

Memorandum



DATE June 14, 2012

TO Honorable Members of the Budget, Finance & Audit Committee: Jerry R. Allen (Chair), Tennell Atkins (Vice Chair), Monica R. Alonzo, Scott Griggs, Ann Margolin

SUBJECT Behavioral Energy Conservation Program Briefing

On Monday, June 18, 2012, you will be briefed on the Behavioral Energy Conservation Program at the Budget, Finance and Audit Committee meeting. The briefing material is attached for your review.

Please contact me if you need additional information.



Forest E. Turner
Assistant City Manager

Attachment

cc: Honorable Mayor and Members of the City Council
Mary K. Suhm, City Manager
Rosa A. Rios, City Secretary
Thomas P. Perkins, Jr., City Attorney
Craig D. Kinton, City Auditor
C. Victor Lander, Administrative Judge
A.C. Gonzalez, First Assistant City Manager
Ryan S. Evans, Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
Joey Zapata, Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Edward Scott, City Controller
Stephanie Cooper, Assistant to the City Manager

Behavioral Energy Conservation Program

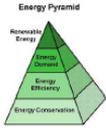
Briefing to the Dallas City Council's
Budget, Finance and Audit Committee
June 18, 2012



Background: Energy Pyramid

The Energy Pyramid

There is lots of interest in renewable energy resources to reduce our expenses for traditional sources of energy and to improve environmental conditions for ourselves and for future generations. But before embarking on a renewable energy project, such as installing a wind machine or solar PV (photovoltaic) panels, consider the Energy Pyramid.



No person would ever consider building a pyramid with the peak first. Rather a pyramid is built with the base first and then progressive layers are added until we finally get to the peak. Likewise, no one should install a renewable energy project without first implementing programs for energy conservation, energy efficiency, and energy demand at the site, whether it is a home, business, farm, industry, or public facility. Let's look at these layers one by one.

Energy Conservation is largely based on behavior to use energy in a more efficient manner. Such practices include turning off lights when not needed, thermostats to lower settings in the winter and high in the summer, keeping engines and machinery well maintained for efficient operation, cleaning the blower ventilation fans on a frequent basis to remove dust, and replacing air filters on HVAC (heating, ventilation and air conditioning) systems on a monthly or bi-monthly basis. Generally energy conservation behaviors change made for little or no expense. But it is essential to cooperation of all people involved with the organization for energy conservation to be successful.

Energy Efficiency involves purchasing and installing and processes with high energy efficiency. Examples of energy efficiency include using compact fluorescent rather than incandescent lamps, electric motors with efficiency rather than standard efficiency, and double insulated windows rather than single-pane windows.

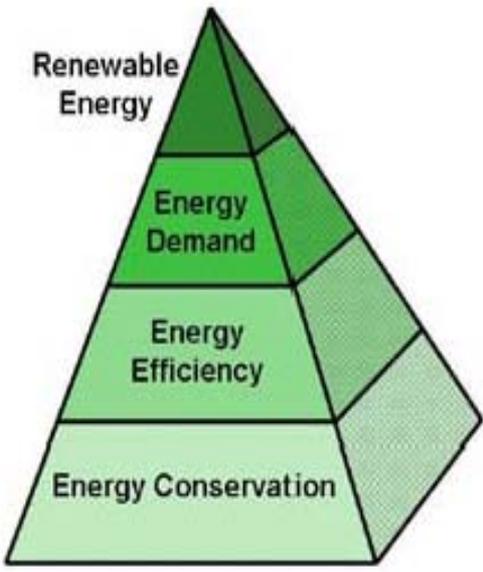
There are numerous opportunities in nearly all operations to increase the energy efficiency for the various forms that are being consumed. It is essential that increased efficiency yields financial savings as well. Before purchases are made, one needs to evaluate whether increased cost for the purchase is cost-effective of the equipment. There is probably no way that a person is justified in paying a premium price for an efficient motor used for only 15 minutes a week for 36 weeks per year. On the other hand, if a motor will run 12 hours per day, 365 days then investing in a high efficiency motor is a "no-brainer".

Whenever shopping for appliances, look for the ENERGY STAR logo. The Energy Star label is on 27 major appliances, office equipment, lighting, electronics, heating and cooling equipment, windows, motors, pumps, and numerous other items.

