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Charting a Course to Energy Independence

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Low-Cost/No-Cost Opportunities

More Bang for the Buck

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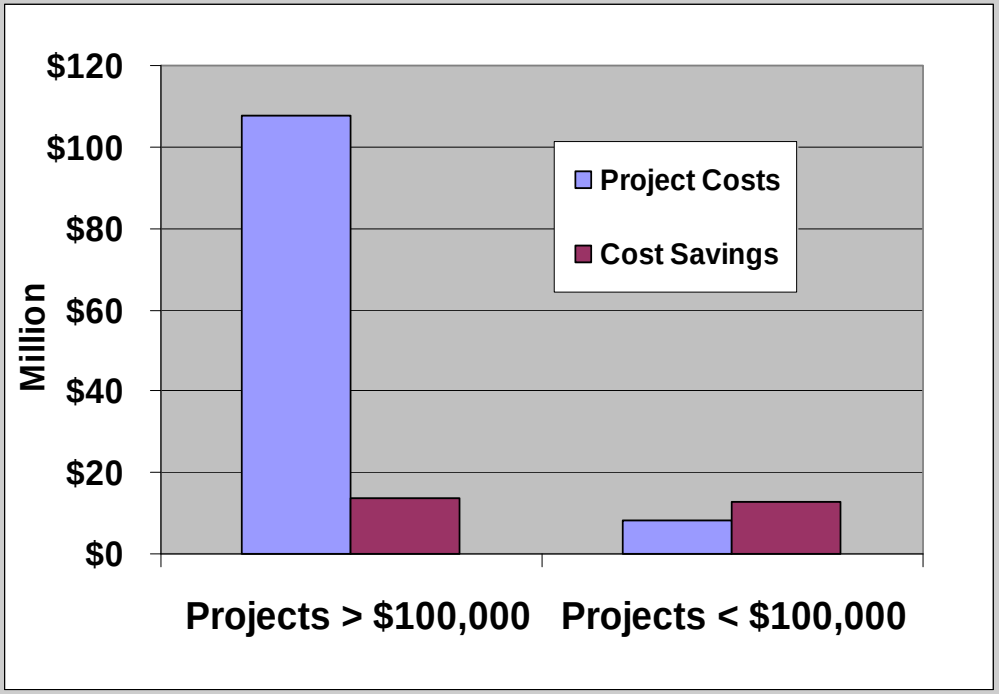
Low-Cost/No-Cost Opportunities

- Why Low-Cost/No-Cost
- How to find opportunities
- Types of opportunities
- Case Studies

Why Low-Cost/No-Cost?

Reported cost and savings numbers over 5 years for client with active financed projects program, fast payback program and low-cost/no-cost program:

Reported Projects > $100,000		
Project Costs	$107,741,823	
Cost Savings	$13,819,112	
Energy Savings	403,219	Mbtus
Water	506,718	Kgals
Mbtu + Kgal	909,936	
$118.41	**per Mbtu-Kgal**	
Reported Projects < $100,000		
Project Costs	$8,257,816	
Cost Savings	$12,697,905	
Energy Savings	328,738	Mbtus
Water	693,935	Kgals
Mbtu + Kgal	1,022,673	
$8.07	**per Mbtu-Kgal**	



How Do We Find Opportunities?

- Keep an eye on the end-goal
  - Cost savings, MBtu savings, etc.
- Observe, and think about what you see
  - Know your buildings and the people
- Look at every change as an opportunity to save energy
  - Mission changes, new construction
- Use every scrap of data!
  - Measure progress, detect trends, identify targets, track performance, etc.

