

'Greening' BVSD

We believe in green building and the benefits of integrating sustainability concepts into our daily operations. It is good for our kids, the environment and the bottom line. On an on-going basis, we seek ways to incorporate energy efficiency and resource conservation measures into what we do. The 2006 Bond Program has provided us with a great opportunity to expand our current practices and employ new and innovative strategies. Following is an extensive list of some of what is happening throughout the district:

GREEN STRATEGIES CURRENTLY BEING UTILIZED IN BVSD OPERATIONS

Energy Efficiency

The Boulder Valley Board of Education first adopted an energy policy in 1978 (revised 1990) which notes our long-standing commitment to conservation (Policy ECF). The timing of the 1990 revision coincided with the preparation of two bond measures placed before the voters in 1992 and 1998 which addressed energy conservation priorities. The successful passage of these measures led to several projects in every school and to improved specifications in our newest schools including:

- District-wide Andover energy management system installed to centrally control heating and cooling systems in all district buildings. The system adjusts heating and cooling levels during unoccupied times to reduce overall energy consumption. It also uses outside air to cool buildings in the spring and fall. This system is being upgraded with new technology through the 2006 Bond Program.
- Florescent fixtures district-wide replaced with more efficient T-8 lamps and electronic ballasts
- Occupancy sensors installed district-wide to control lighting
- Electric booster heaters for food service kitchens replaced with gas-fired booster heaters
- Superior Elementary, Monarch High School, Monarch K-8 – indirect evaporative pre-cooling of ventilation air, variable volume system and ice storage cooling
- Aspen Creek K-8 and Eldorado K-8 – variable volume system which pumps appropriate levels of air into building spaces
- On-going projects through capital reserve
 - Replacing older inefficient boilers with new energy efficient models
 - Replacing older inefficient water heating systems with new energy efficient models
 - Replacing HVAC cooling equipment as it wears out with new energy efficient models
- All EXIT signs have been converted to more efficient LED lights.
- Solar PV panels have been installed at two schools. These projects were basically school based demonstration projects. Currently, the district is nearing completion at Mesa Elementary for the installation of a small solar panel project that was possible through donations.

Transportation

- In 2001, BVSD purchased eight natural gas powered buses through a state-sponsored program. The buses reduce fuel consumption and emissions. We also own two other natural gas powered vehicles.
- We now run B-5 bio-diesel in all our buses. Bio-diesel reduces emissions and diesel fuel consumption.

- We have installed engine pre-heaters in buses to reduce emissions and fuel consumption through reduced idling time.
- We have installed diesel oxygen catalyts on all qualified buses to reduce emissions.
- As funding allows, we buy newer, cleaner running and more efficient buses.
- We have a transportation coordinator on staff who works with students and staff to find alternative means of transportation such as walking, bike riding and public transit.
- We provide bike racks and storage at district facilities.
- We have sponsored Eco-pass programs.

Food Service

- Most elementary school kitchens use reusable washable trays. Secondary school snack lines use trays made from recycled pressed paper.
- 10 of our elementary schools participate in the Eco-cycle sponsored Green Star program which helps schools reduce waste through increased recycling, the implementation of composting and special waste reduction activities.
- Milk is sold in recyclable plastic containers.
- New dish machines to be installed through the 2006 Bond Program will be lower temperature machines, saving energy needed to heat the water.

Operations and Maintenance

- Raw water or gray water is used in irrigation at seven schools.
- We have installed artificial turf on the competitive playing fields at all of our high schools. These fields require no irrigation, no fertilizers, pesticides or striping. In addition, because the fields require no mowing, emissions and fuel use by mowers is reduced.
- All schools participate in Eco-Cycle's paper and mixed container recycling program.
- We are installing efficient field/stadium lighting at three high schools.

Information Technology

- The IT Department has partnered with Eco-Cycle to reduce the waste associated with the installation of new computers from the 2005 3A referendum. Eco-Cycle is recycling all the packaging foam from the new computers. In addition, Eco-Cycle is helping to recycle the old computers. In the future, computer components will be shipped on pallets to reduce packaging and fuel consumption for transport.
- The new computers being installed throughout the district are far more energy efficient than the ones being removed. District computers are programmed to go into low energy mode at night.

