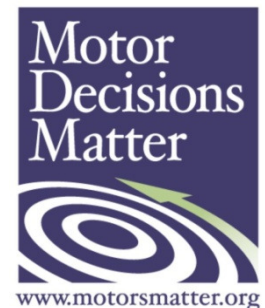


National Grid-NYSERDA Upstate NY
Commercial Industrial Efficiency Expo
March 30, 2010

**Easy as *1*2*3*: Use
MDM Tools to Deliver
Motor Management**

Kellem Emanuele
Consortium for Energy Efficiency
Industrial Program Manager, Motors & Motor Systems



Presentation Outline

- MDM Campaign and Motor Management
- MDM Tools and Resources
 - Outline motor management concepts
 - Calculate and communicate life cycle analysis
- Questions

Motor Decisions MatterSM

Managed by CEE, MDM is a campaign to:

- Encourage motor planning and mgmt.
 - Highlight financial and performance benefits
 - Promote premium efficiency motors and best practice motor repair
- Collaborate nationally to enhance local effectiveness

MDM Sponsors

Efficiency Programs

- Alliant Energy
- BC Hydro
- ComEd, a division of Exelon Corporation
- Long Island Power Authority (LIPA)
- MidAmerican Energy Company
- National Grid USA
- NYSERDA
- Northwest Energy Efficiency Alliance
- Pacific Gas & Electric (PG&E)
- Southern California Edison (SCE)
- Xcel Energy

Supporting Organizations

- U.S. Department of Energy
- Consortium for Energy Efficiency (CEE)

