

Grand Canyon National Park

Greening Charrette

April 27-29, 2004

Grand Canyon, Arizona

Executive Summary

The Grand Canyon National Park was set aside as a national monument by Theodore Roosevelt in 1908, became a national park in 1919, and was designated a world heritage site in 1979. More than 4 million visitors from across the U.S. and around the world come to the park each year. In 1994, one of the nation's first greening charrettes was held at the Grand Canyon. Since the workshop, specific actions taken by Grand Canyon include reducing the footprint of buildings, reusing buildings, minimizing the use of water and power resources, and recycling as many materials as possible. The park has an Environmental Management System (EMS) and is a member of the U.S. Environmental Protection Agency's Performance Track program. The park currently diverts 40% of its trash from the landfill and has a recycling rate of more than 20%. The park also uses alternatively fueled vehicles, has installed a natural gas fueling station, and has constructed several green facilities based on the LEED Rating System. In addition, large and small park major concessioners have undertaken many green initiatives.



Historic facilities are of prime interest in NPS greening

This charrette was the sixth in a series co-sponsored by the National Park Service and the U.S. Environmental Protection Agency. The objective of the charrette was to develop a plan for further greening of the Grand Canyon in categories that included transportation, facilities design and operations/maintenance, procurement of goods and services, and concessions.

The event began with a half-day tour of the park, designed to introduce speakers to issues at the Grand Canyon that might be addressed during the charrette. The first full day of the charrette began with a welcome from Kate Cannon, Deputy Superintendent. Following introductions of participants, Joel Ann Todd, an environmental consultant, presented a brief overview of the results of charrettes held at other parks and Gail Lindsey, FAIA, of Design Harmony, Inc. introduced the sustainability topics that would be the focus of the charrette: environmental leadership and planning, transportation, facilities, operations and maintenance, concessions, interpretation and education, and procurement.



Tour of Grand Canyon – South Rim

Next, Jim Tuck and Greg MacGregor presented an overview of some of the accomplishments at the Grand Canyon NP and the major issues facing the park in the areas of transportation (parking, visitor and employee transport, route confusion, information and wayfinding, and use of light rail), concessions (investment in facilities vs. length of contracts, communication between concessioners and park, perception that green costs more, and additional opportunities for water conservation), facilities (perceived conflict between historic preservation and sustainability, integration of new facilities into Historic Landmarks or Districts, and use of life cycle costing), infrastructure (aging systems and water resources), procurement (availability of green products, green purchasing, and greening products in the warehouse), communications (with partners, with visitors), and operations and maintenance (recycling, budgets).

To conclude the morning, Al Shacklett of ORCA Consulting gave a presentation on transportation issues and ideas. He discussed examples from Disney and lessons learned from that experience along with other ideas and examples from parks. After lunch, other subject matter experts discussed priority topics. Carl Elefante, AIA, of Quinn Evans Architects gave a presentation on facilities, emphasizing the relationship between sustainability and historic preservation. Next, there were two presentations on concessions, one by Christine Chui, representing the NPS Concession Environmental Management Program, and one by Chris Lane, representing Xanterra Parks & Resorts, the largest concessioner at the Grand Canyon and in the National Park system. They described opportunities for sustainability within concessioner operations as well as success stories. The presentations concluded with a discussion of green procurement and contracts by Scot Horst of Horst, Inc. that demonstrated how a broader, systems approach such as “life cycle thinking” can improve purchasing decisionmaking.



Chris Lane presents



Procurement workgroup presents findings

Participants then broke into four work groups to discuss (1) transportation, (2) facilities, (3) procurement, and (4) concessions. For the remainder of the day, the groups created a vision for their topic and discussed the current status at the Grand Canyon to establish a baseline. The work groups returned the final day to establish short-term, mid-term, and long-term goals and actions; the groups also identified champions and partners for high priority actions as well as barriers and opportunities and approximate level of cost.

At the conclusion of the charrette, the groups presented their results and the Deputy Superintendent reacted to the groups' priorities. Kate supported the ideas and said that she was glad to see that they ranged from the very practical and immediate to the more conceptual that could shape future planning efforts. The group also stressed the importance of continuing communication on these topics within and among groups.