Opportunities

- Utility Billing
  - Check utility bills and allocations/estimations
  - Anomalies
  - Disconnect between utility and operation departments

- Facility Operation and Maintenance
  - Equipment Shut-down
  - Equipment Maintenance
    - Dirty Filters/Coils
    - Leaking Valves
    - Belt tension

Opportunities

- Facility Controls

  Preferably perform on EMCS

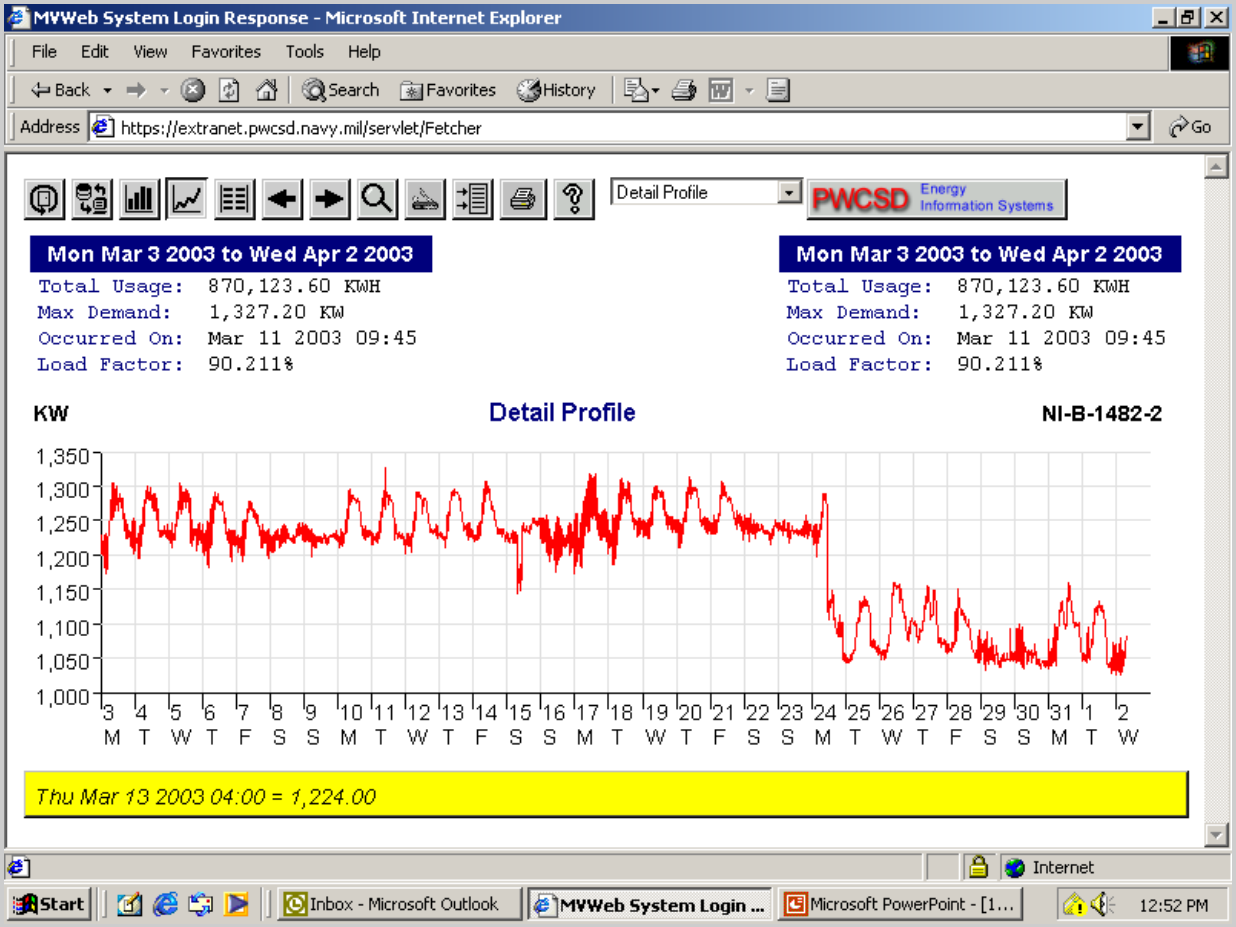
  - Scheduling
  - Set points
  - Sensor calibration
  - Improper dead-bands

- Outdoor Air Economizer

  Proper functioning of outdoor air intake during heating and cooling

Case Studies

High profile data center… 150 kW demand reduction by <u>pushing a button</u> to shut down 2nd, redundant chiller & associated pumps – no cost, no impact to mission.

