

PROPOSED ENERGY CONSERVATION INITIATIVE

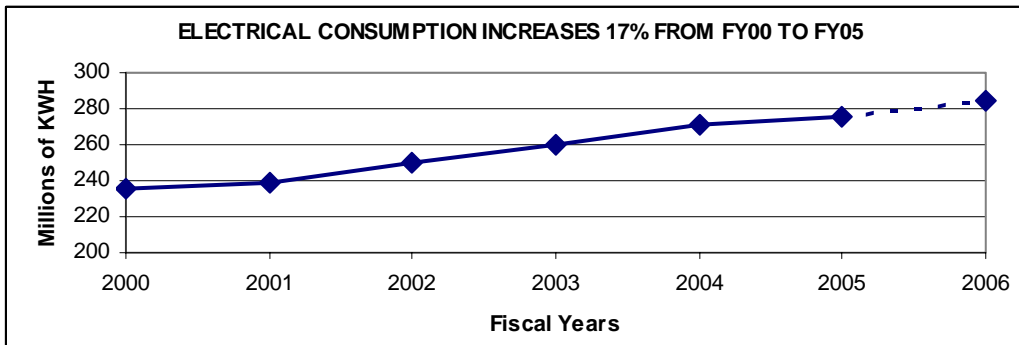
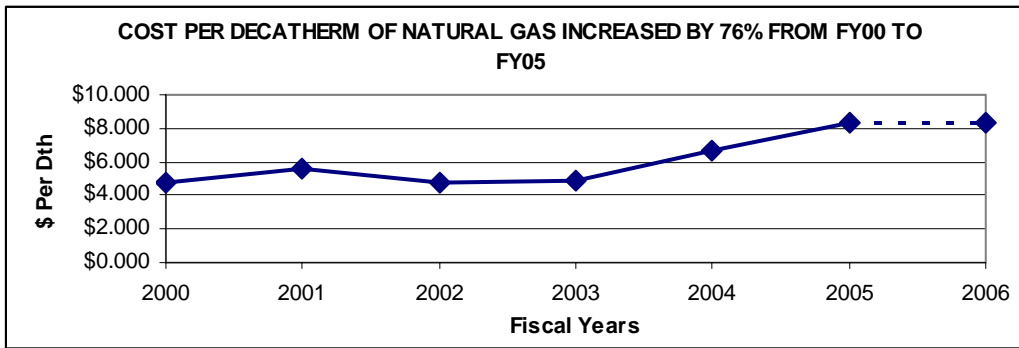
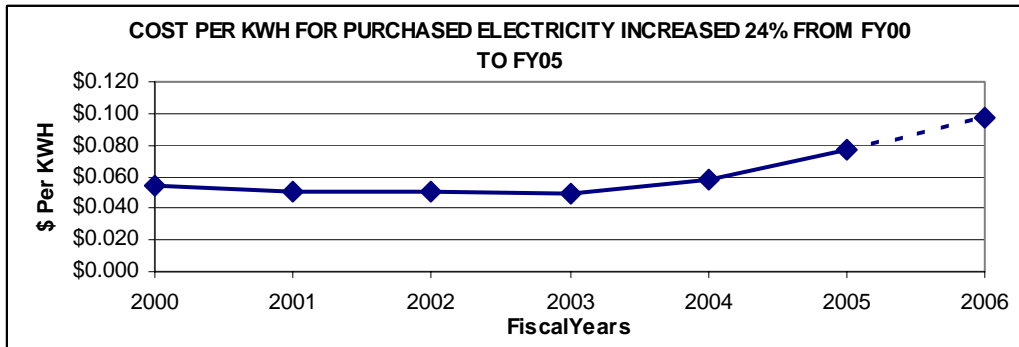
PROBLEM:

FY 05 energy costs are currently anticipated to exceed our \$43M budget by about 10%. This projection is based upon gas futures costs on 11/10/04. Actual year end costs could be higher or lower than \$47.6M as natural gas futures have not yet been purchased for all of FY 05.

Energy commodity advisers indicate that UM should plan on our energy costs increasing in the future. For example, they currently project that the KWH cost of purchased electricity will increase by 20-25% in FY 06 compared to FY 05.

BACKGROUND:

1. Total campus energy costs have increased dramatically in recent years. These changes result primarily from 3 sources: increased consumption, increased rates and including debt service in these costs. See chart below (in millions) for more information.



