

NO COST. Numerous improvements in efficiency can be achieved through more effective management of resources and informed employee behavior. See back page, TEN MOST WANTED—Simple ways to save 50% or more of your energy costs.

INCREMENTAL IMPLEMENTATION. Other efficiency initiatives can be supported with operating and maintenance budgets to be accomplished over an extended period of time. One example is the incremental upgrading of T-12 to T-8 fluorescent lamps and electronic ballasts during spot lamp replacement. Upgrade costs can be spread out over a two-year period and deliver a payback of less than 3.0 years.

CAPITAL APPROPRIATIONS. Some efficiency projects must be addressed with capital appropriations that require a payback analysis. Although almost every project is unique to a particular application, the initiatives in the following “Estimated Savings Potential” section (pages 18–19) are most likely to be worthy investments with attractive paybacks. When capital funding is not available, managers can also consider performance contractors to finance upgrades.

PAYBACKS. Payback may vary according to the scheduled use of a facility, types and configurations of energy consuming systems, climate and regulatory codes. **HOWEVER**, projects involving systems or facilities that are exposed to the most hours of daily use are likely to benefit from accelerated and shorter paybacks. More favorable paybacks can also be experienced if similar projects at several different sites can be combined to benefit from more competitive contract bidding.

	Payback (yrs)	Energy Reduction (%)
Lighting		
Using Energy Saving Fluorescent Lamps	1.8-2.4	15
Upgrading old T-12 Fluorescent Lighting and ballast with T-8 and electronic ballasts	2.7-5.0	30-35
Replacing incandescent lamps with Compact Fluorescents	0.5-3.2	66-75
Upgrading 400-watt Metal Halide Suspended fixtures	0.6-1.25	10-28
Replacing incandescent Exit signs with LED	< 2.0	87
Replacing Mercury Vapor with high pressure sodium	3.0	16
Using Occupancy Sensors in: ¹		
Office	2.3-4.6	25-50
Restroom	1.0-2.6	30-75
Meeting room	0.5-1.3	22-65
HVAC		
Overall HVAC Saving potential ²		30+
Cooling upgrade opportunities ³		
Central Chiller	variable	15-35
Unitary A/C	variable	20-35
Heating upgrade opportunities ³		
Boiler	variable	10-30
Furnace	variable	5-25
Periodic heating system maintenance ³	<.25	5-10
Nighttime temperature setback ²	<.5	10-33
Reducing heating temperature ^{3,2}	instant	12 -13
Fan optimization, variable speed drive (60,000 cfm example) ²	2.1	50-85
Building Envelope		
Reducing air infiltration in large office building heating and cooling	variable	1-5

	Payback (yrs)	Energy Reduction (%)
Motors		
Specifying "premium" efficiency motor vs. standard efficiency ⁴	2.0 for typical 20-hp	3.3-6.9
Using cog-belts instead of V-belts ⁵	< 2.0	2-8.4
Air Compressor Systems		
Energy Savings ^{5,6}	variable	20-50
Redirect compressor air intake to use outside air ⁵	< 1.0	5-7
Lowering system-wide pressure by 10 psi ^{1,5}	instant	3-6
Repairing compressed air leaks ⁵	0.1	5-25
Office Equipment		
Savings Using Energy Star Equipment ⁷		
Dishwashers	6	25
Refrigerators	5-7	10
Copiers	instant	40
Computers	instant	30-70
Monitors (LCD)	instant	70-90
TV & VCRs	instant	25
Energy Management Systems		
Typical Energy Use Savings using EMS' s ²	variable	10-20

Payback estimates are based on one-shift operations using an NC average commercial electric rate of 6.39 cents per kWh. Internal labor usage is assumed. Most paybacks noted are typical for office settings. Payback periods can vary widely based on individual applications.

References:

- ¹ Federal Energy Management Program, "Occupancy Sensors", 26 Jun 2003, <<http://www.energy.wsu.edu/cfdocs/tg/27.htm>>.
- ² "How to Reduce Your Energy Cost: The Energy Efficiency Guide for Business, Industry, Government and Institution," Third Edition, 2001 Advantage Publications.
- ³ EPA Energy Star Building Manual, October 2001, Air & Radiation 6102J.
- ⁴ Motor Challenge Fact Sheet: Buying an Energy-Efficient Electric Motor.
- ⁵ "A Self-Assessment Workbook for Small Manufacturers", Version 1.0, Rutgers University Office of Industrial Productivity and Energy Assessment.
- ⁶ "Improving Compressed Air System Performance: A Sourcebook for Industry", USDOE, Motor Challenge Program, April 1998.
- ⁷ EPA Energy Star, 25 Jun 2003, <<http://www.energystar.gov>>.

Simple ways to save 50% or more of your energy costs:²

1. Turn off lights when not needed.
2. Remove unneeded light bulbs.
3. When replacing bulbs, use lower wattage or more efficient ones.
4. Lower your heating settings.
5. Raise your air conditioning settings.
6. Reduce heating and air conditioning during unoccupied hours.
7. Turn off heating and air conditioning somewhat before the end of your operating hours.
8. Have your heating, ventilation, and air conditioning systems serviced and adjusted.
9. Turn off machines and equipment when not needed.
10. Make sure all automatic controls are in good working condition and are set properly.

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