GREEN STRATEGIES CURRENTLY BEING CONSIDERED IN THE 2006 BOND PROGRAM

The 2006 bond issue ballot language stated the following related to this area:

“SHALL BOULDER VALLEY SCHOOL DISTRICT RE-2'S DEBT BE INCREASED \$296,800,000, WITH A REPAYMENT COST OF \$629,450,000, AND SHALL DISTRICT TAXES BE INCREASED \$31,650,000 ANNUALLY TO BE USED FOR PURPOSES DESCRIBED IN THE DISTRICT'S EDUCATIONAL FACILITIES MASTER PLAN, AS APPROVED BY THE BOARD OF EDUCATION AND MONITORED BY A CITIZEN'S BOND OVERSIGHT COMMITTEE, INCLUDING BUT NOT LIMITED TO THE FOLLOWING”:

IMPLEMENTING COST-EFFECTIVE, ENVIRONMENTALLY-FRIENDLY AND ENERGY-EFFICIENT DESIGN AND CONSTRUCTION STRATEGIES;”

The implementation of “cost-effective, environmentally-friendly and energy-efficient design and construction strategies” was to be accomplished to the extent feasible within the identified work, and available funds set forth for each school project, in the Educational Facilities Master Plan.

Construction of renewable energy generators, such as solar or wind, were not considered in any of the projects that comprise the Educational Facilities Master Plan as developed and approved. Projects focused around programmatic needs and critical infrastructure improvements.

BVSD is committed to continuing its efforts from former bonds and will include additional ‘green’ measures to the extent funds are available and timelines on bond projects are not jeopardized.

The following measures represent some of the first steps toward ‘greening’ the school district in the Phase I projects of the bond issue and lay the groundwork for continued sustainability in BVSD. Some of the green strategies in the bond projects include:

- The technical specifications used under the previous bond program have been reviewed against other school districts including the Poudre School District’s for comparison of sustainable design guidelines and updated over the past few months. We obtained a higher level of detail with the new version. The revised tech specs call for the use of materials such as low VOC emitting paints and carpets and high efficiency heating and cooling systems.
- In addition, our technical specifications encourage all design consultants to utilize the Sustainable Design Resource Guide which is compiled and released by the Colorado American Institute of Architects. This guide provides information on some of the green products available, and how to implement them into design, as well as contact information for local representatives and manufacturers.
- Many of our architects were chosen because they had at least one Leadership in Energy and Environmental Design (LEED) Accredited Professional on their staff, and/or had designed a LEED Registered or LEED Certified Project as a company. We are relying on the expertise of these professionals to incorporate sustainable design into the projects to the extent possible.
- Architects have been asked to complete a LEED checklist at the conclusion of each project identifying sustainable features of the design.
- We are looking at ‘green’ and white roofs for our projects.
- Architects have been instructed to incorporate landscaping elements into their designs to reduce heat island effects.
- Our bond buyer who is responsible for purchasing furniture, fixtures and equipment (FFE) for new spaces has been directed to prioritize ‘green’ products. All products on the purchasing list will be Green Guard certified, meaning they have been tested for their chemical emissions performance. Potential vendors are asked about their sustainability practices and we are looking into the possibility of establishing ‘take back’ programs with vendors. In these programs, vendors take back products at the end of their life cycles to recycle. Our buyer recently attended a Green Build Expo.
- We are tapping into the extensive knowledge base of our maintenance personnel to purchase more durable products with longer life-cycles.
- Where possible we are re-using products and fixtures in remodels.
- Over the past several months, we have been working to establish environmental standards for portable classrooms used in the bond program. In November, the BOE approved leasing two portables as part of the Lafayette project. The company that was awarded the contract had to meet environmental specifications including an updated section on quality control/quality assurance that certifies all materials used are lead and asbestos free and volatile organic compounds and aldehydes are below the standards recommended by the Agency for Toxic Substances and Disease Registry (ATSDR) for acute risk populations (i.e. children). More recently we issued a bid to lease portables

for the Broomfield High School project. This time, we further modified the specifications to see how far we could push the market on getting portables considered more green, i.e., interior flooring shall be recycled commercial grade carpet and interior ceiling tiles shall be manufactured from recycled materials.