Priority Short-Term Goals/Actions	
Goal/Actions	Champions
Transportation	
Develop parkwide vision for alternative fuels	Team
Convert from diesel to biodiesel parkwide	Team
Develop response to Kaibab Trailhead parking problem	Mark Law, Jim Tuck, Rich Vega
Improve visitor contact employee orientation	Jim Tuck, concessions
Continue funding requests for replacement of existing buses	Jim Tuck
Facilities	
Review GMP status – what has been done, what has been delayed, what should be done?	Kate Cannon
Prepare Sustainable Design/Historic Preservation Case Studies	NPS Project Managers
Implement Energy Management Plan that includes water	John Beshears
Procurement	
Purchase and stock 100% recycled content toilet paper in warehouse, preferably chlorine and acid free	Cub Powell
Purchase and stock paper of highest recycled content in warehouse	Cub Powell
Continue Green Team and include concessioners (replace Environmental/ Haz Mat Coordinator)	John Beshears
Investigate feasibility of recycled automotive oil, environmentally friendly antifreeze, vegetable-based hydraulic oil	Jim Boucher
Refine materials tracking at the warehouse	Cub Powell
Investigate feasibility of replacing cleaning products at the warehouse with larger percentage environmentally friendly products	Cub Powell, Jim Boucher, Chuck Griffith
Reduce the percentage of hazardous waste containing products offered in the warehouse (by 10%)	Cub Powell
Investigate feasibility of and emissions from replacing North Rim auto shop heater with recycled oil burner	Jim Boucher, Carl Bowman
Train custodial staff in most efficient use of cleaning products	Jim Boucher, Chuck Griffith
Concessions	
Prepare a booklet on “what we can do, what you can do” for visitors	Lisa McNeilly
Place recycling messages on all bins parkwide (to clarify what can be put in each bin)	Laura Shearin
Establish a collaborative group to work on cohesive, coordinated messages	Nick Hardigg
Develop messages for retail concession operations	Chris Hindle
Develop baseline information on all concessions	Nick Hardigg, Lisa McNeilly
Include environmental elements in prospectuses under development	Nick Hardigg
Conduct an all-concessioner briefing on charrette results and encourage involvement in greening activities	Nick Hardigg, Laura Shearin

Maintain, update and use planning matrix to help in tracking activities, identifying areas where baseline information is needed, and looking for opportunities to engage additional concessioners	Nick Hardigg
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Action items were presented, discussed, and prioritized throughout the Grand Canyon greening charrette

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Final Report

Background

The Grand Canyon National Park was set aside as a national monument by Theodore Roosevelt in 1908 and became a national park in 1919. The Grand Canyon was designated a world heritage site in 1979. Almost 5 million visitors from across the U.S. and around the world come to the park each year.

The park encompasses 1.2 million acres and several major ecosystems; seven American Indian groups, represented by nine tribal governments, have ties to the Grand Canyon. Most visitors come to the South Rim; facilities include several visitor information/interpretation centers, park and concession administration, hotels, campgrounds, restaurants and shops, a kennel, a clinic, as well as residences, recreational facilities, and a school for employees and their families. A free shuttle bus system serves the village, trailheads, and overlooks. Trails, accessible by foot or mule, descend to the river where limited camping and lodging are available. A smaller number of visitors visit the North Rim and its more limited, "lower key" facilities.



Canyon View Information Plaza

In 1994, one of the nation's first greening charrettes was held at the Grand Canyon. That event included regional and national environmental leaders; representatives of government, utilities, the community, and American Indian groups; and private developers. Together they sought ways to make the Grand Canyon more environmentally and economically sustainable. During the workshop, four subgroups formed to discuss resource efficiency, visitors' experiences, information management, and implementation and partnering plans. Since the workshop, specific actions taken by Grand Canyon include reducing the footprint of buildings, reusing buildings, minimizing the use of water and power resources, and recycling as many materials as possible.



Auto shop oil recycling

The Grand Canyon has taken many significant steps toward sustainability. The park has an Environmental Management System (EMS) and is a member of the U.S. Environmental Protection Agency's Performance Track program. The park currently diverts 40% of its trash from the landfill and has a recycling rate of more than 20%. The park also uses alternatively fueled vehicles and has constructed several green facilities based on the LEED Rating System. The new maintenance facility registered with the U.S. Green Building Council's LEED Rating System, but has not yet completed

this process to receive a formal rating. In addition, large and small park concessioners have undertaken many green initiatives. But key issues remain and these issues, outlined during the charrette by Grand Canyon NP staff, were the focus of this event.