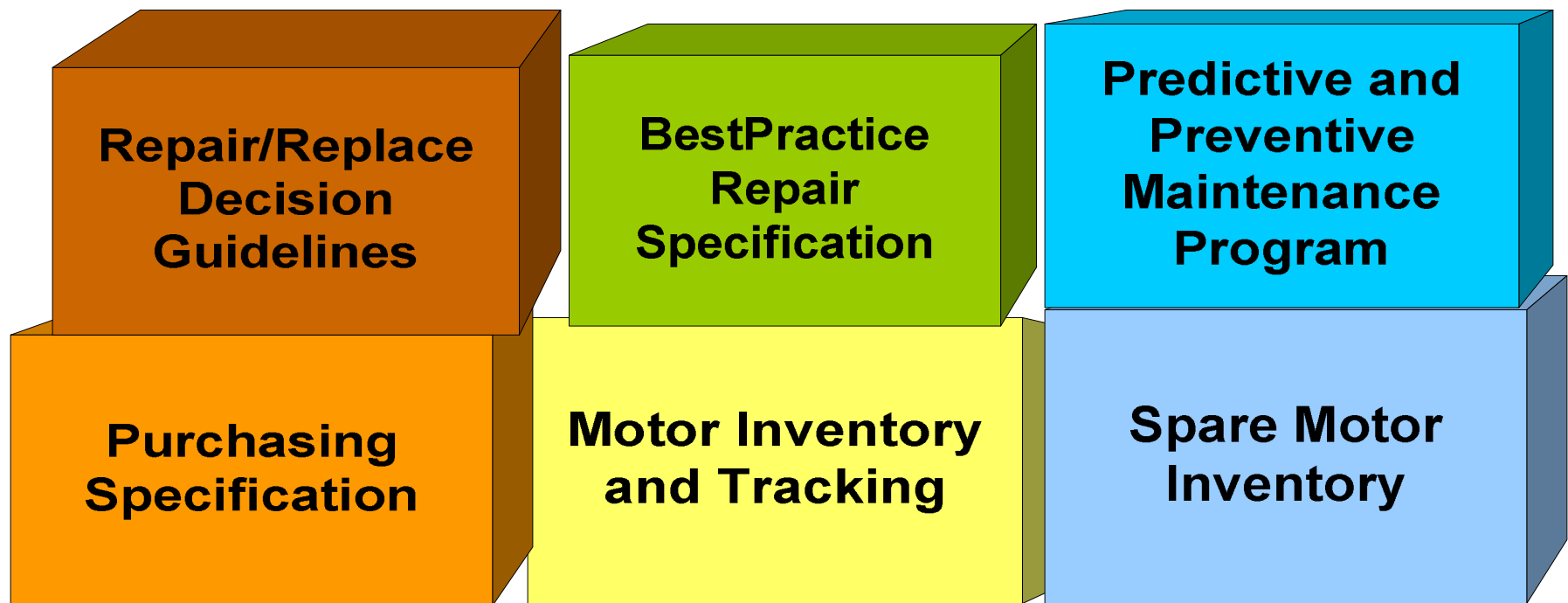
Motor Manufacturers

- GE Energy Motors
- TECO-Westinghouse Motor Company

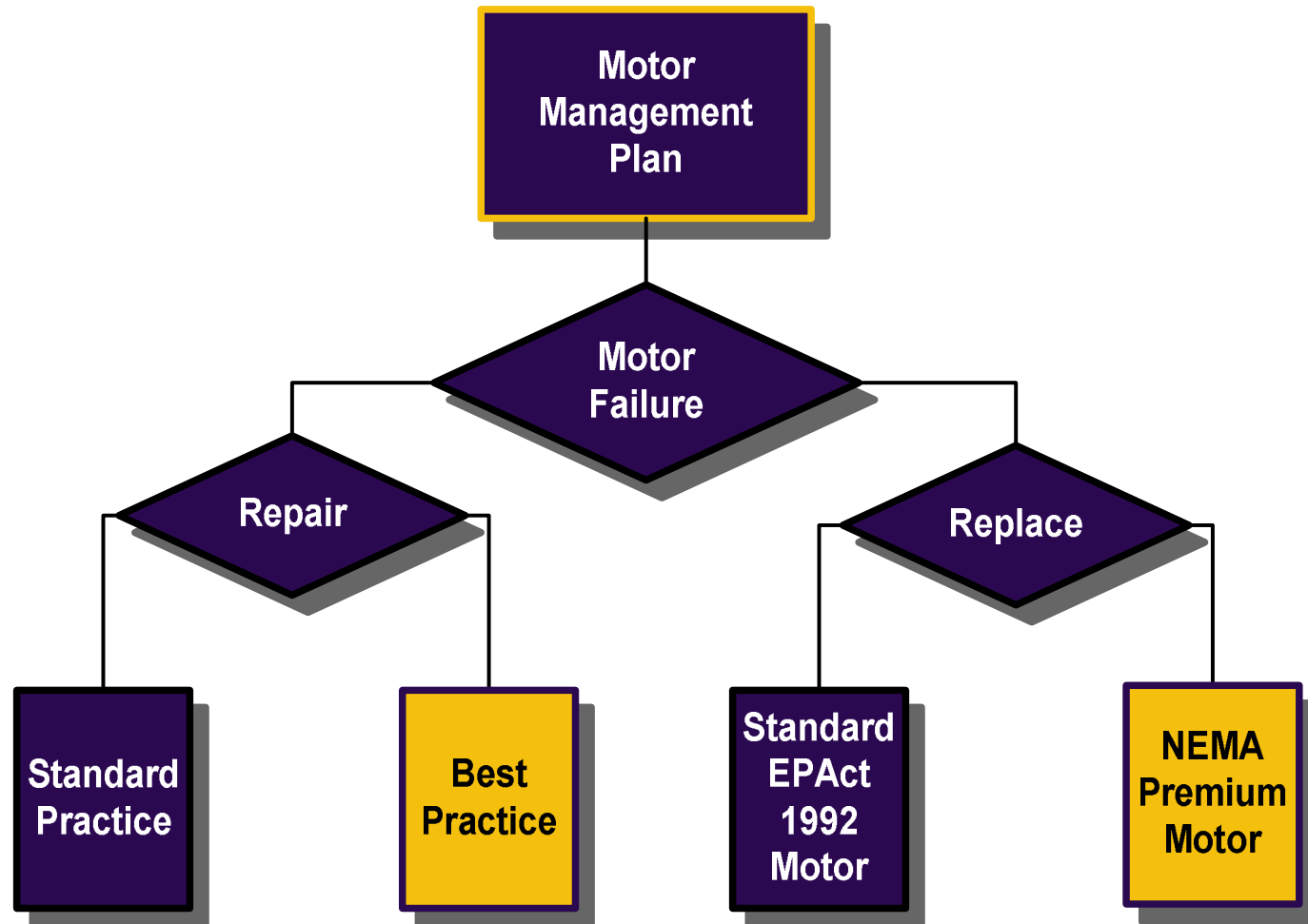
Other Organizations

- Copper Development Association, Inc. (CDA)
- Electrical Apparatus Service Association (EASA)
- Advanced Energy

Motor Management Building Blocks



Repair-Replace Decision



Motor Management Is...

a set of ongoing **policies and practices** that help commercial and industrial facility managers **proactively plan and effectively manage** their motor population...

...**reducing equipment downtime and energy costs.**

Business Partners Motors Program

Case Study: Clarkstown South High School West Nyack, NY

Motor Inventory:

HP	# motors
3	3
5	3
7.5	5
10	2
15	2

Quick Operations Overview:

Basic Info.	Est.
Annual Op. Hours	5,000 hrs.
Electricity Cost	\$0.10 per kWh
Total Annual Op. Costs	\$48,586

Case Study cont'd:

District-wide Motor Mgmt. Opportunity:

Clarkstown South School District, West Nyack, NY

Inventory:

15 schools in district

15 motors per school

Annual motor op. costs: \$728,790

Opportunity:

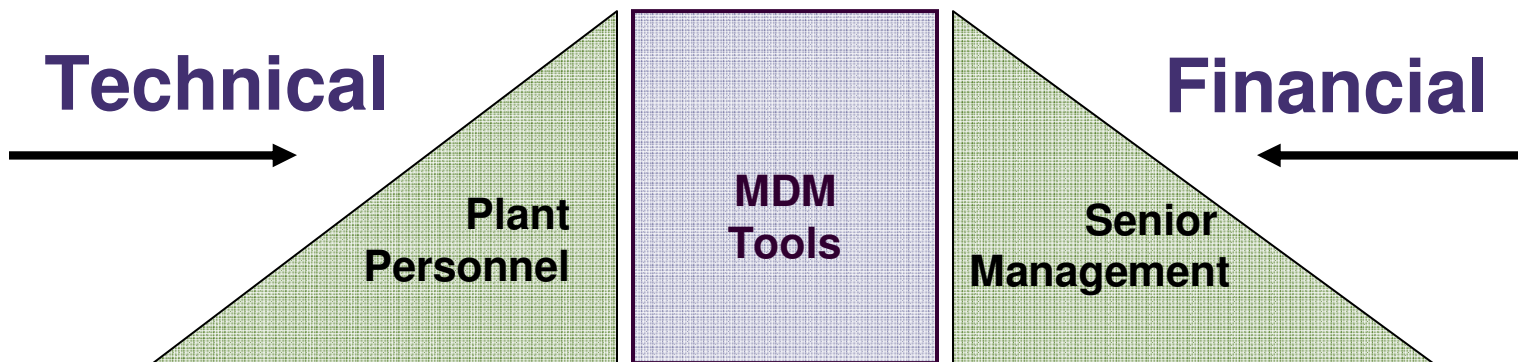
Replace with NEMA Premium[®] to save

- \$47,820 (est.) annual energy costs or
- \$478,200 (est.) over 10 year motor life

Calculations based on MotorMaster+ software which takes into account customer's financial business case and the motors life cycle cost

MDM Scope

To promote proactive motor management to both **facility** and **senior-level managers**



MDM Resources and Tools

Concept Tools

- How-to Guide
- Motor Planning Kit
- Case Studies

Calculation Tools

- Simple Savings Chart
- MotorSlide Calculator
- *1*2*3* Spreadsheet and User's Guide

Resources

- MDM e-Newsletter
- Links to DOE, EPA, others
 - MotorMaster+, PSAT, FSAT, etc.



