



GREENING YOUR COMPANY IN 2015

Opportunities to reduce energy costs and
maximize environmental benefits

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The Path to Green: Building Design, Energy & Productivity



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CEO – SSP Architectural Group

About SSP

Architect of Record Services

Feasibility Studies

Facilities Master Planning

LEED® | Sustainable Design

Capital Project Planning

Additions | Renovations

New Facilities Design

Construction Administration

Post Occupancy Services

Energy / ESIP Planning and Consulting



SSP Architectural Group, Inc. is a Small Business Enterprise (SBE) and a Woman Owned Business Enterprise (WBE) that has a 120 year legacy of service to public and private institutions in New Jersey.



GREEN ACHIEVEMENTS



**First Community
School Design**
*Bayonne Midtown Community
Elementary School*



**First Public K-5
LEED Platinum**
*Neptune Township Midtown
Community Elementary School*



**First Public Education
Design|Build**
*Neptune Summerfield
Elementary School*



The path to green

The journey toward sustainable building and environmental stewardship is *not just an individual one*, but a collective one.



The path to green



In the year 2040, 75% of the buildings that will exist will be either **new or renovated** compared with today.

The IMPACT of buildings

- Past practices & design standards produced buildings that accounted for:
 - 72% of electricity consumption
 - 39% of energy use
 - 38% of all carbon dioxide (CO₂) emissions
 - 40% of raw materials use
 - 30% of waste output (136 million tons annually)
 - 14% of potable water consumption



The path to green



We can transform our energy consumption and CO₂ production by constructing and renovating these buildings to green standards.

Leveraging resources



A commitment to buildings that have a **minimal** negative impact on environment

- Energy efficient
- Durable
- Life-affirming
- Healthy
- Re-generative



Leveraging resources

- A vision of triple bottom line sustainability - **environment, productivity and economics**
 - *Reducing energy-use, enhancing operations, and improving cost flow and benefits*



Green Building Design Knowledge

Creating building projects at all scales that operate as cleanly, beautifully, and efficiently as nature's architecture



To transform the way buildings, sites, and communities are designed, built and operated, enabling an environmentally and socially-responsible, healthy, and prosperous environment that improves quality of life.

Green Globes / GBI

INVEST IN WHAT MATTERS MOST

Green Building Certification System: Verifying metrics, and promoting best practices



- **Energy & Atmosphere**
 - Reduction in use of fossil fuels & atmospheric pollution
 - Energy savings
 - Reduced CO₂ emissions & waste
- **Sustainable sites**
 - Minimizing disturbance to ecosystems & pollution to waterways
- **Water efficiency**
 - Conservation & reuse
- **Materials & resources**
 - Renewable resources
 - Reuse & recycling
 - Improved IAQ
- **Indoor environmental quality**
 - Healthier environment for enhanced human performance

SHARPENING FOCUS



On average, Americans spend 90% of their time indoors.
Green building CAN advance human health and well-being

“Health will be the biggest driver in the green building space in the next 20 years.”

- Rick Fedrizzi
CEO, USGBC



Focus on the indoor environment

- Promote health and well-being
- Understand building product ingredients and life cycle impacts

EVERY BREATHE YOU TAKE

The US EPA states that poor indoor air quality is one of the top five environmental risks to public health.



Focus on the indoor environment

- Seek solutions for overcoming challenges
 - Source control
 - Pollution prevention
 - Improved ventilation
 - Air filtering

Improvements could reduce health related care costs and work losses from allergies and asthma by 18%-25%
(Source EPA)

Green & the work environment

- A survey of occupants of buildings that have achieved an Energy Star label or LEED certification **revealed a high value placed on green building and a high level of satisfaction with the buildings.**



* Tenant Occupants of Green Office Buildings: Driving the Market for Improving Existing Building Stock