This charrette was the sixth in a series co-sponsored by the National Park Service and the U.S. Environmental Protection Agency. The objective of the charrette was to develop a plan for further greening the Grand Canyon in categories that included transportation, facilities design and operations/maintenance, procurement of goods and services, and concessions.

Charrette Overview

The event began with a half-day tour of the park, designed to introduce speakers to issues at the Grand Canyon that might be addressed during the charrette. The tour, conducted in one of the park's natural gas powered shuttle buses, included the LNG/ LCNG fueling station, the Canyon View Information Plaza, the new maintenance area (which was designed to LEED standards), historic Grand Canyon Village and nearby rim overlooks, and a drive through residential and other support areas. The tour highlighted successes, such as the fueling station and the buildings at the Information Plaza and maintenance area, as well as ongoing challenges, such as transportation, maintaining historic structures and building new structures, and visitation.



Natural gas powered bus and mules

The first full day of the charrette began with a welcome from Kate Cannon, Deputy Superintendent. She emphasized the need for "meaningful goals and objectives ... a blueprint" and then the need to carry it forward. She also indicated a commitment to sustainability for the long term. Following introductions of participants, Joel Ann Todd presented a brief overview of the results of charrettes held at other parks, including highlights of the actions these parks have taken based on their work during the charrettes. Gail Lindsey, FAIA, introduced the sustainability topics that would be the focus of the charrette: environmental leadership and planning, transportation, facilities, operations and maintenance, concessions, interpretation and education, and procurement.

Next, Jim Tuck and Greg MacGregor presented an overview of some of the accomplishments at the Grand Canyon NP and the major issues facing the park in the areas of transportation (parking, visitor and employee transport, route confusion, information and wayfinding, and use of rail), concessions (investment in facilities vs. length of contracts, communication between concessioners and the NPS, perception that green costs more, and additional opportunities for water conservation), facilities (perceived conflict between historic preservation and



Charrette participants

sustainability, integration of new facilities into Historic Landmarks or Districts, and use of life cycle costing), infrastructure (aging systems and water resources), procurement (availability of green products, green purchasing, and greening products in the warehouse), communications (with partners, with visitors), and operations and maintenance (recycling, budgets).

To conclude the morning, Al Shacklett gave a presentation on transportation issues and ideas. He discussed examples from Disney and lessons learned from that experience along with other ideas and examples from parks. After lunch, other subject matter experts gave presentations on priority topics. Carl Elefante, AIA, gave a presentation on facilities, emphasizing the relationship between sustainability and historic preservation. Next, there were two presentations on concessions, one by Christine Chui, representing the NPS Concession Environmental Management Program, and one by Chris Lane, representing Xanterra Parks & Resorts, the largest concessioner at the Grand Canyon. They described opportunities for sustainability within concessioner operations as well as success stories. The expert presentations concluded with a discussion of green procurement and contracts by Scot Horst that demonstrated how a broader, systems approach such as “life cycle thinking” can improve purchasing decision making.



Al Shacklett presents



Participants listen to workgroup reports

Participants then broke into four work groups to discuss:

- (1) transportation,
- (2) facilities,
- (3) procurement, and
- (4) concessions.

For the remainder of the day, the groups created a vision for their topic, discussed the current status at the Grand Canyon to establish a baseline. The work groups returned the final day to establish short-term, mid-term, and long-term goals and actions; the groups also identified champions and partners for high priority actions as well as barriers and opportunities and approximate level of cost.

At the conclusion of the charrette, the groups presented their results and the Deputy Superintendent reacted to the groups' priorities. Kate supported the ideas and said that she was glad to see that they ranged from the very practical and immediate to the more conceptual that could shape future planning efforts. The group also stressed the importance of continuing communication on these topics within and among groups.

Highlights of Discussion

Transportation

Team: Carl Bowman, Sharon Cann, Costa Dillon, Steve Meyerhein, Al Shacklett, Peter Steinkopf, Vicky Stinson, Jim Tuck

Vision:

- 100% alternatively fueled vehicles; tour buses in park alternatively fueled
- Low floor, 100% accessible buses
- Traffic and vehicles significantly removed from the rim
- Shuttle service to adequately serve employees in the park and in Flagstaff
- Elimination of congestion at entry gates
- Base funding for transportation
- Expansion of the system



