



# TRIBAL SUSTAINABILITY

## Green Projects in Indian Country

Gepetta S. Billie  
Tribal Energy Program Review  
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# Overview

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- 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



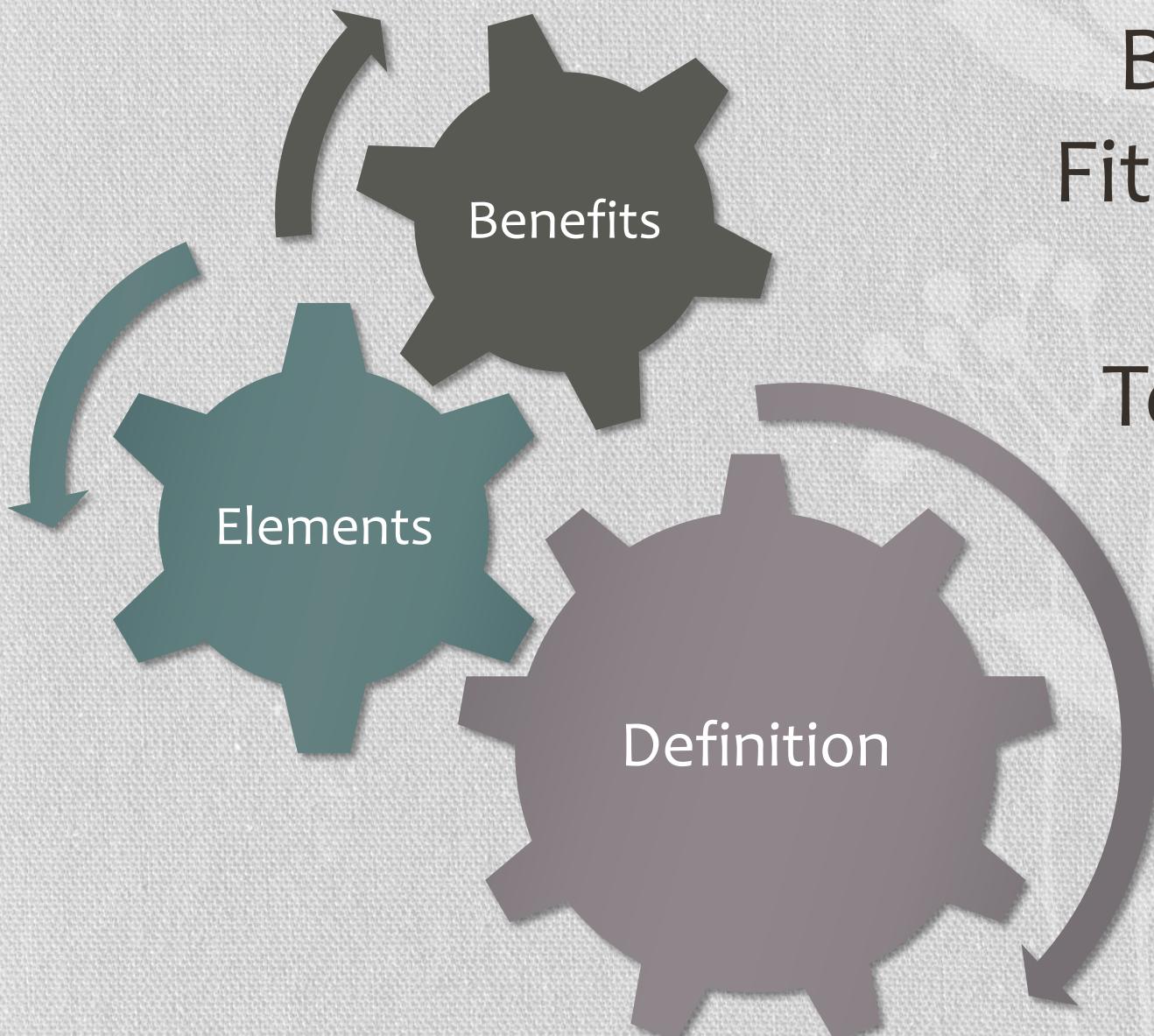
## Sustainability

- 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

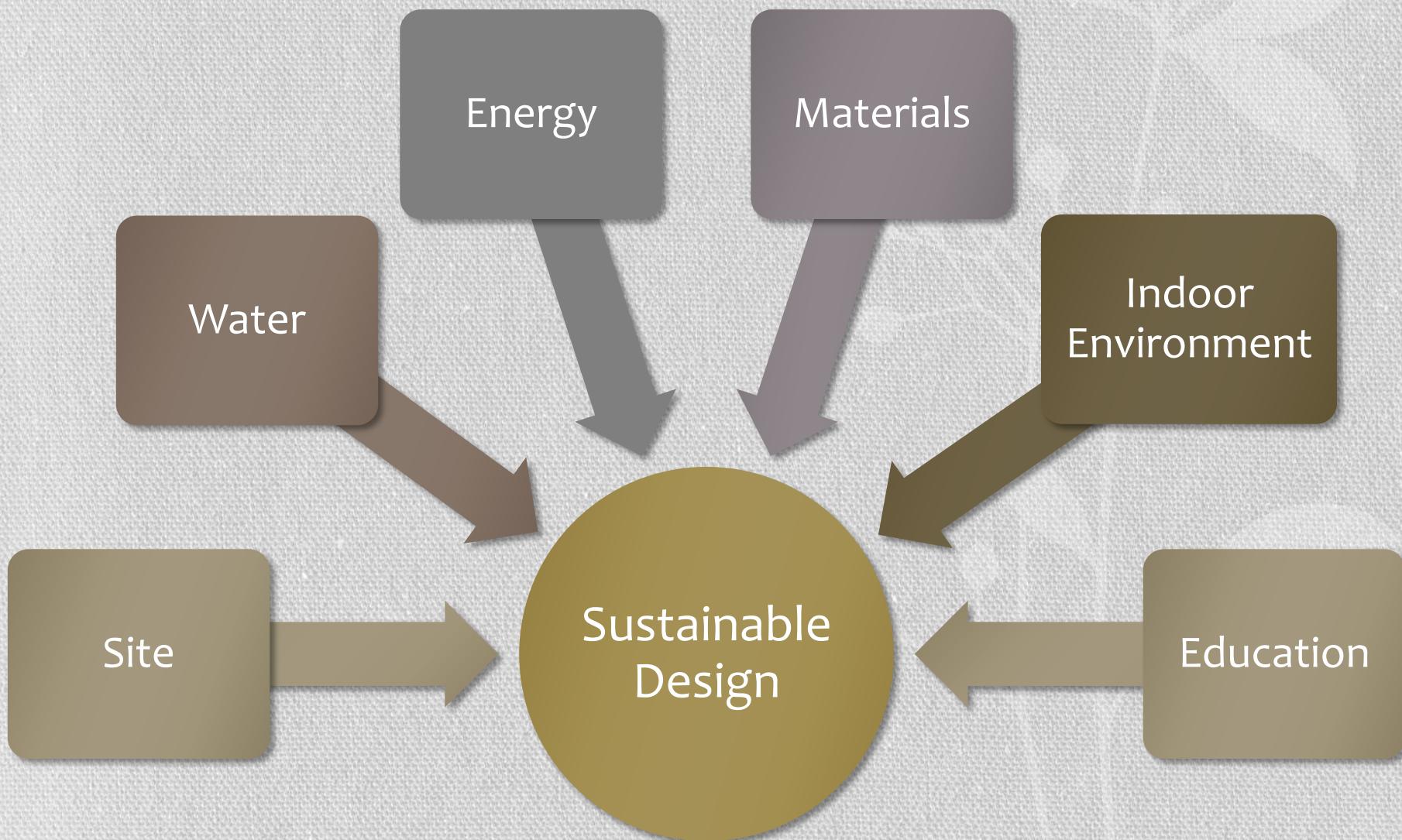


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# Green Building **ELEMENTS**