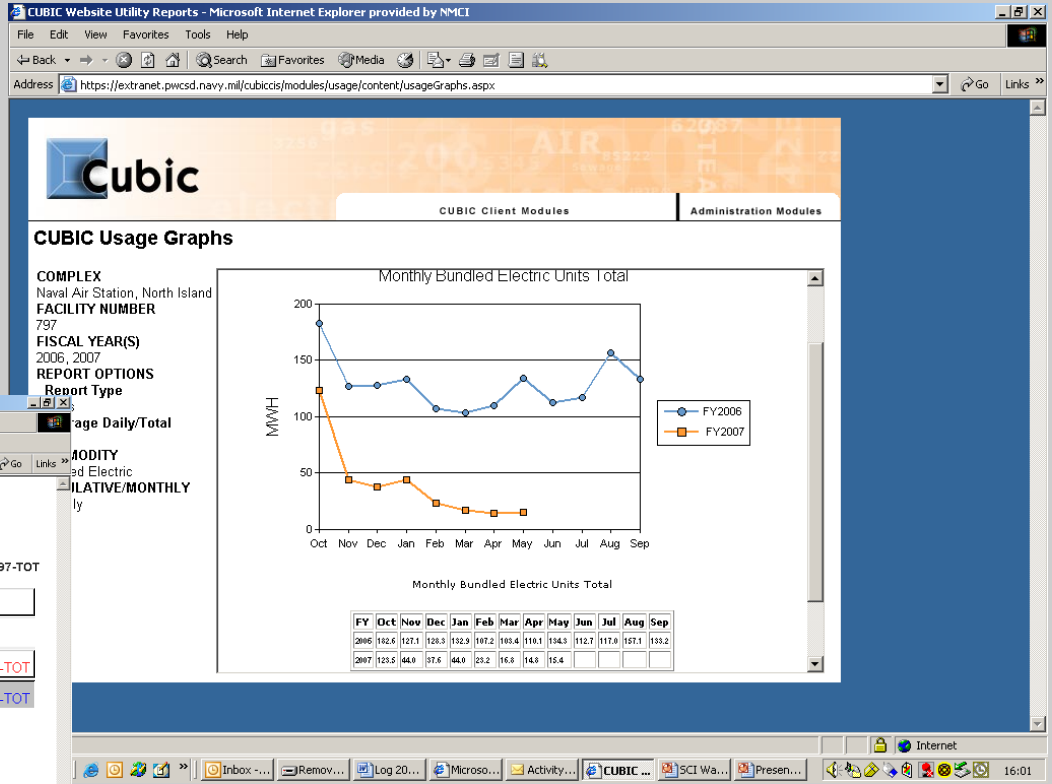


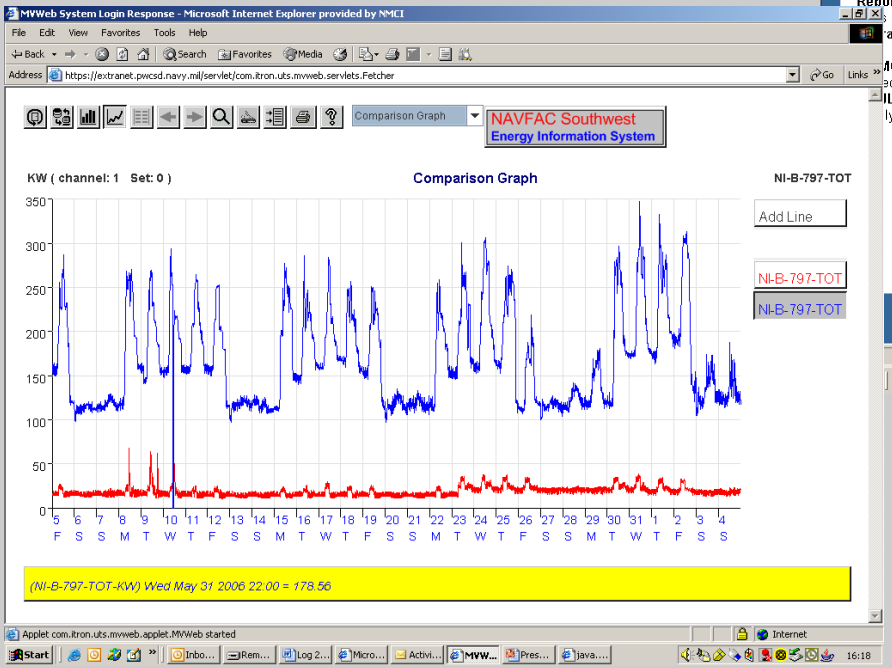
Case Studies

- 100% Outside air
- No control of operation
- Energy Star rating: 7 out of 100

Case Studies

Flight simulator facility – reduced