Motor Decisions Matter

- HOME
- SPONSORS
- MDM EVENTS
- MDM TOOLS**
- PRESS ROOM
- CASE STUDIES
- HELPFUL RESOURCES

MDM Tools

- The 1*2*3 Approach
- Motor Planning Kit
- How-To Guide
- Sponsor Sign In
-
- Sign In**

MDM Tools

The Motor Decisions MatterSM Sponsors have developed several tools to demonstrate the financial benefits of life cycle costing and to help you develop a plan that's right for your company. These tools are available below.

The [Helpful Resources](#) tab also provides additional resources.

The 1*2*3 Approach to Motor Management



Spreadsheet (xls)

This simple, step-by-step calculation tool for getting started in motor management can help motor service centers, vendors, utilities, energy-efficiency organizations, and others convey the financial benefits of sound motor management to their customers.



User's Guide (pdf)

This step-by-step guide explains how to use the 1*2*3 Spreadsheet. It also suggests a process for using the results to convey the financial benefits of sound motor management to your customer's management team.



Tagging your motors lets everyone know what to do when a motor fails.



Motor Planning Kit (pdf)

This booklet provides a comprehensive overview of motor management. It details the goals and opportunities available, and describes how to pursue a variety of plans ranging from generic purchasing policies to total motor inventory.



MotorSlide Calculator

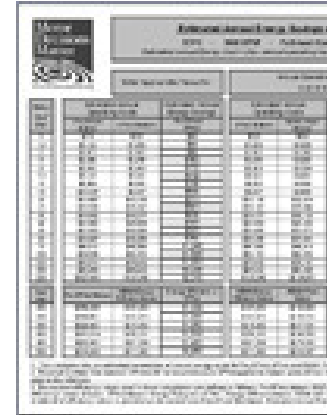
This cardboard slide rule calculates annual energy costs and annual energy savings based on electricity costs, motor size, motor efficiency, and hours of operation. Available on-line and in print.

Motor Planning Kit



- Easy-to-read, 20 pages
- Intro. to motor management and planning
 - Details about “building blocks”
 - Tools and templates for getting started
 - Resources for motors and motor systems
 - Success stories
- Region-specific resources

Simple Savings Chart



The screenshot shows an Excel spreadsheet with columns for 'Motor Type', 'Annual Operating Hours', 'Blended Cost of Electricity', 'Annual Operating Costs', and 'Annual Cost Savings'. It compares different motor options, likely showing the savings achieved by switching to more efficient models.

A very simple Excel Spreadsheet

Step 1) Enter two pieces of data

Annual Operating Hours and Blended Cost of Electricity

Step 2) Spreadsheet generates side-by-side comparison of purchase options

- ◆ Pre-1992 Motors → EPart (1-200 hp)
- ◆ EPart (1-200 hp) → NEMA Premium
- ◆ Pre-1992 Motors → NEMA Premium
- ◆ Annual Operating Costs and Annual Cost Savings

The 1*2*3 Approach



Excel Spreadsheet

Step 1) Enter thirteen pieces of data

Nameplate Data, Costs (energy, purchase, repair), Operating Hours

Step 2) Spreadsheet generates side-by-side comparisons of repair/replace options:

- ◆ Immediate Replacement with NEMA Premium
- ◆ Repair -or- Replace with EPart 1992 or NEMA Premium at Failure
- ◆ Annual Cost and Energy Savings, Simple Payback, and NPV