Green & the work environment

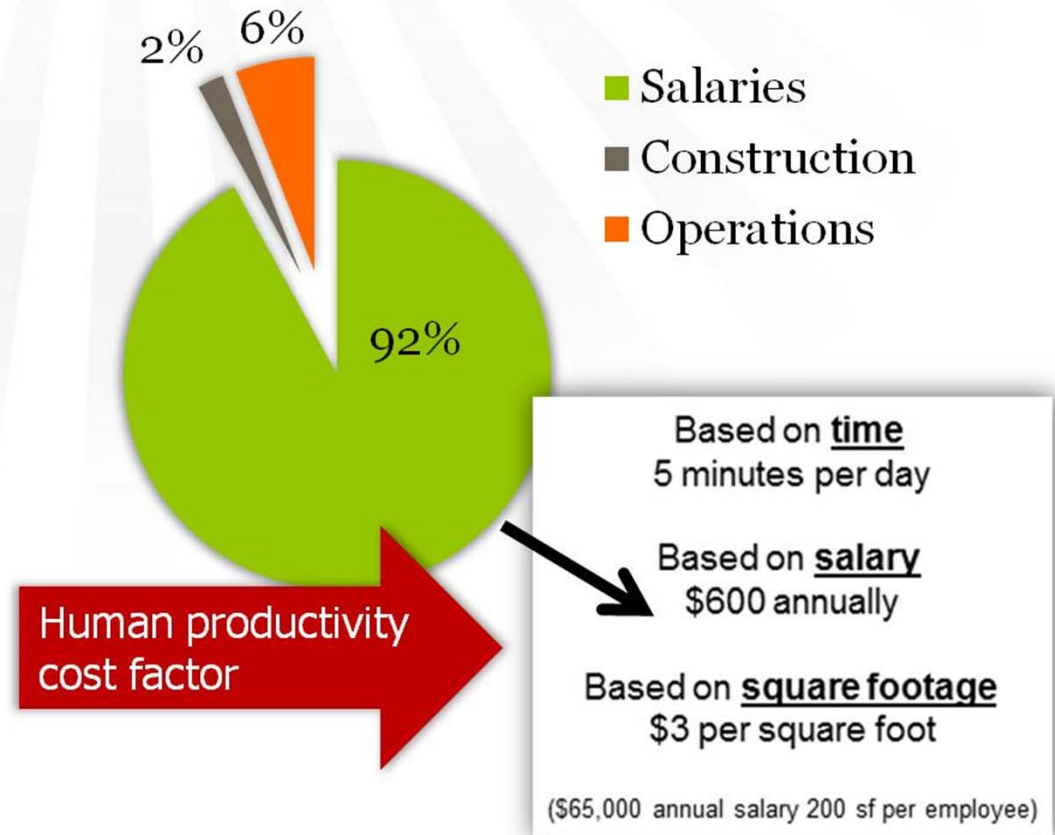
- **HIGH VALUE** on
 - Healthy indoor air quality
 - Daylighting and views
- Occupants of these buildings also report increased productivity.
 - Less tangible elements present challenges for promoting satisfaction.



What 'green' really provides.

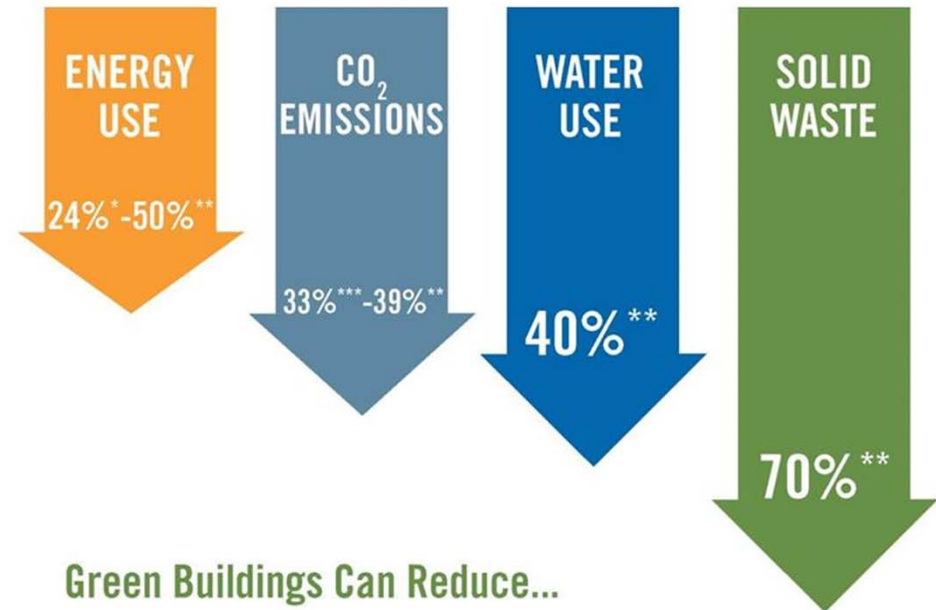
What is a 1% increase in productivity worth to your company?