electrical demand (below) & consumption (right) during building's "downtime"





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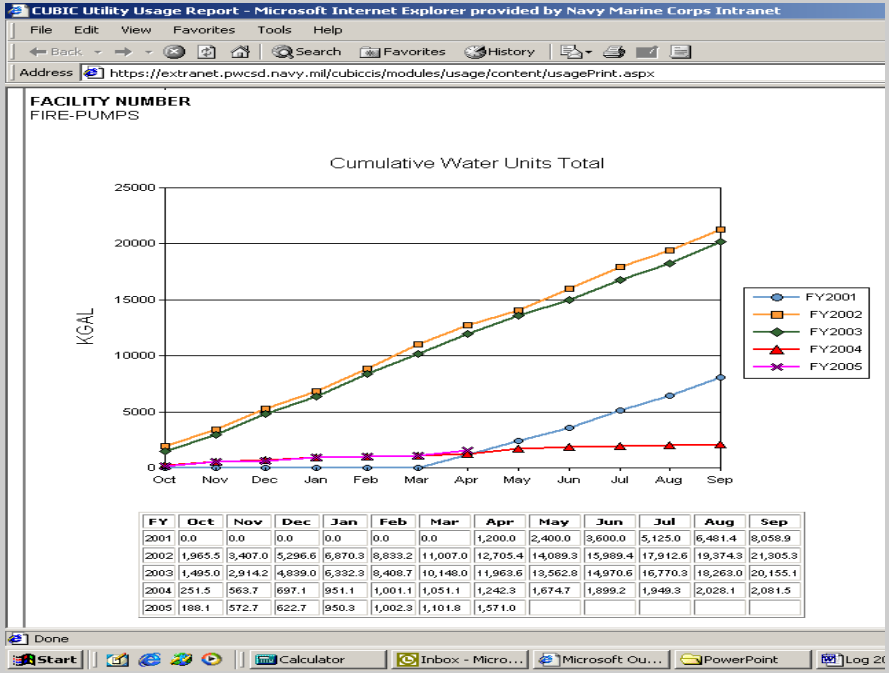
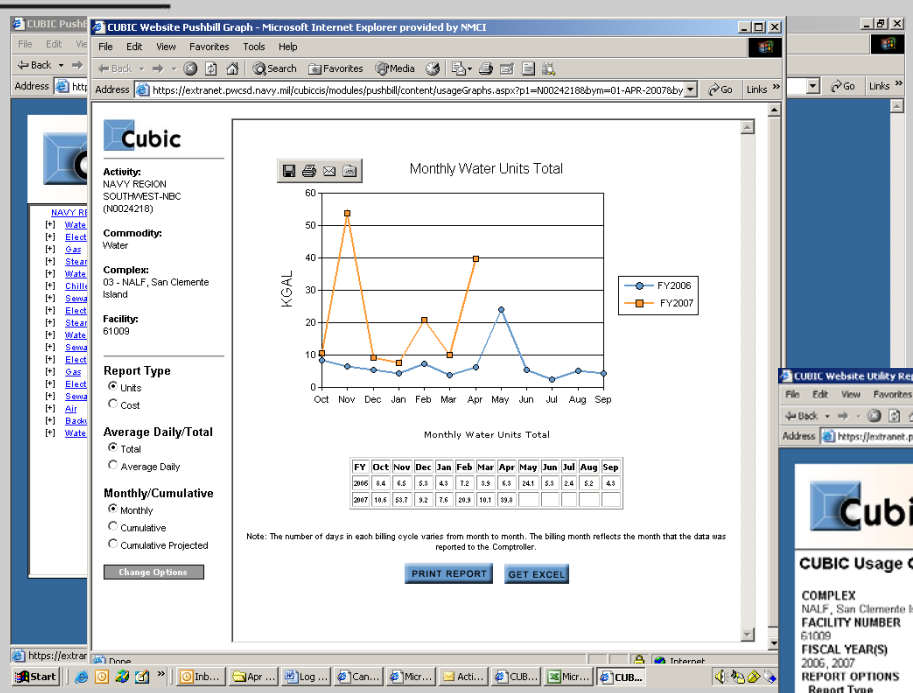
Case Studies