Transportation workgroup presents findings

Current Status/ Baseline Conditions

- Visitation now static, future unknown
- Resident travel (2,500 in the park and Tusayan)
 - residential areas are not served by shuttles (-)
 - residents must go to Market Plaza to get mail (-)
 - only 5% of maintenance staff now ride bicycles or walk to work at the new facility instead of 50% in old facility (-)
 - greenway will not meet needs of residents (-)
 - there are limited bike racks (-)
 - school children carpool (+) but not staff (-)
 - Xanterra Parks & Resorts has a limited shuttle system, and many Xanterra employees use the shuttle (+)
 - positions are moving to Flagstaff – long travel to park (-)
 - there is no transport from the Phoenix airport for those attending training at Albright Center or for visitors (-)
- Fleet
 - electric pickup trucks were tried, but they did not work adequately (-)
 - park is primarily using diesel and gasoline fleet vehicles (-)
 - parkwide, there are 800 vehicles (park, concessions), about 5% alternative fuel (-)
 - fuel – have LCNG, LNG, and separate diesel tanks (allows for partial conversion to biodiesel) (+)
 - maintenance facilities – new facility is adequate, but the Xanterra Parks & Resorts facility inadequate (-)
 - fluids in maintenance facilities are handled properly (+)



NPS Electric vehicle (NEV)

- Traffic and congestion
 - there are long waits at the South Rim entrance gate about 100 days per year for five busiest hours (-)
 - most visitors enter from the South and congestion is village-wide
 - visitor parking is inadequate (-)
 - the existing bus system is old and not all use alternative fuel (-)
 - routes are confusing and wayfinding is inadequate – leads to confused visitors (-)



Grand Canyon diesel and gas tanks



Pedestrian walkways in the park

- Bicycling
 - there are conflicts between bicycles and buses on Hermit Road (-)
 - there are bike racks on buses (+) but no bike lanes on most roads (-)
- Shuttle bus system
 - housing for drivers is inadequate (-)
 - buses are inadequate – number, capacity, age, fuel type (-)
 - Canyon View Information Plaza – functions poorly and not as intended (-)
 - shuttle stops need rehab (-)
 - many facilities are inadequate – garage, storage compound (-)
 - time between buses is 10-15 minute (+)
 - shuttles operate year round (+)
 - ridership is good (+) Note that a recent survey showed that about 1,000,000 visitors use the system each year (20-25% of South Rim)
 - system graphics are “pretty good” (routes) (+)
 - drivers are pleasant and professional (+)



Old NPS diesel bus with smoke

- park has an outstanding safety record (+)
- system does not meet needs – congestion (-)

Short-Term Goals/Actions

Priority Goals/Actions

1. Develop parkwide vision for alternative fuels
 - a. Champion – team including NPS, Xanterra Parks & Resorts, shuttle contractor
 - b. Barriers – ?
 - c. Opportunities – some groundwork done
 - d. Cost – \$ (consultant)
 - e. Partners – fuel suppliers, consultants, sponsor/participants, all champions
2. Convert from diesel to biodiesel parkwide
 - a. Champion – team including NPS, contracting, maintenance, concessions
 - b. Barriers – maintenance cost and perceived maintenance difficulties
 - c. Opportunities – price has come down, infrastructure exists, proven fuel
 - d. Cost – ¢
 - e. Partners – school, Xanterra Parks & Resorts, NPS, shuttle bus contractor, USFS
3. Develop response to Kaibab Trailhead parking problem, winter and summer – inadequate parking areas, congestion, walking is difficult, social trails
 - a. Champion – Mark Law, Jim Tuck, Rich Vega
 - b. Barriers – visitor compliance, need for increased signage, need for ground disturbance for new parking, impact of management decisions
 - c. Opportunities – strong visitor habits not yet developed, improved visitor services, shuttles already run to the area
 - d. Cost – \$
 - e. Partners – NPS, shuttle bus operators, public
4. Improve employee orientation on shuttle bus service so they can provide better visitor information (and use shuttles themselves)
 - a. Champions -- NPS, concessions, Jim Tuck
 - b. Barriers -- availability of employees to be trained, lack of trainers, concessions employee turnover rates
 - c. Opportunities – improved visitor services, instill *esprit de corps* and camaraderie
 - d. Cost – \$
 - e. Partners – NPS Human Resources, concessioners
5. Continue funding requests for replacement of existing buses
 - a. Champion – Jim Tuck