- 2% investment in green can yield significant ROI dividends by increasing productivity over the life of building operations



Green & the work environment

- Green building must be perceived as a necessity rather than a luxury
- Working in a LEED building **does** increase basic knowledge about LEED



* Turner, C. & Frankel, M. (2008). Energy performance of LEED for New Construction buildings: Final report.
** Kats, G. (2003). The Costs and Financial Benefits of Green Building: A Report to California's Sustainable Building Task Force.
*** GSA Public Buildings Service (2008). Assessing green building performance: A post occupancy evaluation of 12 GSA buildings.



Green & the work environment

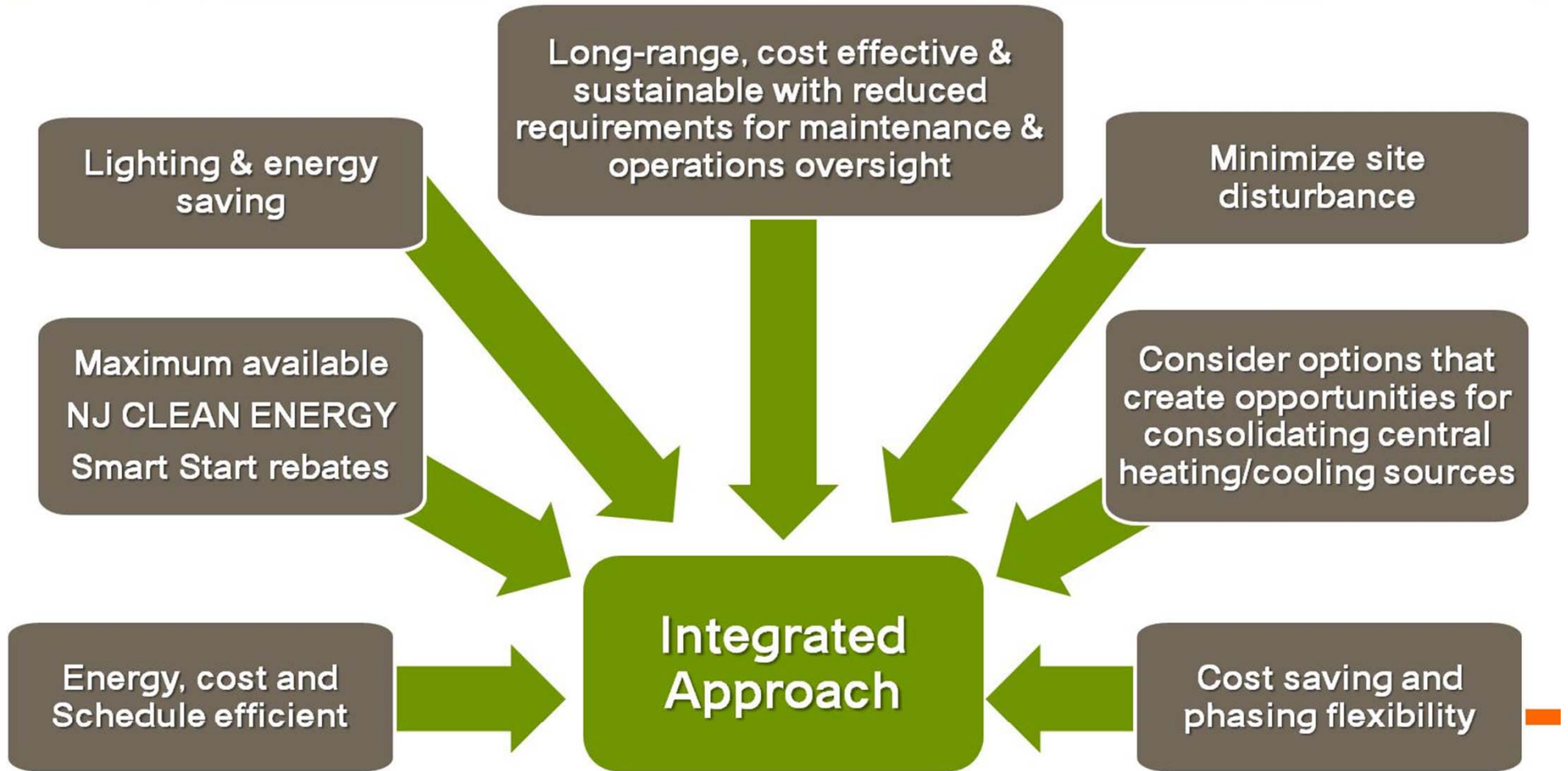
- The industry can increase the demand for **Energy Star** labeled and **LEED** certified buildings by increasing awareness within building occupants and their employers (tenant firms in the buildings) that the offices they work in are ones that have achieved these measures.