# Six Green Building Elements



# 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

Outdoor water conservation

Innovative waste water management

Using biological treatment or other “off grid” systems



- Using low-flow plumbing fixtures
- Using high-performance appliances
- Using rainwater collection systems
- Using sustainable landscaping techniques
- Using high-efficiency irrigation systems
- Using gray water recovery systems
- Using waterless urinals

# Energy

## Strategies to Consider

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 Green Building Strategies



Prepare a Green Building Product Selection Plan



Use Salvaged Building Products



Use Recycled-content Building Products



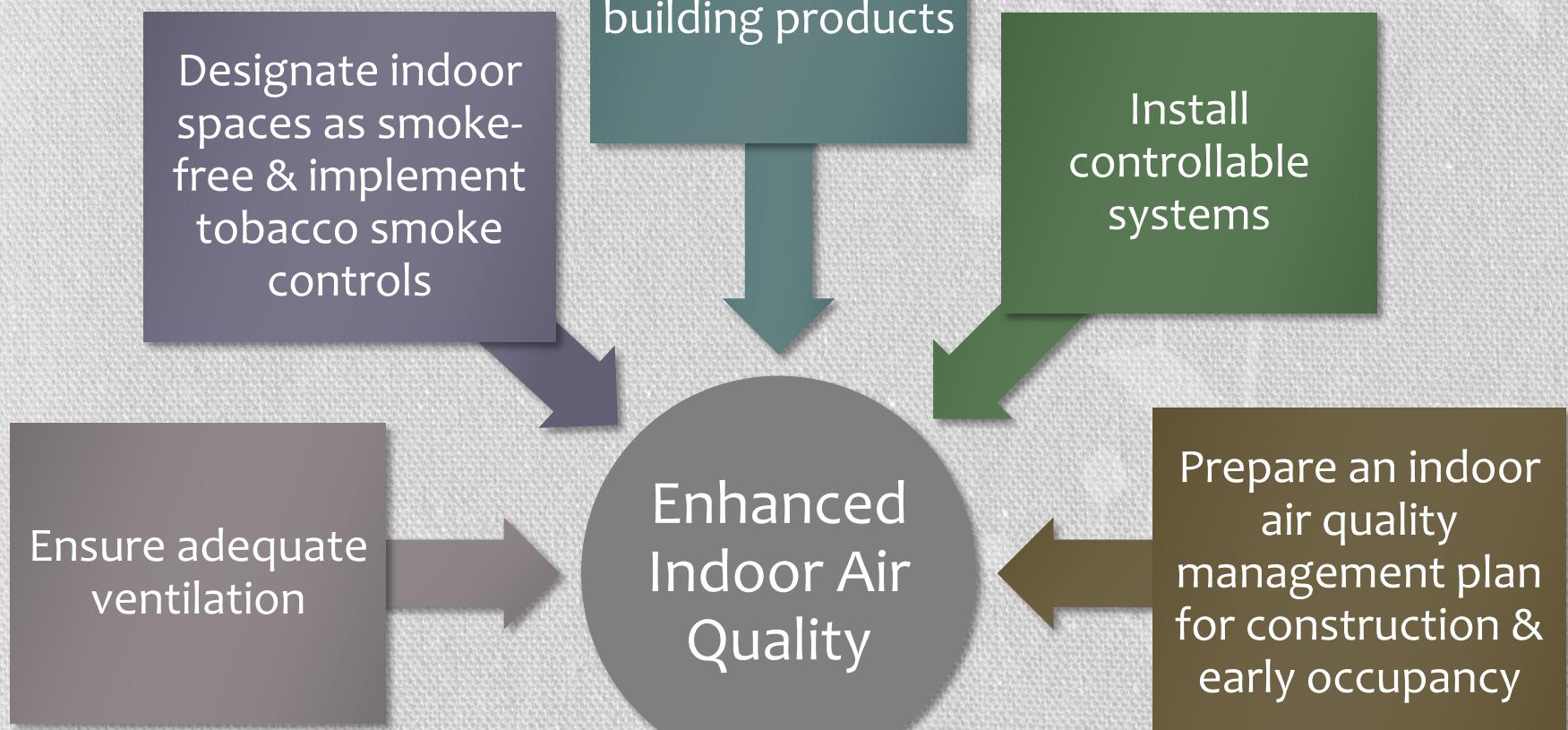
Use Locally Available or Naturally Occurring Building Products