Transportation workgroup goals



Liquified and compressed natural gas for fueling new buses and other vehicles

- b. Barriers – funding, GSA specs, sole source vs. competitive bid
- c. Opportunities – improved fleet, reduced maintenance, improved visitor experience, increase alternative fuel use
- d. Cost – \$\$\$, approximately \$6 million
- e. Partners – NPS, GSA, equipment manufacturers, shuttle contractor, & sponsorships

Other short-term goals/actions



Natural gas pump

1. Install bike racks at workplaces and visitor facilities
2. Consider car pools and van pools, including families
3. Review existing fleet size, types, and use
4. Investigate opportunities for cooperative fluid recycling including contractors and residents (including crankcase oil for heating new transportation buildings)
5. Identify specific choke points and develop signs (vehicle and pedestrian)
6. Develop parkwide bike plan
7. Pursue use of Moqui site for shuttle bus operations (housing and compound)
8. Pursue rehab of bus stops using green design

Mid-Term Goals/Actions

1. Consider residential mail delivery
2. Build bike path to new maintenance facility
3. Expand bike and pedestrian paths for residents; install bike racks at workplaces and visitor facilities
4. Develop efficient system for transporting employees in Flagstaff to Grand Canyon
5. Consider converting gasoline to biogas
6. Replace part of the fleet with hybrid engine vehicles
7. Investigate/ensure Xanterra Parks & Resorts facility is NG safe
8. Install electronic pass-through lanes at entrance
9. Revisit parkwide signage and wayfinding, including pedestrian walk time signs – park sign plan needed
10. Consider planning for high-density housing for shuttle bus operators
11. Pursue equipment replacement plan for consistent type units
12. Build new shuttle bus maintenance facility (NG safe)



Transportation workgroup presents ideas

Long-Term Goals/Actions

1. Expand shuttle buses into residential areas and workplaces (including Tusayan)

2. Develop/improve transportation services between Grand Canyon and Phoenix and/or Las Vegas airports
3. Consider offering alternative fuels to residents and visitors
4. Investigate use of public garage for alternative fuel maintenance for concessions and public
5. Create more entrance lanes
6. Expand entrance gate staffing
7. Encourage development of shuttle service to Tusayan, including fee structure
8. Consider interim parking & road modifications at Mather area (phase into GMP solution)
9. Continue long term plan for bike rentals coupled with development of safe bike lanes
10. Pursue funding for fleet expansion and O&M to support visitor and employee needs

Facilities

Team: Bob Baker, Susan Werner, Tom Geiger, Carl Bowman, John Beshears, Greg MacGregor, Jim Garrison, Bob van Belle, Carl Elefante

Vision:

- GMP is still guiding document; however, ten years and many circumstances have changed. Effort to reassess GMP needed and useful.
- Facilities planning decisions need to be guided by four overarching values:
 - Enhancing visitor experience
 - Stewardship of natural and cultural resources
 - Life cycle impacts – need staff, operations and maintenance embraced in planning
 - Sustainable design – better approach to applying NPS LEED checklist needed.
- Historic preservation drives facilities issues – combining sustainable design and historic preservation missions should *help* facility planning, O&M – concessioners need to be fully integrated into the process
- “Regulatory infrastructure” needs to be clear and finite
 - Section 106, certified local government, guidelines
 - UBC Codes
 - Energy code
 - Access code
 - Life-cycle analysis
 - LEED, LEED-EB, ISO 14001
- Architectural character guidelines need to be re-evaluated in terms of sustainable design – more integration, more diversity, appropriate intervention.



Facilities workgroup presents goals & action items



NPS new green maintenance facility

- Facilities and transit need to support each other
 - Accept that CVIP has created 2-node approach to visitor facilities
 - Facility use scenario planning session needed for CVIP
 - Each “zone” needs to be assessed in terms of Pedestrian/Transit/Intermodal
 - Grand Canyon Village
 - CVIP
 - Market Plaza
 - Grand Canyon business area
- Water and energy – Grand Canyon NP should provide leadership on studying and implementing water resource and solar energy – potential is attractive, but practical limits are difficult to overcome.