The path to green pastures

- Prioritize space needs among new construction or renovation
- Prioritize among capital improvements
- Work according to what delivers greatest value (ROI)
- Take advantage of energy savings programs/strategies to pay for energy-related capital work
- Help ensure uninterrupted building performance
- Create an action plan and implementation strategy to garner internal support

Realize the greatest value



CASE STUDY: NEPTUNE MIDTOWN SCHOOL

Abundant Natural Daylighting

Energy-saving controls &
monitors

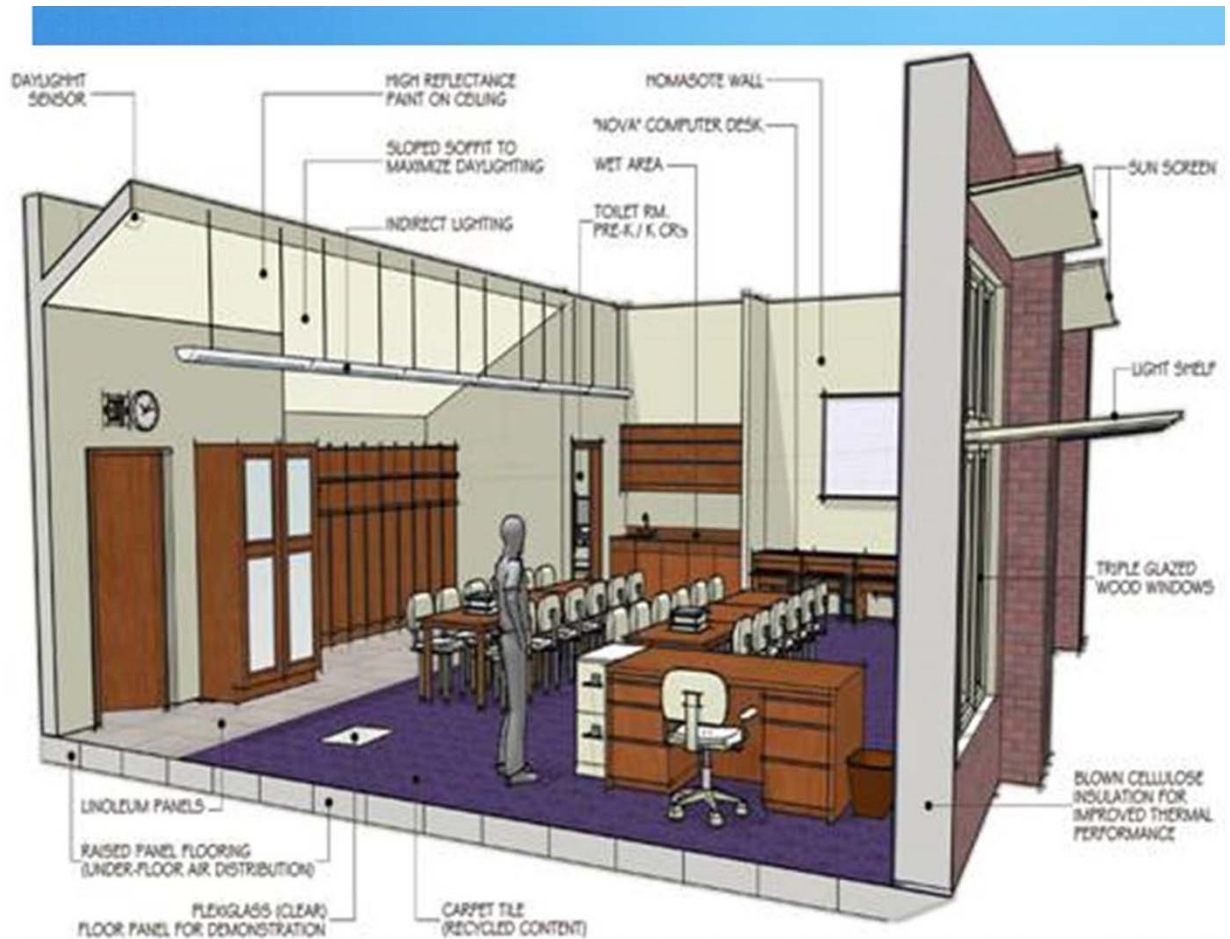
Geothermal heating/cooling

Low VOC materials throughout

Healthy, quiet underfloor air
delivery

Flexible power grid & power
source

Operable windows & opening
that promote natural
ventilation



BEST PRACTICES:
Indoor Environment
Healthier Environment For
Enhanced Human
Performance

OUTCOME:

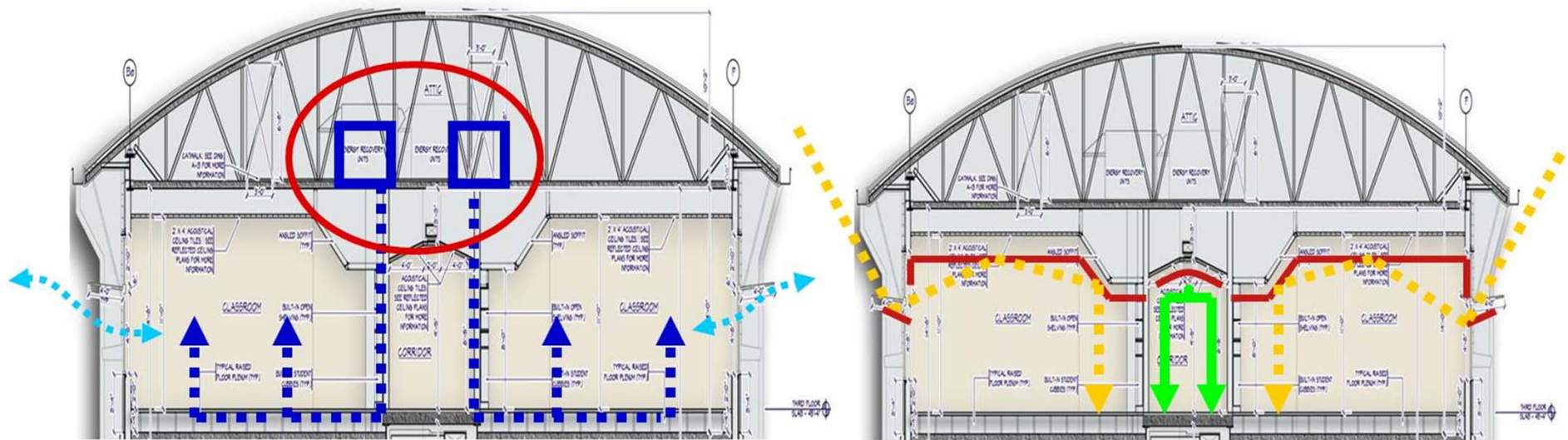
20% reduction in absenteeism

20+% improvement in test scores

35+% energy savings over code

BEST PRACTICES: Indoor Environment

Healthier Environment For Enhanced Human Performance



Underfloor Displacement Air System

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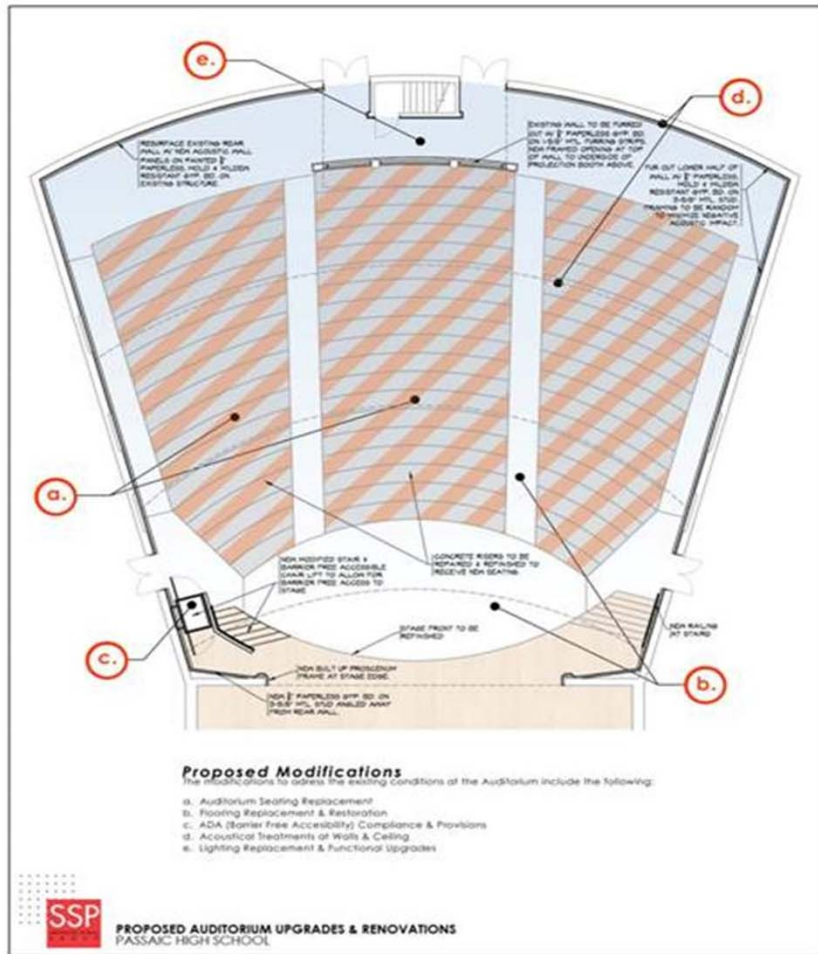
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BEST PRACTICES: Materials & Resources

Renewable Resources - Reuse & Recycling



Case Study: Passaic High School Auditorium Renovations

- Reuse/refinishing of existing materials
- Refinish wood stage (low-VOC products)
- Retain existing HVAC systems
- Re-use existing ceiling assembly
- Repair existing concrete floor
- LED conversion of light fixtures
- (Re-use instead of replace mentality)
- Monitor construction waste

OUTCOME:

80% recycling of waste (at a minimum!)

