Division of Facilities Construction and Management

Energy Group

Team Leader of the Energy Group

- Curtis James Clark, State Energy Manager
  - 25 years experience in green building design, energy engineering, and commercial construction
  - Professional Engineer licensed in UT, OR, and WA
  - USGBC LEED™ Accredited Professional
  - Chair for the USGBC-UTAH Chapter

Mission Statement

- Deliver Centralized Services at Competitive Costs while Exceeding Customer Expectations.

Energy Group Activities

- *Lead* market transformation;
- *Build* our team of facility managers, building designers and contractors, code officials, utility representatives, and energy service companies; and
- *Integrate* building design and building maintenance.

Energy Group Goals

- *Energy Efficiency*
- *Water Conservation*
- *Healthy Indoor Environment*
- *Sustainable Site*

Market Summary

- There are more than 2 thousand state buildings with 42 million square feet of floor space.
  - 40% of the floor space is over 35 years old.
- Nearly $60 million are spent on energy costs. Energy cost increases have impacted State's budgets:
  - 30% cost increase in natural gas.
  - 4% to 6% increase in electricity.

Funding Mechanism

- Budget for capital improvement projects is $65 million;
  - About 10% of the capital improvement projects are energy related.
- Budget for new construction and major renovation projects is $500 million;
- Utility incentives and other federal grants; and
- Alternate funding sources.

House Bill 80
Energy Savings in State Buildings

- Provides that the Division of Facilities Construction and Management shall administer the State Building Energy Efficiency Program;
- Eliminates the requirement for state agencies to place 50% of net energy savings in the LeRay McAllister Critical Land Conservation Fund;
- Develop programs and incentives to encourage state entities to save energy;
- Appoint staff member for each state entity to coordinate and report on energy savings programs; and
- Establish approval procedure for financing of energy savings performance contracting.

Energy Group Programs

1. Energy Efficient Products;
2. Energy Design Standards;
3. High Performance Building Rating System;
4. Energy Management Team;
5. Utility Energy-Efficiency Contract;
6. Energy-Savings Performance Contract;
7. Energy Efficiency Projects; and
8. Re-commissioning Program.

1 - Energy-Efficiency Products (3.1 C)

- Where life-cycle cost-effective, purchase products in the upper 25% of the efficiency range;
- Target products that will serve the State well; and
- Promote products throughout State government to lower costs through quantity discounts.

2 - Energy Design Standards (3.1 D)

- Sets the minimum requirement for energy design of the building envelope, mechanical systems, lighting systems, service water heating, power, and other equipment:
  - Lighting system: 10% better than Code.
  - Envelope system: 10% better than Code.
  - All other systems: comply with Code.

3 - High Performance Building Rating System (5.0)

- A program that promotes energy efficiency, water conservation, indoor environment improvements, and sustainability through market transformation in new construction and major renovations.

4 - Energy Management Team

- HB 80 requires State agencies and institutions to appoint a staff member to coordinate and report on energy savings efforts.

5 - Utility Energy Savings Contracting

- A demand side management services provided by Utah Power to improve the efficiency of use of electricity:
  - Recommissioning Program;
  - FinAnswer Program; and
  - Self-Direct Program;

6 - Energy Savings Performance Contracting

- A contract that provides performance of services for the design, acquisition, financing, installation, testing, operation, and other services.
- Payment to the contractor is realized through a guaranteed stream of future energy and cost savings.
- Nearly complete with three pilot projects involving $21 million of improvements that generated $1.3 million in savings annually.

7 - Energy Efficiency Projects

- A program that improves the efficiency of the use of commodity (electricity, gas, water, etc.) in State buildings that is funding through Capital Improvement funds and other funding mechanism.

8 - Re-commissioning Program

- A program to tune-up mechanical system and optimize efficiency in State buildings.

Why Energy Performance in State Buildings?

- Cost savings for State institutions and agencies, and our tax payers;
- Electricity reliability and reduce the risk of blackouts.
- Natural gas shortages and costs;
- Increase environmental stewardship; and
  - Limited natural resources.
  - Mining and drilling impacts.
  - Water and air pollution.
- Global warming.
  - Reduce greenhouse gas emissions.

High Performance Building Rating System (5.0) - Goals

- Substantially improve energy efficiency;
- Conserve on water;
- Incorporate daylighting design to improve occupant production and visual acuity;
- Design buildings with better air quality, better lighting, and better acoustics to increase the health of state employees;
- Select materials with little or no off-gases; and
- Incorporate sustainable site standards.

High Performance Building Rating System – Components

- Design and Technology Charrette (5.4);
- Prerequisites (5.5);
- Energy Efficiency Requirements (5.6); and
- Sustainability Credits (5.7).

Design and Technology Charrette (5.4)

- Achieve integrated and sustainable design
- Build consensus and buy-in among stakeholders
- Reduce resistance to change and optimize opportunities by change
- Transform of physical environments and mindsets

Prerequisites (5.5)

- Fundamental Building Systems Commissioning;
- Life-Cycle Cost Analysis;
- CFC Reduction in HVAC and Refrigeration Equipment;
- Ventilation Systems;
- Drainage Systems;
- Landscape and Irrigation Systems;
- Fundamental Lighting Design;
- Mold Prevention during Construction;
- Filtration Media Replacement before Occupancy; and
- Thermal Comfort.

Energy Efficiency Requirements (5.6)

- Through Energy Engineering, each building must consider the following technologies:
  - Daylighting;
  - Natural ventilation;
  - Evaporative cooling;
  - Demand-controlled ventilation using CO2 or occupancy sensors;
  - Green roof;
  - Ground source heat pumps;
  - Spectrally selective glazings;
  - Underfloor air distribution, and Displacement ventilation system; and
  - Radiant cold beam system.

Sustainability Credits (43 points total)

- Daylight Credits (6 points)
- Energy Credits (5 points)
- Renewable Energy Credits (6 points)
- Indoor Air Quality Credits (9 points)
- Commissioning and Training Credits (2 points)
- Acoustics Credits (2 points)
- Sustainable Material Credits (2 points)
- Waste Reduction Credits (2 points)
- Water Reduction Credits (3 points)
- Performance Measurement and Verification Credits (2 points)
- Innovation in Design Credits (4 points)

Green Building Specifications

- Whole Building Design Guide, http://www.wbdg.org/
- Collaborative for High Performance School , http://www.chps.net/
- US Green Building Council, http://usgbc.org/
- EPA ENERGY STAR, http://www.energystar.gov/

Division of Facilities Construction and Management

Energy Group