Step 3) Develop Plan of Action for motor management

1*2*3 Spreadsheet Assumptions

- ◆ Nameplate data & full load efficiency
- ◆ Customer approves all data
- ◆ Future motor failure will require rewinding
- ◆ Best Practice rewind: maintain nameplate efficiency



HOME

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MDM EVENTS

MDM TOOLS

PRESS ROOM

CASE STUDIES

HELPFUL RESOURCES

General

Organizations

Software

Energy Legislation

Motor Selection

Motor Repair

Evaluation & Planning

ASD's

System Optimization &
Plant Wide Energy
ManagementOrganizations &
Programs

Software

Literature

National & Regional
Assistance

National (US & Canada)

Regional

Helpful Resources - Energy Legislation

2009 American Recovery and Reinvestment Act

The U.S. Department of Energy has added a Web site to provide information about funding for energy and energy efficiency that has been made available through the American Recovery and Reinvestment Act ("Recovery Act"). The Web site, <http://www.energy.gov/recovery>, includes summary information about the federal energy-related programs outlined in the Recovery Act (program name, available funding, and the DOE office responsible for administering) as well as information about Recovery Act funding for each state, the District of Columbia, Tribal Nations, and U.S. territories. The Web site also includes a section which provides links to DOE Funding Opportunities, authorized through the Recovery Act, and a separate section which compiles Communications, Plans, and Reports related to DOE and the Recovery Act, such as press releases and weekly spending reports.

2007 Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007, into law ([Public Law 110-140](#)). Section 313 includes new electric efficiency standards for motors. The law affects electric motor efficiency in three basic areas:

- It will raise the minimum efficiency level for 1-200 hp motors that are currently covered by EAct 1992 to NEMA PREMIUM levels (NEMA MG Table 12-12), except for fire pump motors which remain at EAct levels.
- It will set new federal minimum standards for motors that were not covered by standards previously. The following motors in the 1-200 hp range must meet NEMA Energy Efficient levels (i.e. EAct 1992, NEMA MG Table 12-11), including:
 - U-Frame motors
 - Design C motors
 - Close-coupled pump motors
 - Footless motors
 - Vertical solid shaft normal thrust motors (tested in a horizontal configuration)
 - An 8-pole motor (900 rpm)
 - Poly-phase motors of not more than 600 volts (other than 230 or 460 volts).
- It creates a new federal minimum standards for NEMA design B motors, 201 to 500 hp at NEMA Energy Efficient levels (NEMA MG Table 12-11).



MDM e-Newsletter



 Motor Decisions Matter

MDM e-Newsletter @

Please pass this newsletter along to your colleagues, sales force, and others in your organization who might be interested.

July 2009

The Motor Decisions Matter (MDM) campaign is a national public awareness campaign to increase awareness of motor management opportunities, increase demand for NEMA Premium® motors & best practice motor repair, and encourage the market to engage in motor planning. The Campaign was launched in 2001 by a diverse group of stakeholders including energy efficiency program administrators, motor manufacturers, sales/service centers, and trade associations.

IN THIS ISSUE:
[Summary of Efficiency Programs for Motors & Motor Systems](#)
[DOE Resources: Funding Opportunities, State Partnerships, & More](#)
[Upcoming MDM Events](#)
[MDM in the News](#)

Summary of Efficiency Programs for Motors & Motor Systems

In May, the Consortium for Energy Efficiency published the 2009 Motors & Motor Systems Program Summary ([XLS 111 KB](#)). The Summary, which is presented as an Excel spreadsheet, provides information on efficiency programs that offer incentives for motors (1-200hp and above) & motor systems (ASDs, compressed air, pumps, fans) in industrial and commercial facilities. The Summary provides program participation information to indicate whether incentives are targeted upstream (towards vendors) or downstream (towards customers), as well as whether custom programs are offered.

The Summary also includes convenient links to the appropriate program web pages for more detailed information, and indicates whether the program offers additional opportunities related to systems work.



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www.easa.com/find/active_members



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