

## **PRESENTATION SUMMARIES**

### ***What is sustainability?***

- Sustainable design is a holistic approach that encompasses the design, construction, operation, renovation and eventual replacement of a building. It is a multi-phased and continuous process to minimize buildings' negative effects on the environment.
- US Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) rating system to qualify and quantify sustainable building design.
- LEED rates 5 categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality.
- Sustainable design cost estimates range from 5% increase in total costs to potentially reducing project costs.
- While LEED certification can be costly and time consuming, its goals and guidelines are worth pursuing even if certification is not a goal.

### ***Green Regulations and Bidding***

- No federal, state or local mandate exists today.
- MA has a variety of programs and incentive grants in place.
- Hingham has options in the language of its RFPs, in the points awarded in bid review, in its zoning, planning and committee-charter documents, and in the use of financial incentives.
- Life Cycle Costing requires consideration in a single analysis not only of both costs and benefits over the life of the project but also of capital and operating budgets for the proposed project.

### ***Why Green? Environmental Impacts***

- Current non-renewable energy sources create substantial amounts of air pollution, contributing to acid rain, global warming and water contamination.
- Non "green" building materials and finishes produce toxic emissions and toxic run-off that contribute to air and water pollution.
- Sustainable buildings are able to re-use water and reduce the demands on our water supply.
- Massachusetts discards 5 million tons of construction waste annually. Re-use and recycling will reduce landfill content.

### ***Why Green? Impacts on People***

- Green/High Performance Bldgs. include design improvements in Air Quality, Temperature Control, Lighting, Acoustics.
- Poor indoor air quality can cause serious illnesses, including asthma. Air quality is improved with the use of low-emitting products and installation of HVAC which is easy to control and maintain.
- Temperature control, better acoustics, and greater natural light all boost performance.
- Green improvements translate into higher test scores, which predict higher future earnings; decrease incidence of asthma, colds, flu; improve teacher/employee attendance and retention.

### ***Green Building Materials and Finishes, Furnishings***

- Indoor Air Quality Management Plan
- Recycled and Renewable Content for Materials and Finishes
- Low-Emitting and Local Materials; Energy Star Products
- No Brainers: Easy to implement within standard budgets, e.g. high recycle content and regional materials
- Light Green \$: Green technology with short payback or lifecycle cost / benefit, specified, e.g. occupancy sensors.
- Dark Green \$\$: Innovative green technology with high environmental + educational benefits, e.g. rainwater harvesting for toilet flushing, or renewable energy generation systems.

### ***Green Maintenance and Operations (M&O)***

- To be successful M&O must include strategic planning, excellent communications and continuous personnel training.
- A successful M&O program capitalizes on the building's original sustainable design and mitigates the initial green building investment.
- As documented in [A Report to California's Sustainable Building Task Force \(2003\)](#) an upfront investment of less than two percent of construction costs yields life cycle savings over ten times the initial investment.  
For example, an initial investment of \$100,000 to incorporate green features into a \$5,000,000 projects would result in a savings of at least \$1,000,000 over the life of the building, assumed conservatively to be 20 years.

### ***Final Phases: Remodeling and Demolition***

- Remodeling and Demolition generates waste and costs.
- Deconstruction is a green approach that reduces these associated costs and waste by reusing and recycling building components, such as windows and wood.
- Less common items that can be reused and recycled include: carpet, furniture and aggregate.

- Deconstruction can actually be more economical than disposal, given fees and transport expense.