Products that earn the Energy Star label must meet strict criteria, including less energy consumption than standard products without sacrificing features, style or comfort. While it is true that many Energy Star products cost more initially than the standard items, the value of the energy saved over the life of the product must exceed the extra initial cost of the Energy Star product. In other words, the product with an Energy Star label must be cost-effective as well as energy efficient.

Energy Demand involves shifting energy usage when possible to periods with less demand on the energy distribution system. Energy demand considerations are most applicable to electricity and natural gas. For an electricity system, the challenge is to shift many of the energy-intensive operations to the time periods when off-peak rates are applicable. For electricity customers on real-time pricing, the challenge is to shift major loads to periods when the price of electricity is historically low. As an example, a large dairy farmer has been able to reduce his electricity bill by \$1,000 per month by

Energy Pyramid



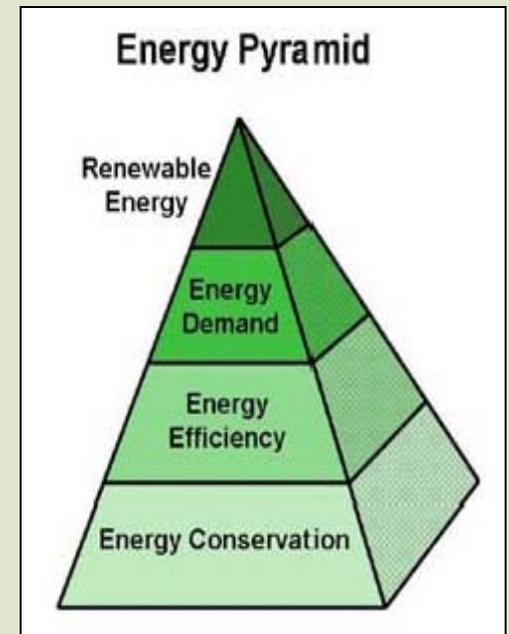
ENERGY STAR

- ▶ “Energy Conservation is largely based on behavioral practices to use [energy] in a more efficient manner...it is essential to have the cooperation of all people involved with the organization or enterprise for energy conservation to be successful.”
- ▶ “When the energy pyramid is built with energy conservation as the base ... then we will be saving energy, saving money, decreasing dependency on imported energy, and improving the environment for this generation and the following generations. That’s a winning combination!”
- ▶ “No person would ever consider building a pyramid with the peak first. Rather a pyramid is built with the base first and then progressive layers are added until we finally get to the peak.”

Dr. Dennis Buffington, P.E.
Penn State University

City Energy Initiatives

- ▶ Primary focus to date has been on energy demand and efficiency
- ▶ Increasing emphasis over the last several years on renewable energy
- ▶ Examples of previous /current initiatives include:
 - Green Building Program
 - Energy efficiency upgrades / retrofits
 - Renewable energy procurement
 - Cogeneration



Behavioral Energy Conservation Program Procurement

- ▶ RFP issued March 2011 – two proposals received
 - Energy Education, Inc. (final score: 85.49 out of 100)
 - Komia, LLC (final score: 79.75 out of 100)

- ▶ Evaluation / selection – five member committee
 - Business Development and Procurement Services (evaluated pricing)
 - Communication and Information Services
 - Equipment and Building Services
 - Public Works
 - Dallas Water Utilities

- ▶ Item for Council consideration of contract award to Energy Education, Inc. on June 27, 2012

Proposed Program

- ▶ Initial nine-month “Fast Track” period wherein all savings generated are the City’s
- ▶ Following five years are contingency-based: City shares actual savings realized 50/50 with vendor
- ▶ Vendor hires and staffs program out of their share
- ▶ City staff also trained to use program software to facilitate validation of savings
- ▶ Regular updates to Council on program results achieved
- ▶ Vendor projects preliminary program savings of \$20m over 5 years and 9 months – if achieved, vendor’s share would be approximately \$10m