Carl Elefante presents

Current Status/Baseline Conditions



Old NPS maintenance building to be used by Xanterra

- Geographic development areas are dispersed and diverse
 - South Rim Village – point of entry for most visitors
 - Desert View – more remote on South Rim
 - North Rim – “traditional” Grand Canyon experience
 - Corridor – connects North and South Rim, Phantom Ranch, wastewater, water supply
- Types of facilities
 - National Historic Landmarks and others almost eligible for historic status
- Status of facilities process
 - Approximately 600 NPS structures; concessions have similar number
 - 50% of residential structures are 50 years old
 - 50% new construction
- Status of facilities process
 - GMP had a long range master plan and vision
 - Park entrance complex and light rail plaza is on hold
 - Park is planning adaptive use of historic support zone (power plant)
 - Cost and funding stream is an issue; operational dollars are part of cost picture
 - “Surplus” buildings find new users
 - “service station” on Center Road
 - GMP “domino” plans



Xanterra Warehouse Facility

- North Rim facilities
 - Compact village/significant historic setting
 - EMS building planned
 - Renovation of service
 - Skipped most of Mission 66
 - Recent construction 15%; 85% historic and will stay as is with rehab, preservation, maintenance
 - Visitor contact point
 - North Rim transit is on hold for visitor count
 - NPS has asset stewardship plan
- South Rim facilities
 - Most buildings and visitors in the park are at the South Rim
 - Historic Grand Canyon Village lodges
 - Removal of Thunderbird and Kachina Lodges could be biggest issue in GMP – debatable cost-benefit
 - Bright Angel is very attractive and popular – RFP being proposed now
 - El Tovar is planned for rehab in 2005, windows replaced in 1980s
 - HSRs being prepared on five structures, but not yet approved – awaiting approval is delaying design (Outlook Studio, Bright Angel, Verkamps, Desert View Watchtower, Livery Barn, Power Plant)
 - Lighting – Xanterra Parks & Resorts is working with Smith Group to address lighting per NPS policy
 - “Green” impacts – recycling containers have visual impact
 - Industrial area project planned/underway
- Desert View
 - GMP proposed many changes
 - Parking/change in road has been implemented
 - General store is not being pursued
 - Old Trading Post might be long term opportunity for sustainable design applications
 - Gas station rehab will occur soon
 - Trailers for offices to be replaced
- Corridor
 - There is work to be done but the area is inaccessible – building is very difficult due to remoteness
 - Housing needs exist
 - Water upgrades delayed as impact considered – relationship to life safety is important since there is no water storage



Energy efficient heating and cooling in NPS bookstore



Ideas from the Facilities workgroup

Short-Term Goals/Actions

Priority Goals/Actions

1. Review GMP status – what has been done, what has been delayed, what should be done?
 - a. Champion – NPS internal, Joe Alston
 - b. Barriers – time
 - c. Opportunities – identify gridlock
 - d. Cost – \$ (staff)
 - e. Partners – Concessions (Xanterra Parks & Resorts)
2. Prepare Sustainable Design/Historic Preservation Case Studies – Visitor Information Center, Power Plant renovation, Headquarters rehab
 - a. Champion – NPS Project Managers
 - b. Barriers
 - c. Opportunities – upcoming power plant and headquarters work, part of Project Managers' jobs
 - d. Cost – \$ (staff)
 - a. Partners – NREL (Department of Energy)
3. Implement Energy Management Plan that includes water
 - a. Champion – John Beshears
 - b. Barriers – time, funding reductions
 - c. Opportunities
 - d. Cost – \$ (staff)
 - e. Partners – Xanterra Parks & Resorts and other concessions

Other Short-Term Goals/Actions

1. Provide leadership on greening to Grand Canyon NP and public
 - publish sustainable design success stories (including LEED and beyond LEED)
 - document lessons learned
 - find green tools beyond LEED
 - a. Champion – NPS and Xanterra Parks & Resorts Green Teams
 - b. Barriers – internal procedures
 - c. Opportunities
 - d. Cost – \$ (staff) and \$\$ (publications)
 - e. Partners – NPS-DC, US Green Building Council
2. Establish Historic Preservation Streamlining Task Force – plan to guide all projects
 - a. Champion – Jan Balsom (Section 106 Coordinator), NPS Historic Architect/Compliance Office/Facility Manager
 - b. Barriers – staff time
 - c. Cost – \$ (staff) – but will save money in the future
 - d. Partners – SHPO, Xanterra Parks & Resorts
3. Scope regulatory requirements/infrastructure/processes – how do we make things easier and how much does the park control?
 - a. Champion – Kate Cannon
 - b. Barriers
 - c. Opportunities



