

## **Green Casinos Workshop**

### Introduction to Greening Tribal Casinos: "Greening from the Ground Up"



## Outline

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- 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



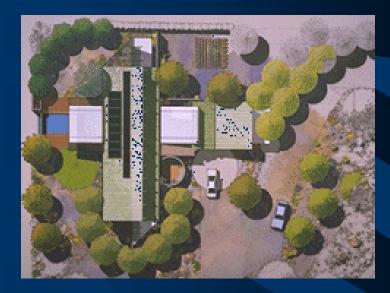
- Sustainable site planning
- Safeguarding water and water efficiency
- Energy efficiency and renewable energy
- Conservation of materials and resources

Indoor environmental quality

## Green Building is More Sustainable

Designed appropriately for location

- Consumes <u>less resources</u>
- Generates less waste
- Cost less to operate



 Provides <u>healthier</u> living and working environments than traditional *contemporary* buildings.

**Environmental Impact of Buildings** In the US, buildings account for: <u>- 39 % of total energy use</u> -12% of the total water consumption -68 % of total <u>electricity</u> consumption -38 % of the <u>CO2</u> emissions -25 % of all <u>water supplies</u> -60% of all <u>materials</u> (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

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## 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/CalculatorCom mercialDishwasher.xls

#### **Green Buildings**

✓ Plaster

✓ Carpet Tile

✓ Wood/ Solid Surface

✓ Linoleum

Green Materials/Green Maintenance H2E Teleconfrence 2003, G5Arch, PLLC

✓ Polyolefin

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



#### Mealth and Productivity





## 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 <u>average kWh reduction of 30%</u> and an <u>average peak kW reduction of 40%</u>



## **Components to Build Green**

Energy Efficiency

Indoor Air Quality

Water Efficiency

Resource Use

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	<b>20-Year NPV</b>
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

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## Ask EPA...

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