Use Smart Wood or Alternative Lumber Products

# Indoor Environment

## Green Building Strategies



# 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



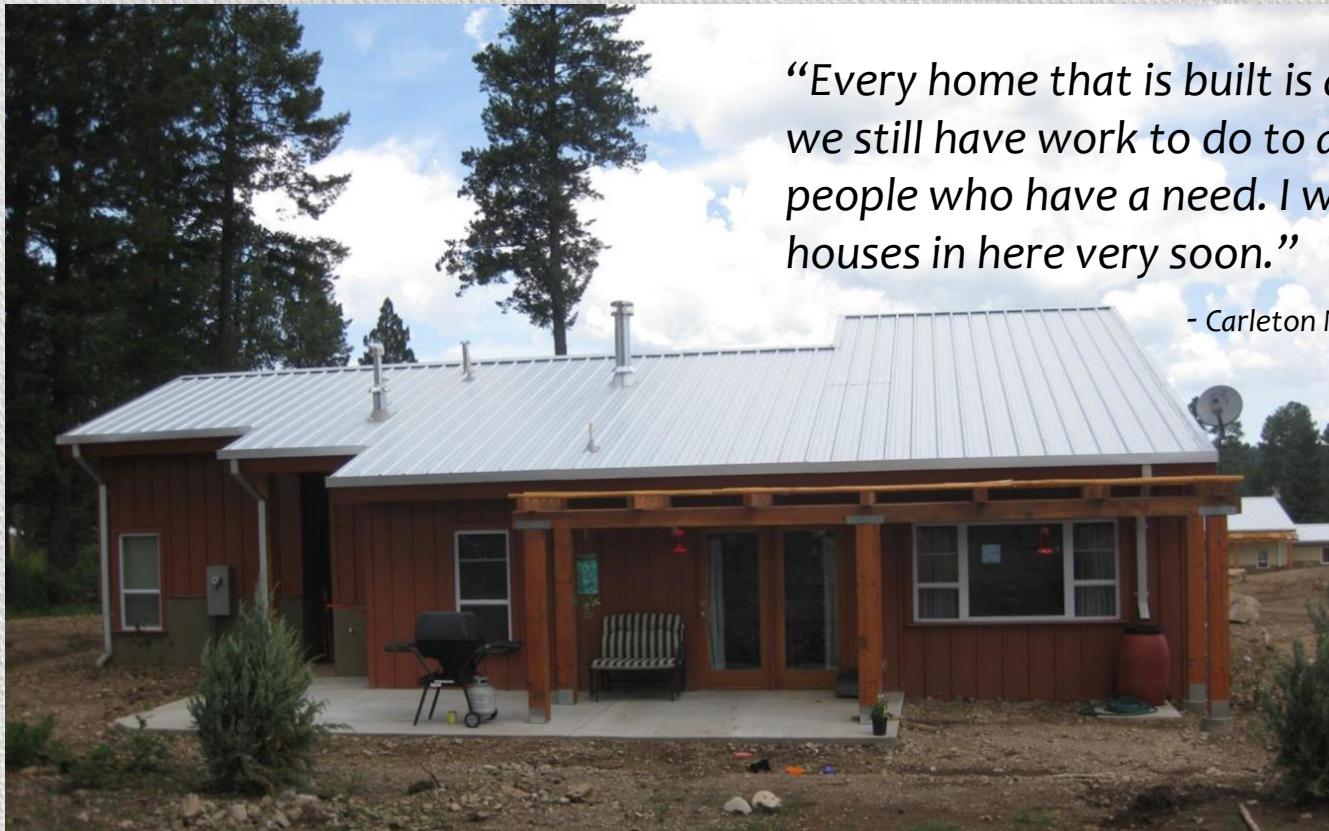
# GREEN BUILDING IN INDIAN COUNTRY

# Mescalero

Mescalero, New Mexico



# Seeing is Believing



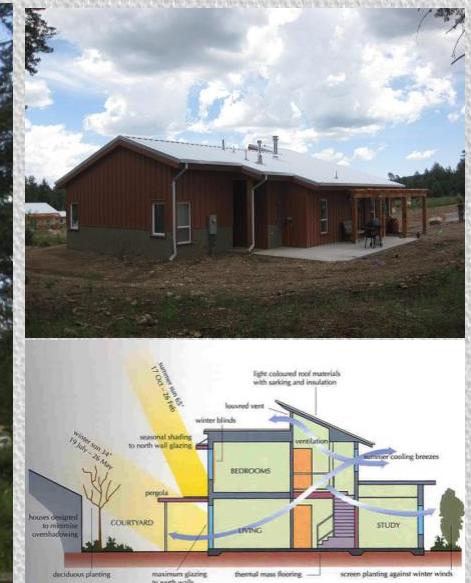
*“Every home that is built is a blessing for our people, we still have work to do to accommodate all the people who have a need. I wish and pray we get more houses in here very soon.”*

