Bringing Sustainable Approaches to the Forefront of the Learning Environment
A Case Study of a Community Unit School District (Pre K-12)

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Sustainability is the balance of economic, environmental and social objectives in ways most likely to create long term value, without taxing the resources on which we depend.

This report discusses the implementation of a long range strategic initiative for sustainability in the secondary learning environment. In general, it focuses on the opportunities available for those in educational leadership positions to influence and shape policy and decision making at a local level, while relying on resources made available through a broad array of funding and R&D sources.

Three key components that define the success of a comprehensive initiative for sustainability include:

1. Educating decision makers and stakeholders on the relevance of sustainability.
2. Developing a strategic approach to creating healthy learning environments with available resources.
3. Defining a long range plan to reduce the dependency on non-renewable resources.

<u>Educating decision makers and stakeholders on the relevance of sustainability</u>

There are many factors that can impact the success (or failure) of a school district wide initiative, not the least of which is the means by which the message is communicated. Without the awareness and support of the senior leadership in a school organization, the program will not generate the impetus necessary to initiate the steps to succeed. In the case of sustainability, the factors to be communicated include an acknowledgment of *global impact, budgetary impact, impact to the learning environment,* and *educational opportunities in the classroom.*

The Global Impact of our decisions on how we build, renovate and operate facilities is tremendous: Buildings consume over 40 percent of the energy used in our country, and account for 38 percent of carbon emissions. 70 percent of electricity in the United States is consumed by buildings. As a nation, we use 5 billion gallons of water per day to flush toilets. The air pollution created from burning fossil fuels used to heat and generate electricity for buildings has an enormous negative impact on our health, environment and property. Recognizing the direct correlation between decisions we make at the local level (gas, electric and water consumption),

and the global impact of these decisions, demands one to reflect on the value we can create through environmental stewardship. Our decisions relating to facilities in the school community share these consequences to the environment.

As reported in Kats' study (2006), a green school could lead to the following annual emission reductions per school:

- 1,200 pounds of nitrogen oxides, a principal component of smog.
- 1,300 pounds of sulfur dioxide, a principal cause of acid rain.
- 585,000 pounds of carbon dioxide, the principal greenhouse gas.
- 150 pounds of coarse particulate matter (PM10), a principal cause of respiratory illness and a contributor to smog.

By choosing to build, renovate and operate green schools, we assert our commitment to being conscientious leaders in our communities.

The *Budgetary Impact* to a school district on how they build, renovate and operate their facilities is equally impressive: The United States will see nearly $90 billion in K-12 school construction between 2010 and 2012, according to estimates by McGraw-Hill Construction, a leading national construction forecaster. Many school decision makers across the country will weigh the cost and value of implementing sustainable features in their projects. According to the Sustainable Buildings Industry Council (SBIC), school districts can save 30 to 40 percent on utility costs each year for new schools and 20 to 30 percent on renovated schools by applying sustainable, high performance design and construction concepts. Using less energy than conventionally designed schools, sustainable schools not only have lower utility bills, they also have the potential to lower market-wide energy costs by reducing demand (Kats, 2006). Additionally, the potential payback to the nation's power grid is enormous if schools invest in upgrading the energy performance of their new and existing facilities.

When considering implementing sustainable features in the design of new and renovated facilities, evidence suggests that there is a first cost premium to going green. This is the result of specifying higher quality materials and construction, and more efficient building systems. However, over time, these systems demonstrate a favorable return on investment, both in terms of healthier indoor environments and savings in energy and water. A 2006 study of 30 green schools nationwide showed that a 2 percent increase in first cost, about $3 per square foot, paid back $10 per square foot in energy and water savings over the course of the buildings' service lives (Kats, 2006).

Probably the most relevant information to communicate regarding sustainability in a learning institution is the *Impact to the Learning Environment.* A significant amount of research has been published correlating student performance and health benefits to the learning environment. Healthy schools have been shown to improve student focus, retention, and test scores; enhance teacher performance; and lower absenteeism among students and teachers.

Among these studies, a report published by Air Quality Sciences titled "Green, High Performance Schools" (2009) cites the following examples of school specific studies relating positive impacts from improving the indoor environment:

“An analysis of two school districts in Illinois found that student attendance rose by 5 percent after incorporating cost-effective indoor air quality improvements” (Illinois Healthy Schools Campaign 2000).