- One of the most significant, but low-cost features architects are incorporating into project designs is daylighting—increasing the amount of natural light entering a building which reduces lighting and heating needs. Daylighting has been linked to reduced absenteeism and increased productivity.
- We are working with local companies to salvage materials from spaces slated for demolition and to recycle surplus materials.
- To the extent possible, we intend to divert construction waste from landfills.
- We will continue to implement energy- and resource-wise strategies implemented in previous bonds, such as low-maintenance landscaping, efficient irrigation systems, low-flow water devices, Energy Star appliances, low VOC-emissions carpets and furnishings, recycled content materials, and highly-efficient ventilation and heating and cooling systems.
- Commissioning is planned for all projects. Commissioning is a systematic process of ensuring that all building systems perform interactively according to the contract documents, the design intent and the district's operational needs. No matter how carefully a school is designed, if the building materials, equipment and systems weren't properly installed or aren't operating as intended, the health, productivity, and other benefits of high performance design will not be achieved.
- Four members of the Bond Team attended a program on Greening Colorado Schools in Fort Collins on October 19. The program was sponsored by Xcel Energy and The Colorado Chapter of the US Green Building Council. Speakers presented materials and information on what services and support are available from various sources like USGBC- Colorado Chapter, Energy Star Program of the US EPA, The US Environmental Protection Agency, Colorado Energy Science Center and Colorado Association of School District Energy Managers (CASDEM). The program was held at Fossil Ridge High School and the presentations were followed by a tour of the school and a chance to see the energy conservation measures that were implemented into the LEED Certified School.
- In 2006, the district became a member of the United States Green Building Council. The USGBC is the nation's foremost coalition of leaders working to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves quality of life.
- Steel conduit to be used for electrical, data, voice and fire alarm wiring in all new and remodeled buildings of the bond will be 30-100% recycled material. Preliminary estimates call for tens of thousands of feet of conduit. This conduit is also 100% recyclable.
- We plan to facilitate the collection and storage of recyclables at schools.
- We are exploring ways to reduce environmental impacts and increased operational costs associated with fossil fuels.
- A geo-thermal heating and cooling system is being installed at Summit Middle School.
- We plan to create truth windows at Casey to utilize the building as a teaching tool.
- We are installing a central irrigation control system for the majority of all landscaped and irrigated sports fields. This system has a climate monitoring component and is expected to result in a reduction of 25 – 30% of irrigation water use.
- At Manhattan, the DAT made a deliberate effort to reduce landfill waste by re-using cabinets with a new finish on them if needed and re-using the epoxy resin laboratory tops.

NEXT STEPS

Recent conversations among staff about energy efficiency and sustainability as well as the opportunities presented by the bond to 'green' our buildings have led us to believe the current policy ECF needs to be updated. To that end, Operations staff will be looking at other districts, working with our cities, county and others to develop a broad based energy and sustainability policy for our district. We will include many other individuals in this effort. We hope to bring a draft policy forward for consideration in the second quarter of 2008.

As previously stated to the Board, we have looked at performance contracting in the past as well as recently in response to inquiries prompted by bond work. We have recently talked to an independent energy company who confirmed that performance contracting would not necessarily be economical given the level of improvements the district has already implemented and plans to implement through the bond. However, we are open to examining such agreements if they prove to be financially viable, the terms and conditions acceptable and work within the bond project timeline.

Staff recently met with local solar energy company Namaste Solar Electric. Namaste has offered to donate staff time to help the school district evaluate each of the schools on a very cursory level to determine which school roof tops may be a good fit for solar. This evaluation will only be cursory in nature and will be designed to provide us with a preliminary starting point to determine which schools warrant a deeper investigation and which can be immediately eliminated from the list of possible candidates. These evaluations would not result in system designs or proposals for each of the schools, just a starting point for the school district to better determine the schools that may be in consideration for these types of projects.

CONCLUSION

We embrace the philosophy of green building and sustainability. This is not only fiscally prudent, but is part of our responsibility as good global citizens. The benefits of green building are many-fold, from the reduction in negative environmental impacts and increased cost effectiveness to the improved health, well-being and performance of building occupants and users. Green schools can actually become learning tools themselves, teaching students to think about their relationship with the ecosystem as they come to understand the purpose behind design decisions.

We have made efforts to integrate the green building philosophy into our daily operations and the improvements funded through the bond. With all such issues, funding and time are limited. We are constantly looking for new products and opportunities. However, not all green options work for us. Strategies and products must be evaluated in terms of first costs, life cycle costs, maintenance requirements, etc. and how they support our ultimate educational mission.

District Capital Reserve funds are woefully inadequate and primarily go to life and safety issues. These funds are used for the maintenance and remodeling of facilities and the replacement of vehicles including school buses. Grant programs are rarely an option as they typically go to other districts with much greater needs.

In the 2006 Bond Program, we are committed to implementing green strategies to the extent possible. However, the realities are that we have project budgets that must be met and brought in within set schedules to meet a very aggressive six year completion.

We believe the efforts we are making currently through discussions with energy groups, including solar, working with our city and county officials and others may offer us other funding

alternatives. These efforts, coupled with a comprehensive sustainability policy will help us make great strides toward greening our organization.