- Carleton Naiche-Palmer, Former Tribal President



I-Sah'-Din'-Dii Housing Development  
Mescalero Apache Reservation

# I-Sah'-Din'-Dii, Design



*“...this housing development has been designed to have as minimal an impact as possible on Mother Earth. .”*

- Tim Horan, Former MAHA Exec. Direct.

# I-Sah'-Din'-Dii, Conservation

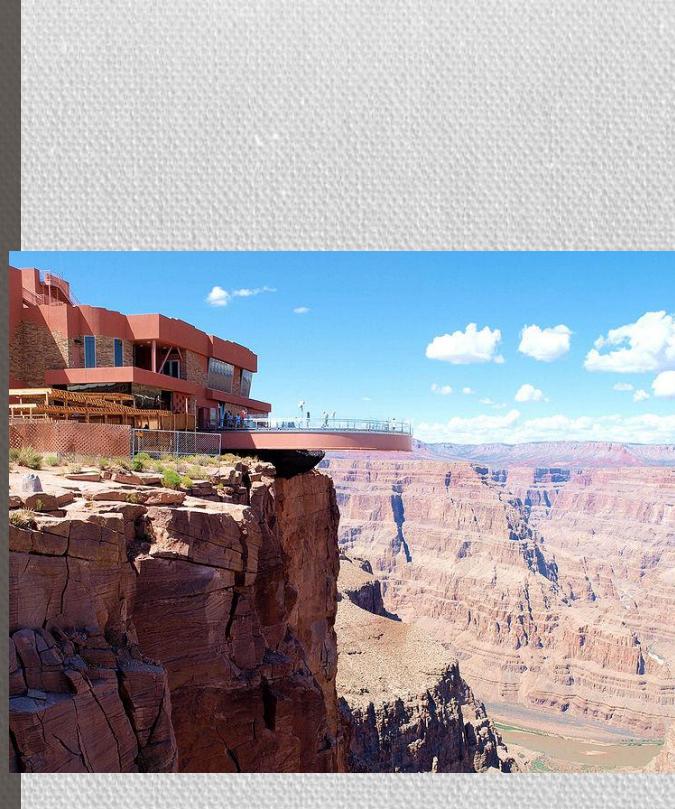


*“This project is a wonderful example of how truly sustainable housing can be built on New Mexico’s tribal lands.”*