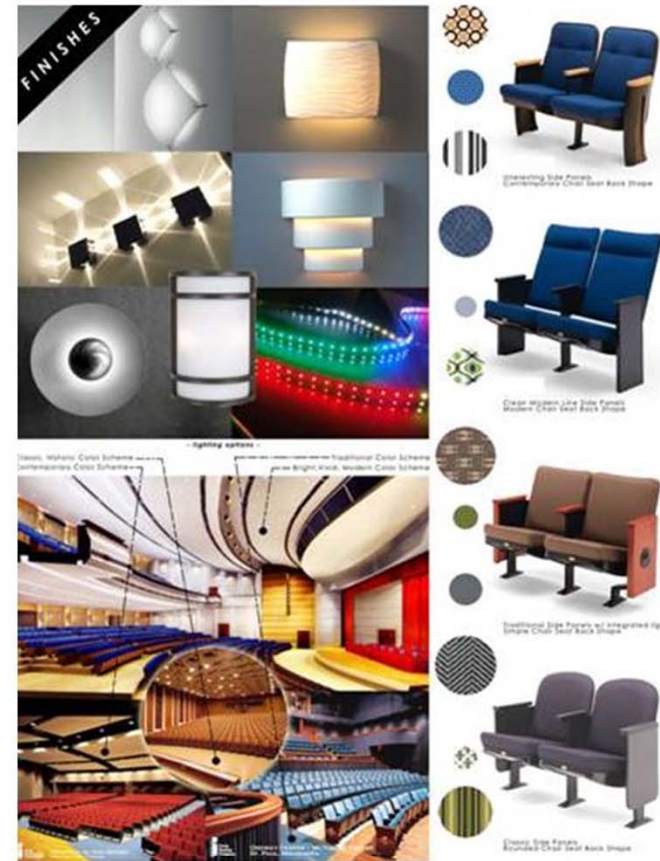
BEST PRACTICES: Materials & Resources

Renewable Resources - Reuse & Recycling

Case Study: Passaic High School Auditorium Renovations

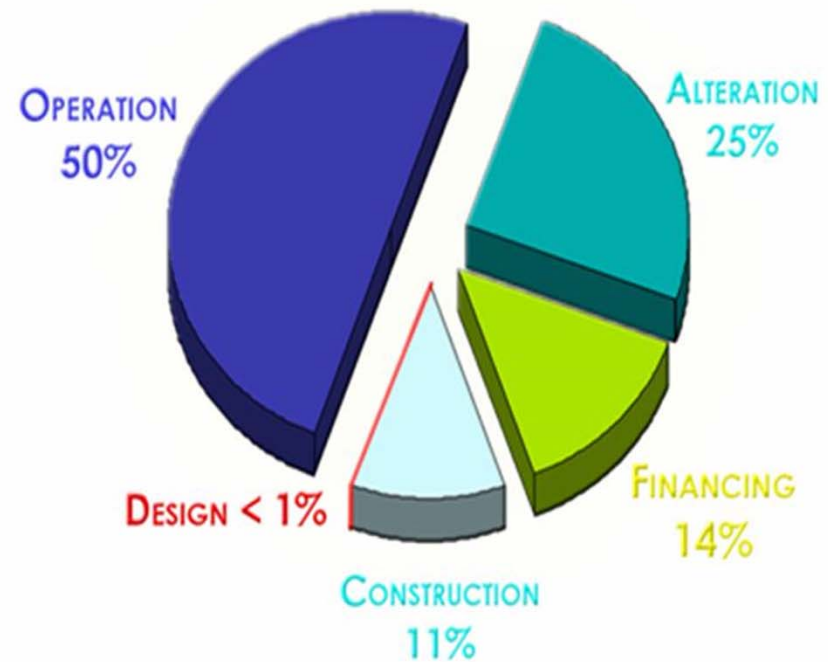
- Sustainable Materials
- Side wall panels utilize composite wood veneer panels
- Carpet with high recycled content
- Extra long lifespan of new seats
- Low VOC paint to reduce off gassing
- LED lighting used for house lights

OUTCOME: Minimize the environmental impact of project by using materials that are readily available, sustainable and improve indoor air quality



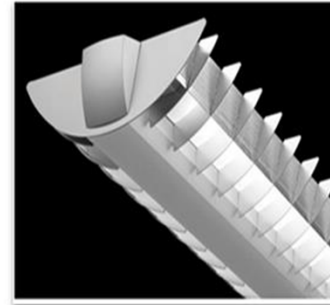
Know What Green Costs

2% investment in green can significantly lower operating costs for life of the building



Energy Conservation Measures Eligible for ESIP

- Lighting Retrofits & Upgrades
- Occupancy Sensors
- HVAC Upgrades
- Electric to Gas Conversions
- Boiler Replacements
- Chiller Replacements
- Building Management Systems
- Building Envelope Improvements
- Combined Heat & Power
- Renewable Energy



Investigate Metrics And Options

Average simple payback projections on retrofit projects (in years)

Lighting and
Sensors
= 4.6

Retro
Commissioning
= 5.7

Controls
= 7.6

Appliance
Replacement
= 8.5

Window
AC Replacement
= 15

Boilers
= 16

Domestic Hot
Water
= 21

Equipment
Conversion
= 35

HVAC Systems
= 65

Building Envelope
Improvements
= 98



GETTING ON BOARD

- Understand **your leadership role** in guiding critical investment decisions to maximize resource savings and promote sustainability outcomes