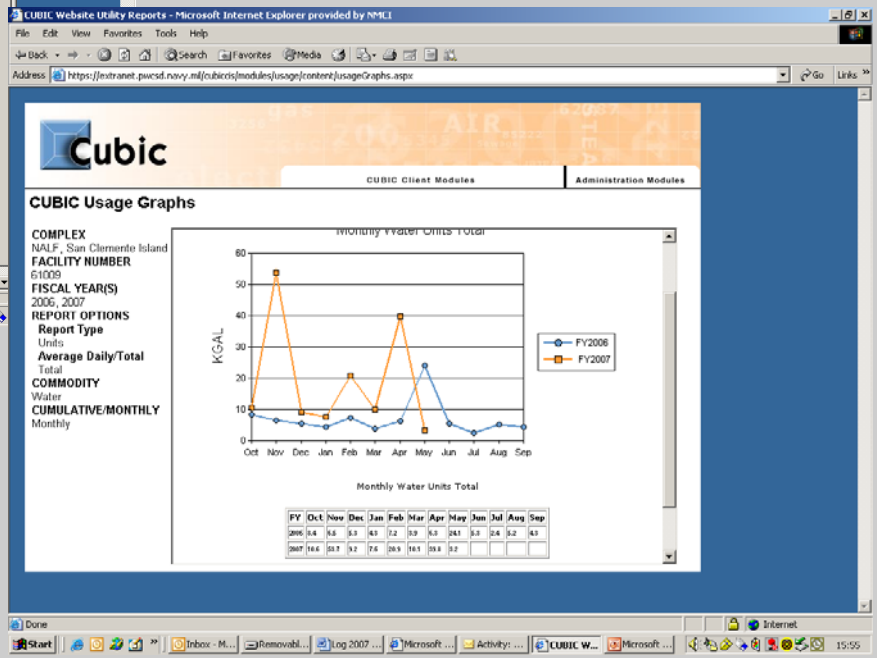


FY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2001	0.0	0.0	0.0	0.0	0.0	0.0	1,200.0	2,400.0	3,600.0	5,125.0	6,481.4	8,058.9
2002	1,965.5	3,407.0	5,296.6	6,870.3	8,833.2	11,007.0	12,705.4	14,089.3	15,989.4	17,912.6	19,374.3	21,305.3
2003	1,495.0	2,914.2	4,839.0	6,332.3	8,409.7	10,148.0	11,963.6	13,562.8	14,970.6	16,770.3	18,263.0	20,155.1
2004	251.5	563.7	697.1	951.1	1,001.1	1,051.1	1,242.3	1,674.7	1,899.2	1,949.3	2,028.1	2,081.5
2005	188.1	572.7	622.7	950.3	1,002.3	1,101.8	1,571.0					

Hangar deluge pumps,– saved 20 MGY water & sewer at no cost… Determined sewer charges were invalid (water was discharged to storm sewer, not sanitary sewer) and testing process no longer used 20 MGY but estimate was never changed!

