TRIBAL SUSTAINABILITY

Green Projects in Indian Country

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Tribal Energy Program Review
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Overview

• Introduction
• Green Building
• Elements
• Benefits
• Green Building in Indian Country
• Conclusion
INTRODUCTION
Connecting Green Building to Renewable Energy

- Power Generation
  - Distribution
  - Transmission

- R & D
  - Highly technical
  - Nerd work

- Energy Efficiency
  - Less technical
  - People work
Where Do We Start?

Current Practices
- Energy Use
- Population & Consumption

Tribal Housing
- Housing Stock
- Housing Need

Tribal Sustainability

Sustainability
- Who’s definition?
- What does it mean?
GREEN BUILDING
Green Building: Fitting the Pieces Together
Defining Green Building

We did not inherit the Earth from our parents. We are borrowing it from our children.
~ Chief Seattle

Hozhó
Green Building
ELEMENTS
Six Green Building Elements

- Energy
- Materials
- Indoor Environment
- Water
- Site
- Education
Site

Green Building Strategies

- Use appropriate building sites
- Preserve open space
- Reduce sprawl
- Develop brownfields
- Safeguard endangered species
- Restore damaged environments
- Design to optimize sun, wind, and light
Water Green Building Strategies

- Developing a water use management plan
  - Indoor water conservation
    - Using low-flow plumbing fixtures
    - Using high-performance appliances
  - Outdoor water conservation
    - Using rainwater collection systems
    - Using sustainable landscaping techniques
    - Using high-efficiency irrigation systems
  - Innovative waste water management
    - Using gray water recovery systems
    - Using waterless urinals
  - Using biological treatment or other “off grid” systems
Energy

Passive solar design
• Optimizing site, design and orientation
• Landscaping to provide natural shade
• Using natural day lighting
• Using natural heating and ventilation

Energy management plan
• Evaluating tradeoffs & minimizing projected energy costs
• Training building occupants
• Tracking and optimizing performance over time
• Employing an energy management system

Energy efficient or high performance materials
• Thermal insulation
• Roofing and glazing
• Lighting
• Heating, ventilation, and air conditioning systems

Indoor appliances
• Energy Star
• Renewable energy
Materials

Prepare a Green Building Product Selection Plan

Use Salvaged Building Products

Use Recycled-content Building Products

Use Locally Available or Naturally Occurring Building Products

Use Smart Wood or Alternative Lumber Products
Indoor Environment

Green Building Strategies

- Ensure adequate ventilation
- Designate indoor spaces as smoke-free & implement tobacco smoke controls
- Use low-emitting building products
- Install controllable systems
- Prepare an indoor air quality management plan for construction & early occupancy

Enhanced Indoor Air Quality
Education

Since the homeowner knows how to best run their households, it is also important for them to understand how to run the house itself.

Successful Implementation of Sustainable Design Strategies

Prepare A Handbook For Homeowners
- Water Use Management Plan
- Benefits
- Responsibilities

Provide A Homeowners Orientation
- Common Sense Steps
- Low-Cost Water Conservation Techniques
- Energy Efficiency Techniques
Green Building

BENEFITS
Benefits of Incorporating Green Building Design Strategies

**Environmental**
- Enhances & Protects Biodiversity & Ecosystems
- Improves Air & Water Quality
- Conserves & Restores Natural Resources
- Reduces Energy Consumption & Climate Impacts
- Reduces Waste

**Financial**
- Reduces Energy Costs
- Reduces O&M Costs
- Creates & Expands Local Markets for Green Products & Services

**Social**
- Enhances Community Values
- Increases Aesthetic Qualities
- Enhances Occupant Comfort & Health
- Minimizes Strain on Local Infrastructure
- Improves Quality of Life

**Cultural**
- Is in sync with Traditional Practices
- Respects & Observes Cultural Values & Practices
- Increases Community Participation
GREEN BUILDING IN INDIAN COUNTRY
Mescalero
Mescalero, New Mexico
Seeing is Believing

“Every home that is built is a blessing for our people, we still have work to do to accommodate all the people who have a need. I wish and pray we get more houses in here very soon.”

- Carleton Naiche-Palmer, Former Tribal President

I-Sah’-Din’-Dii Housing Development
Mescalero Apache Reservation
“...this housing development has been designed to have as minimal an impact as possible on Mother Earth.”

- Tim Horan, Former MAHA Exec. Direct.
This project is a wonderful example of how truly sustainable housing can be built on New Mexico’s tribal lands.”

- Diane Denish, NM Lt. Governor
Hualapai
Peach Springs, Arizona
Earthship
Peach Springs, AZ
Hualapai Social Services Building
Hualapai Cultural Center
Hopi
Hopi, Arizona
Moore Residence
Hopi, AZ
Santo Domingo
Santo Domingo Pueblo, New Mexico
Santo Domingo Pueblo Safety Complex

The Safety Complex is designed to demonstrate the high technology requirements of today’s emergency response teams, but also to respect traditional values and architectural heritage of Santo Domingo Tribe.
<table>
<thead>
<tr>
<th>Safety Complex Features</th>
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</thead>
<tbody>
<tr>
<td>Six Bays: Ambulance &amp; Fire Trucks</td>
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<tr>
<td>Equipment Storage</td>
</tr>
<tr>
<td>Residential Quarters</td>
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<tr>
<td>Kitchen</td>
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<tr>
<td>TV Room</td>
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<tr>
<td>Fitness Area</td>
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<tr>
<td>Office Space</td>
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<tr>
<td>Small Holding Cell</td>
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<tr>
<td>Community Conference Room</td>
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<tr>
<td>Space for Long-term Training Facilities</td>
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</tbody>
</table>
Kewa Pueblo Safety Complex

- Water Catchment System
- Low Flow Fixtures
- Dual Flush Toilets
- Permeable Pavement
- Xeriscaping

Water
Materials

- Rastra Building Material (ICF)
- Local Material (Within 500 mi)
- Construction Waste Management System (Separate bin for contaminated materials)
Natural Lighting
Recycling Program
Honoring Tradition
CONCLUSION
Why Green Building?

- Fills Housing Need
- Facilitates tribal people’s ability to work toward achieving healthy, livable communities
- Allows tribal people to reconnect with the natural world
Ahé’ hée’

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