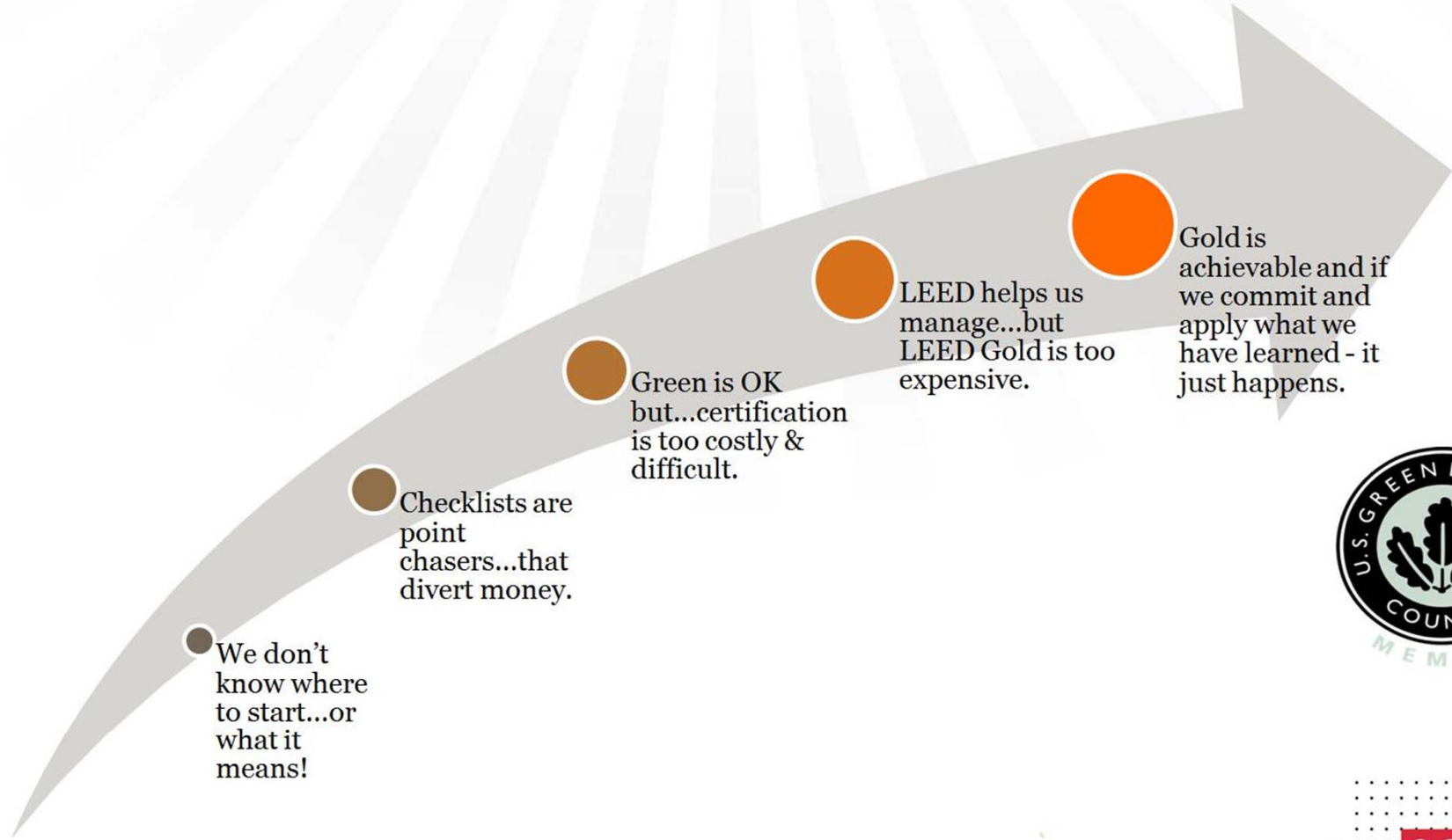


GETTING ON BOARD

- Change your **Perspective** ... *think long-term*
- Begin with **Energy Audit** ... *benchmark baseline*
- Understand **Metrics** ... *overall impact of small steps*
- Factor in **Life-cycle Costs** ... *maximize ROI by controlling expenses (occupant-loads & operations)*
- Be aware of **Market Shifts** ... *find out about new products, grant opportunities, tech changes, etc.*



Accept Change Incrementally



Learn about energy-saving Funding



Motivating Change & Investment

- **ENERGY AUDIT:** Assessment of energy conservation measures (ECMS)
- **CREATE ENERGY SAVINGS PLAN:** Level III audit recommending package of energy projects achieving 15% savings. Create an energy reduction plan for pay for performance (P4P).
- Use energy savings improvement program with 15 year financing (ESIP): work with ESCO or DIY with knowledgeable A/E team
- **INTEGRATE ADDITIONAL GRANT MONEY:** investigate & take strategic use of additional funding for specialized project packages and systems
- Bid, construct, & commission
- Measure & verify ensure energy savings are attained
- Find out about local/regional opportunities
- Funding sources, county & state initiatives
- Federal bonds & utility company programs



Questions?

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