Case Studies

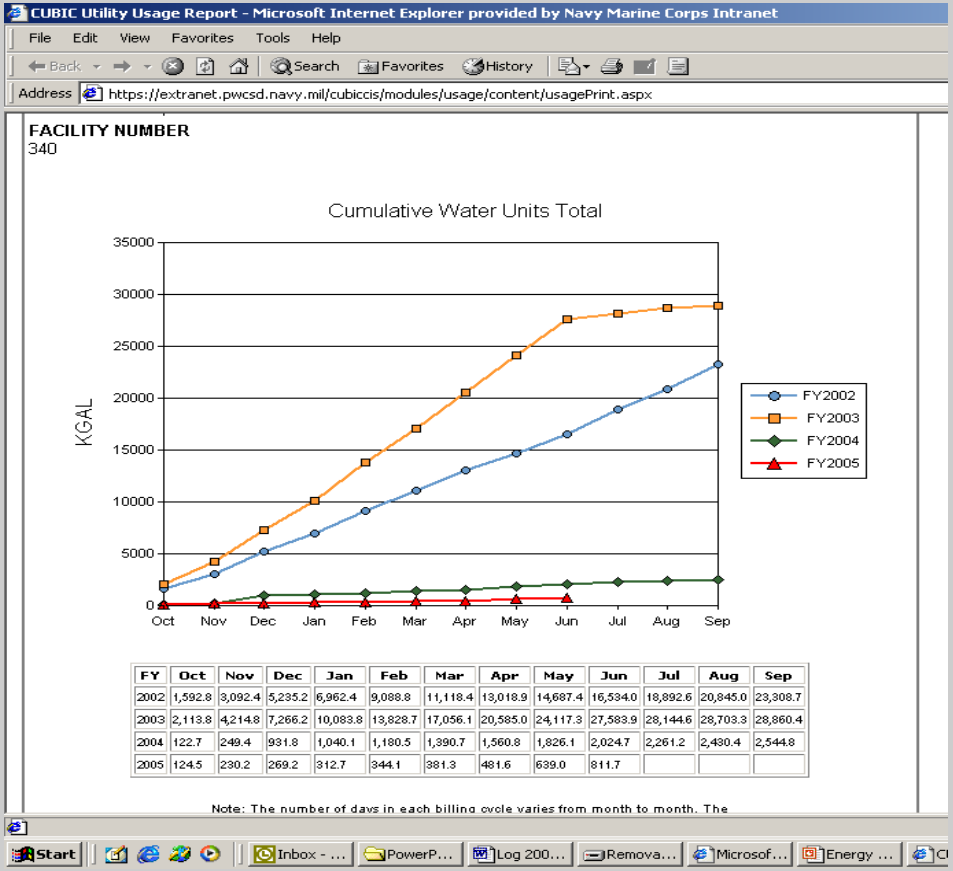




38 Kgals in water & sewer savings worth $8K by “jiggling the handle”… detected apparent problem in April, problem resolved on May bill.

Case Studies

35 MGY water & sewer savings by asking a question…



FY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2002	1,592.8	3,092.4	5,235.2	6,962.4	9,088.8	11,118.4	13,018.9	14,687.4	16,534.0	18,892.6	20,845.0	23,308.7
2003	2,113.8	4,214.8	7,266.2	10,083.8	13,828.7	17,056.1	20,585.0	24,117.3	27,583.9	28,144.6	28,703.3	28,860.4
2004	122.7	249.4	931.8	1,040.1	1,180.5	1,390.7	1,560.8	1,826.1	2,024.7	2,261.2	2,430.4	2,544.8
2005	124.5	230.2	269.2	312.7	344.1	381.3	481.6	639.0	811.7			

Summary

- Low-Cost/No-Cost often provide best ROI
- Many “common sense” solutions
- Pay attention and ask questions
- Watch your data

Questions?

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