- Diane Denish, NM Lt. Governor

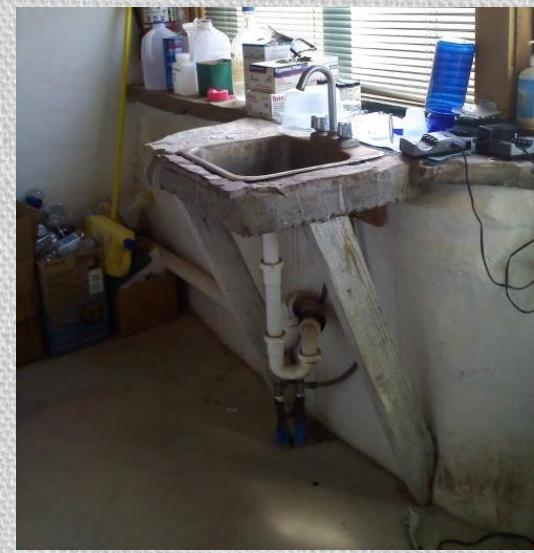
# Hualapai

## Peach Springs, Arizona



# Earthship

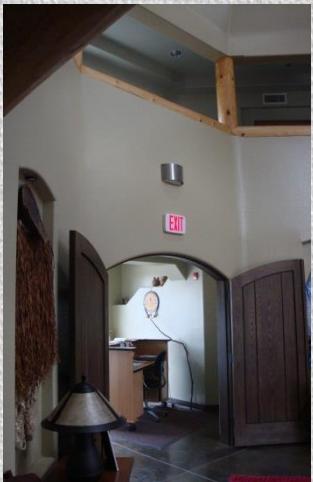
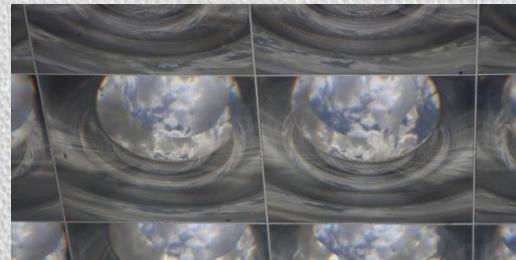
## Peach Springs, AZ



# Hualapai Social Services Building

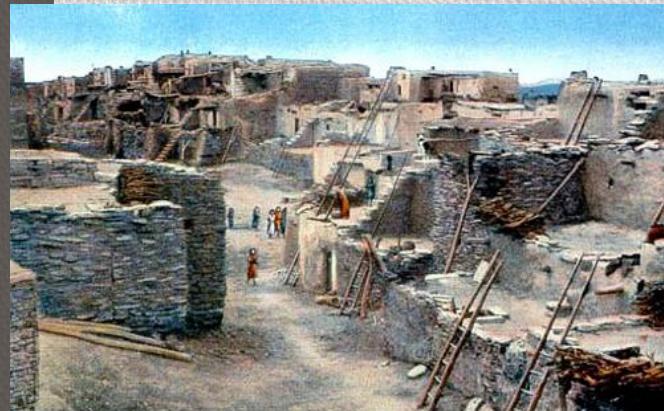


# Hualapai Cultural Center



# Hopi

Hopi, Arizona



# Moore Residence

## Hopi, AZ



# Santo Domingo

Santo Domingo Pueblo,  
New Mexico



# Santo Domingo Pueblo Safety Complex



10,000 square feet

Volunteer Fire & Police  
Substation

LEED Silver 08/30/2011

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.

# Safety Complex Features



Six Bays: Ambulance & Fire Trucks

Equipment Storage

Residential Quarters

Kitchen

TV Room

Fitness Area

Office Space

Small Holding Cell

Community Conference Room

Space for Long-term Training Facilities

# Kewa Pueblo Safety Complex

Water Catchment System

Low Flow Fixtures

Dual Flush Toilets

Permeable Pavement

Xeriscaping



Water



# Materials

Rastral 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' héé'

Gepetta Billie  
Strategic Site Planner  
Sandia National Laboratories  
[gsbilli@sandia.gov](mailto:gsbilli@sandia.gov)