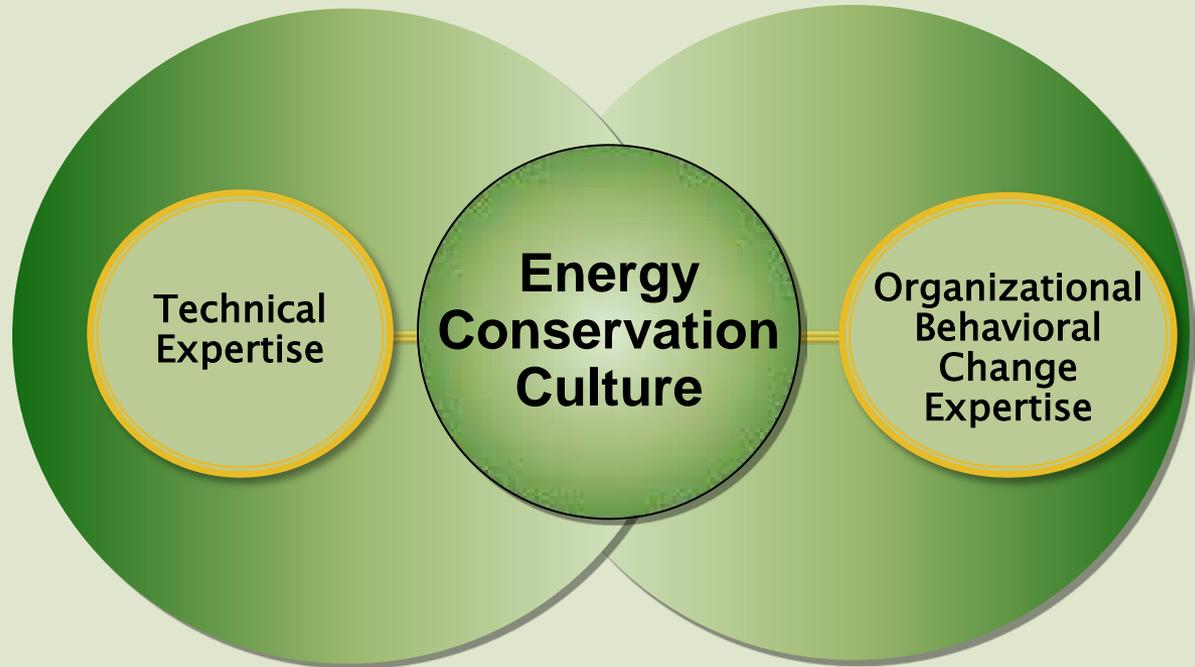
**Contingency-based contract minimizes City’s risk –
City only pays based on and out of results achieved**

Proposed Energy Conservation Program

Draws upon Technical and Organizational Behavioral Change Expertise

Technical Expertise

- HVAC
- Indoor Air Quality
- Building Simulation
- Measurement and Verification Specialists
- Six Sigma
- Pneumatics & Controls
- Irrigation
- Lighting
- Re-commissioning/
retro-commissioning



Organizational Change and Behavioral Change

- Focus on execution and accountability
- Use of evidence-based decision making and analytics
- Use of principles derived from Total Quality Management
- Application of principles of behavior modification
- Use of policies, practices, procedures and methods that change organizational culture

Proposed Energy Conservation Program

Augments City staff with an experienced, professional and credentialed team of experts

- Professional Engineers (Electrical & Mechanical)
- Certified Energy Managers
- Certified Measurement and Verification Professionals
- Certified Indoor Air Quality Professionals
- Certified Quality Engineers
- Certified Quality Auditors
- Certified Commissioning Agents
- ASHRAE Certified Professionals
- Certified Building Operators
- Licensed Boiler Engineers
- Energy Management System Specialists
- Certified Public Accountants

Proposed Energy Conservation Program

- ▶ Requires no capital outlay
- ▶ Maintains priority of City's mission, comfort, and safety
- ▶ Funded from existing utility budget
- ▶ Accounts for savings from prior/concurrent City initiatives individually and separately
- ▶ Vendor does **not** receive credit for savings from other City initiatives

Accounting for Each Initiative

"We have successfully integrated a traditional approach of replacing aged equipment with higher efficiency retrofits while implementing a behavioral conservation program in parallel. Although all forms of energy savings directly improve the hospital's bottom line, ***Energy Education's training and the EnergyCAP software have allowed us to separately account for the various initiatives.***"

"To-date UNMH has saved \$2.5MM gross and reduced energy consumption by over 20% based significantly on the results of our behavioral focus."

Mark Kistner
Executive Director,
Facilities and Support Services
University of New Mexico Hospital

In Summary

Contingency-based contract is proposed

- ▶ Vendor's projection of savings over five years and nine month term: \$20m
- ▶ First nine months: no sharing of savings with vendor
- ▶ Subsequent five years: vendor receives share of actual savings achieved (no savings realized = no payment)

Recommendations

- ▶ Authorize approval of the Behavioral Energy contract with Energy Education, Inc. on the June 27th Addendum