“A study of Chicago and Washington D.C. schools found that better school facilities can add three to four percentage points to a school’s standardized test scores, even after controlling for demographic factors” (Schneider 2002).

“A recent study of the cost and benefits of green schools for Washington State estimated a 15 percent reduction in absenteeism and a 5 percent increase in student test scores” (Paladino & Company 2005).

Many other studies supporting the positive correlation between student performance and the environmental condition of school facilities can be found in publications from the National Clearinghouse for Educational Facilities and the United States Green Building Council.

Incorporating *Educational Opportunities in the Classroom* can further underscore the relevance of sustainability; by integrating our sustainable strategies in an educational forum, we pass on our commitment to environmental stewardship to future generations. The important point to make here is that sustainable education needs to be an integral part of the curriculum, not an amendment to it. Teachers face a myriad of challenges educating students on a standard curriculum, on a daily basis; adding to their course load may not improve the overall learning experience of the students. So a successful approach should weave sustainable elements into a well balanced curriculum.

<u>Developing a strategic approach to creating healthy learning environments with available resources</u>

One of the greatest challenges facing school districts today is balancing diminishing financial resources with the operational needs to run the district. Staff salaries and benefits, curriculum, transportation, food service, and facility operations all compete for dwindling funds from taxing bodies. The challenge for many school districts has been to develop creative approaches to providing educational support services while trying to minimize the impact to the classroom. When it comes to facility management and other support services, making wise investments and decisions in the infrastructure and capital improvements helps the district mitigate its operational costs.

In the case of Valley View School District (in a collar county of Chicago), developing a comprehensive approach to energy and environmental management was key to alleviating the rising costs associated with the operation of an expanding school district. Faced with a growing population in the late 1990’s, the district embarked on an extensive expansion program, resulting in the construction of several new schools and renovations to existing facilities. The construction of a new high school in early 2000 enabled the district to apply sustainable features to a flagship project for the district, resulting in the first LEED (Leadership in Energy and Environmental Design) certified school in Illinois, and the fourth certified high school in North America. Bolingbrook High School opened its doors to students in August 2004, and has served as a catalyst for subsequent sustainable development in the district.

In 2009, the school district gave definition to its sustainable program by terming it the Comprehensive Energy and Environmental Management Initiative (CEEMI). Through the

CEEMI program, the district has developed a road map for implementing sustainable projects and initiatives that have resulted in substantial savings and improvements to the district.

The attached presentation has been used as a tool to share with various stakeholders and communities, the positive impact sustainable measures have had on the Valley View School District. [see attachment].

Defining a long range plan to reduce the dependency on non-renewable resources

The ultimate goal of a comprehensive energy and environmental management program should be to reduce the reliance on non-renewable energy sources. The aforementioned "strategic approach to creating healthy learning environments with available resources" is a viable measure to mitigate energy consumption, but as a long term permanent plan, it has its limitations. As indicated in a report to the 110th Congress, "economic and environmental concerns- namely energy security, international competitiveness, high energy prices, air pollution and climate change- are now driving policy proposals to support renewable energy R&D and market deployment".

Given the daily challenges school districts face in educating our children, it is difficult for school leaders to focus on long term strategic energy initiatives which rely on promising technologies, such as wind, solar and biomass. Nonetheless, as major consumers of energy in our country, school districts throughout the nation can have a positive influence in efforts to reduce reliance on non-renewable resources. The benefits that can be derived from leveraging the school communities' assets are tremendous:

- Reduction of carbon emissions on a national scale
- Reduction of capital investment needs for utility companies, by reducing the load on utility grids
- Reduction of school utility bill costs, which can redirect funds towards the classroom
- Reduction of need for local tax increases associated with utility costs for school systems

Many states have recognized the benefits of green design in public facilities by legislating new school construction to be LEED certified. Using this concept as momentum for long term planning, educational leaders should partner with current and future energy research programs that lead to innovative applications of renewable resources on a large scale. For example, Illinois recently passed legislation that allows school districts to form consortiums to build wind turbines to generate power off site, and receive credit from utility companies at current costs of electricity. Strategies such as this save taxpayers' dollars, preserve educational spending for the classroom, benefit the global environment, and demonstrate to children and families the importance of environmental stewardship. A continuation of this type of legislation, based on on-going research and development of emerging technologies, is vital to achieving long term initiatives in the school environment.

The opportunity for educational leaders to participate in the discussion and application of renewable energy technologies has immeasurable value, and will allow learning environments to share in a legacy of sustainability.