PROPOSED ENERGY CONSERVATION INITIATIVE

2. Because the utility infrastructure deal includes a 120% Debt Reserve Fund and a 20% annual debt service coverage requirements, UM will be able to pay off the principal about 4 years early in 2015.
3. "What ifs":
 - a) If UM had installed boilers instead of turbines in the recent utility infrastructure project, the current projected FY 05 energy cost would be higher at \$50M compared to \$47.6M.
 - b) If the actual cost of natural gas equaled the amount projected by USDOE in the recent utility infrastructure project, then UM's projected FY 05 energy cost using turbines would be \$37.3M instead of \$47.6M.
4. Institutional Comparisons:
 - a) Total projected energy costs for FY 05 are: \$70M for XX SF at UNC, Chapel Hill; \$55M for 10.5 MSF at MIT. UI gas cost increased 74% between FY 98 and 03. U.S. of Alabama is paying 28% more for gas than UM for November.
 - b) Between FY 00 to FY 04, total purchased energy costs increased 49% at Frostburg, 28% at Towson and 46% at UMB.

RECOMMENDED UM RESPONSE:

A. Continue to implement Energy Conservation Measures (demand side management measures) to take advantage of the opportunities presented by higher energy costs..

Past Steps taken:

1. Have installed CCMS which enables UM to peak shave and load shed by remotely and automatically turning off HVAC building systems in evenings and weekends, or in response to specific environmental conditions.
2. Have retrofitted most campus light fixtures with low energy lamps and electronic ballasts.
3. Have installed variable frequency drives on most of our large motors.
4. Wherever possible, raised the indoor temperature (and humidity) in our buildings to 78 degrees during the past two summers and lowered it to 68 degrees this past winter.
5. As funds become available for upgrades and/or as major repairs have been completed, O&M installs energy efficient variable speed motors to replace constant volume motors.

These steps conservatively avoid an estimated \$6M annually in additional costs.

Recent Steps now Underway:

1. Investigate the cost and effectiveness of LAN wake up software to automatically turn on & off networked computing equipment. It is estimated that if we were able to turn off 12,000 work stations (that are now on 24 hours per day) for 12 hours each work day and weekends, UM would save \$300,000 per year.
2. Connect outside air dampers to CCMS and CO2 monitors to eliminate the unnecessary heating and cooling of outside air. (\$700,000 annual savings; 1 year payback)

PROPOSED ENERGY CONSERVATION INITIATIVE

3. Sub- meter make up water used in our year round cooling towers to enable us to back out the sewer charge. (\$330,000 annual savings; 1 year payback.)

Proposed Steps:

1. **Initiate a PR campaign aimed at engaging the campus community in voluntary energy conservation. Specifically address:**
 - a) **reducing winter indoor temperatures to 68 degrees and increasing summer indoor temperatures to 78 degree;**
 - b) **turning off lights and closing windows at the end of the work day;**
 - c) **turning off computer workstations and all other office equipment at the end of the work day.**

Start with informational road show to colleges & departments, and media announcements. Use door hangers and handouts. Provide monthly mechanism for soliciting suggestions and providing feedback on how we are doing. Tie to UM's "green agenda".

Evaluate taking the following additional Steps depending on Payback and availability of Funds:

1. Explore the payback and effectiveness of dual source occupancy sensors to reduce lighting costs. (1 to 2 year payback.)
2. In 14 campus buildings, explore the payback associated with the conversion of constant volume, dual deck HVAC systems to less energy intensive variable volume HVAC systems. (5 to 7 year payback.)
3. Explore the payback associated with manifolding hundreds of fume hoods to reduce the heating and cooling costs associated with over-ventilating. (5 to 7 year payback.)
4. Investigate expansion of the existing sub-metering program for irrigation. (2 to 4 year payback)

- B. Continue to employ both physical and financial hedges, and other best practices to reduce the cost of purchased commodities (primarily natural gas and purchased electricity) while at the same time managing UM's exposure to financial risk.**

Past Steps Taken:

1. The following physical hedges are in place: ability to convert from natural gas to number 2 oil for heating or cooling for up to 3 months per year; ability to convert from self generated electricity to purchased electricity; ability to make chilled water with steam or electricity in about 20 buildings.
2. UM purchased FY 05 electricity wholesale saving \$1M compared to the DGS Statewide price and \$2M from Pepco's Standard Offer of Service price.
3. UM entered a 3 year agreement with Wash Gas which enables UM to purchase natural gas futures 36 months out, starting on July 2004. Utilizing the hedging strategy offered by 3 advisers and Tractebel, UM is buying gas futures in an effort to minimize its upside risk while taking advantage of downside opportunity.

PROPOSED ENERGY CONSERVATION INITIATIVE

Current Steps:

1. As long as it is financially advantageous, UM is leading the USM effort to aggregate electric commodity purchasing for all USM institutions in both FY 06 and FY 07.
2. UM is cautiously exploring the advantages and risks associated with more sophisticated hedging techniques including “lifting” and derivatives.