives for participating motor repair shops (summer 2008)
- Custom Motor Management Planning workshop
 - Targeted at mid-size industrial sites

CONTACT INFORMATION



THANK YOU

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