

US EPA ARCHIVE DOCUMENT

Green Casinos Workshop

Introduction to Greening Tribal Casinos: “Greening from the Ground Up”



Outline

- Terminology
- What is High Performance/Green Building?
- Why Build Green?
- How to Build Green
- Costs

So what is “Green” Building?

Design & Construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants



Sustainable site planning



Safeguarding water and water efficiency



Energy efficiency and renewable energy



Conservation of materials and resources



Indoor environmental quality

Green Building is More Sustainable

- Designed appropriately for location
- Consumes less resources
- Generates less waste
- Cost less to operate
- Provides healthier living and working environments than traditional *contemporary* buildings.



Environmental Impact of Buildings

In the US, buildings account for:

- 39 % of total energy use
- 12 % of the total water consumption
- 68 % of total electricity consumption
- 38 % of the CO2 emissions
- 25 % of all water supplies
- 60 % of all materials (excluding food and fuel)

Sources: DOE, EPA, U.S. Geological Survey, Worldwatch Institute

Key Health Issues

- 🏠 90% of our time spent indoors
- 🏠 Air pollution is one of the top five environmental risks and exposure to indoor air pollutants can be 2 to 100 times higher than outdoor levels
- 🏠 Poor air quality health effects: headaches, dry eyes, nausea, dizziness and fatigue
- 🏠 A majority of cancers are environmentally induced

New Construction or Renovations Can be Green

 New Buildings

 Renovations

 Repair or Rehabilitation

 Can retrofit several features such as insulation, plumbing, lighting

Tribal Green Building Examples

❏ The Turtle Creek Casino & Hotel



❏ Other Examples?

Examples of Green Features: Energy

- ❁ Energy efficient heating and cooling systems
- ❁ Energy efficient lighting
- ❁ Occupancy sensors
 - ❁ restrooms
 - ❁ guest rooms
 - ❁ storage area
- ❁ Energy efficient computers, kitchen and laundry appliances



Cost Calculators

- Dishwashers:

http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/CalculatorCommercialDishwasher.xls

Green Buildings



✓ *Carpet Tile*



✓ *Linoleum*



✓ *Polyolefin*



✓ *Plaster*



✓ *Wood/ Solid Surface*

Material Choices:
Natural

- *Recyclable*
- *Durable*
- *Renewable*
- *Conducive to green cleaning*
- *Low emitting materials*

Green Construction Practices

- ✎ Protect the immediate health of building occupants
- ✎ Protect the health of the surrounding local community
- ✎ Protect the health of the global community and natural resources
- ✎ Include recycling/reuse of construction and demolition debris



Benefits of Green Building

 Financial

 Health and Productivity

 Environmental



Financial Benefits of Green Building

- Reduced energy, water and waste costs
- Lower operating and maintenance costs
- Lower insurance and risk costs
- Enhanced productivity and health

Health and Productivity

- ❏ Poor Indoor Environmental Quality (IEQ) has health and productivity costs valued at many billions of dollars per year
- ❏ *Over 1,000 studies and reports* link green building attributes such as air quality and thermal comfort to human health and productivity
- ❏ Improved IEQ:
 - ❏ Decreased absenteeism
 - ❏ Improved performance
 - ❏ Employee/student satisfaction



Environmental: Energy

- Green buildings average - 28% more efficient
- Generate 2% of their power on-site, typically from photovoltaics (solar)
- Green buildings can average kWh reduction of 30% and an average peak kW reduction of 40%



Components to Build Green

- Energy Efficiency
- Water Efficiency
- Resource Use
- Indoor Air Quality
- Landscaping
- Cultural Integrity

Strategies to use in any combination

Additional Benefits

- Access additional funding sources
- Community goodwill
- Good stewardship
- Meeting customer needs and demands
- Others?

Routes to Building Green: Certifications:

Green Building:

- Leadership Energy Environmental Design (LEED)
- Green Native Council
- National Green Building Standard
- Local Green Building Programs
 - Build it Green

Energy Efficiency:

- Energy Star with Indoor Air Package

Routes to Building Green: Specifications

- ✍ Require designer to include green building specifications - which you can select
- ✍ Can be included in any project, with or without a certification program
- ✍ Good systems often available from state, local governments

Costs of Green Buildings

- Studies have shown an average cost premium of nearly 2% or about \$4-5/square foot
- Some recent studies show no difference in cost
- Costs premiums continue to decrease

Summary: Financial Benefits of Green Buildings (per square foot)

Category	20-Year NPV
Energy Value	\$5.79
Emissions Value	\$1.18
Water Value	\$0.51
Waste Value (construction only – 1 year)	\$0.03
Commissioning O&M Value	\$8.47
Productivity & Health Value (Certified & Silver)	\$36.89
Productivity & Health Value (Gold & Platinum)	\$65.33
Less Green Cost Premium	\$(5.00)
Total 20-Year NPV (Certified & Silver)	<u>\$47.87</u>
Total 20-Year NPV (Gold & Platinum)	<u>\$66.31</u>

Strategies for the Best Green Building Results:

- ◆ Start early!
- ◆ Get educated about Green Building
- ◆ Identify environmental goals and strategies
- ◆ Use an integrated design process
- ◆ Hire a knowledgeable green building consultant
- ◆ Maintain sense of respect, purpose and humor

Ask EPA...



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