

Continuous Operational Improvement



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COLLIERS
INTERNATIONAL



Presentation Overview

- Why focus on Operations & Maintenance?
- Major O&M program types & structure
- Potential savings from a strong O&M plan
- Eco-friendly leasing tips
- Resources to get your job done



Why Focus on O&M?

- Typical O&M plans are low or no cost in nature
- Most plans can be set-up by in house personnel
- O&M can have an immediate payback
- O&M plans rarely require the time that designing, bidding, evaluating and completing a capital project does



Why Focus on O&M?

- Optimize the operation of existing systems
- Improve building comfort and tenant satisfaction within the capabilities of the installed system
- Reduce building energy cost
- Solve indoor air quality problems
- Guarantee continuous optimal operation for years to come
- Reduce operational and maintenance costs



Types of Maintenance Programs

- Reactive
- Preventative
- Predictive/Continuous Commissioning
- Reliability Centered Maintenance



Getting Started

- Gather all building specific system data
- Investigate and document the condition of the building systems
- Solve existing problems in the building within the capabilities of the installed system
- Optimize building energy systems and formalize operational procedures
- Measure and document the energy savings and comfort improvements
- Provide for on-going monitoring of system operation



Quick Hits

- Upgrade to more efficient HVAC filters
- Review sensor locations
- Use all the features in your energy management system
- Ask questions!

2001 Pennsylvania Avenue Case Study



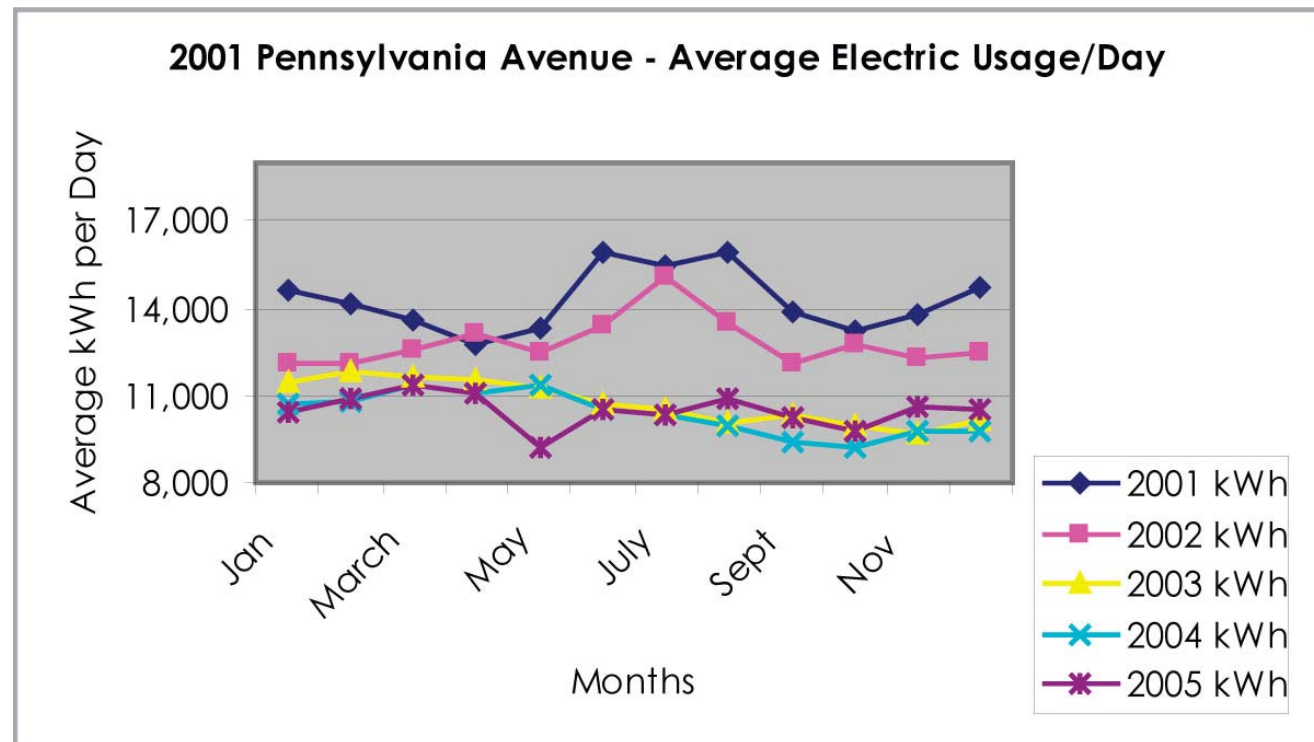
What we did:

- Instituted proper preventative maintenance
- Repaired and replaced non-functioning equipment
- Relocated outside air sensors
- Balanced air flow throughout the building
- Replaced lighting with lease rollover
- Reprogrammed energy management system



2001 Pennsylvania Avenue Reduction in Average Electric Usage

Our results:





Eco-friendly Leasing Tips

- Review & update your building standards & work rules
- Provide for efficiency upgrades to be amortized and passed through to your tenants
- Include energy & sustainability guidelines in the Work Letter incorporated into your leases



Resources

- FEMP Operations & Maintenance Best Practices Guide
www1.eere.energy.gov/femp/
- BOMA Preventative Maintenance & Building Operation Efficiency
www.boma.org
- BOMA Energy Efficiency Program (BEEP)
www.boma.org/TrainingAndEducation/BEEP/
- Energy Star Guidelines for Energy Management
www.energystar.gov/index.cfm?c=guidelines.guidelines_index
- ...and many more