Facilities workgroup final reporting

- d. Cost – \$\$ (staff), \$\$ (consultants)
 - e. Partners – NPS, concessions, consultants
4. Initiate Task Force to review architectural guidelines
- a. Champion – Jim Garrison, Jan Balsom
 - b. Barriers – time
 - c. Opportunities –
 - d. Cost – \$ (staff)
 - e. Partner – Xanterra Parks & Resorts
5. Conduct CVIP interim scenario workshop/assessment – what can we do to optimize in the interim?
- a. Champion – ?
 - b. Barriers – solution costly
 - c. Opportunities
 - d. Cost – \$ (staff)
 - e. Partners – Vendors, concessioners

Mid-Term Goals/Actions

None identified during the charrette

Long-Term Goals/Actions

None identified during the charrette

Procurement

Team: Scot Horst, Cub Powell, Jim Boucher

Vision:

- Reduce hazardous materials by 80% over five years
- Replace, find, create strong leadership
- Recycle and use recycled automotive oil, vegetable based hydraulic oil, antifreeze, etc.
- Obtain higher recycled content in paper
- Use more green cleaning products and purchase in bulk
- Conduct product reviews by life cycle stages
- Use holistic budget thinking – consider longer term savings
- Implement budget incentives to reward good purchasing



Procurement workgroup presents



Current green cleaning fluids



Current Status/Baseline Conditions

- Have reduced hazardous chemicals in the warehouse by 1/3
- Have a database to track materials
- Have a Green Team for the park but the leader is leaving
- Are using jumbo rolls of toilet paper and have found 100% recycled content paper locally
- Have training and performance issues on

green cleaning products; there is no coordination on purchases with concessioners; budget is a barrier

- North Rim operations currently recycle oil but do not use recycled oil, recycle antifreeze, and hold a weekly environmental meeting

Short-Term Goals/Actions

1. Purchase and stock 100% recycled content toilet paper in warehouse, preferably chlorine and acid free

- a. Champion – Cub Powell
- b. Barriers
- c. Opportunities
- d. Cost – no extra cost
- e. Partners

2. Purchase and stock office paper of highest recycled content in warehouse

- a. Champion – Cub Powell
- b. Barriers
- c. Opportunities
- d. Cost – \$
- e. Partners

3. Replace Environmental/Haz Mat Coordinator and continue Green Team

- a. Champion – Grand Canyon NP Administration, John Beshears
- b. Barriers
- c. Opportunities
- d. Cost – \$
- e. Partners

4. Continue Green Team and include concessioners

- a. Champion – John Beshears
- b. Barriers
- c. Opportunities
- d. Cost – no cost
- e. Partners

5. Investigate feasibility of recycled automotive oil, environmentally friendly antifreeze, vegetable based hydraulic oil

- a. Champion – Jim Boucher
- b. Barriers
- c. Opportunities
- d. Cost – no cost except time
- e. Partners

6. Refine materials tracking at warehouse

- a. Champion – Cub Powell
- b. Barriers
- c. Opportunities
- d. Cost – no cost
- e. Partners



NPS recycled paper



Current practice: battery recycling



NPS current oil drip catch system



7. Investigate feasibility of replacing cleaning products at warehouse with larger percentage (10-15%) environmentally friendly products

- a. Champion – Cub Powell, Jim Boucher, Chuck Griffith
- b. Barriers
- c. Opportunities
- d. Cost – unknown
- e. Partners

8. Reduce the percentage of hazardous material containing products offered in the warehouse by 10% *Crushed oil filters for recycling*



Green parts washer

10. Train custodial staff in most efficient use of cleaning products

- a. Champion – Jim Boucher, Chuck Griffith
- b. Barriers
- c. Opportunities
- d. Cost – \$ (will reduce hazardous materials and quantity of purchases)
- e. Partners

Mid-Term Goals/ Actions

1. Develop a waste reduction plan to reduce the amount of material coming into the park
2. Consider composting (equipment is available)



Scot Horst discusses Procurement workgroup goals

Long-Term Goals/Actions

1. Track 100% of materials flows
2. Use 100% green cleaning products
3. Use 0% hazardous materials

Concessions

Team: Christine Chui, Nick Hardigg, Chris Hindle, Chris Lane, Lisa McNeilly, Laura Shearin, Joel Ann Todd

Vision:

- Grand Canyon NP and the National Park Service will be recognized as environmental leaders – how do we promote this?
- A focus on park sustainability is not enough – we must focus on take-home messages for visitors to influence their attitudes and behavior.
- An environment that rewards innovation should be created at the park, with incentives for taking risks.
- Water conservation is most pressing and recognizable environmental issue at the park.
- 20 out of 22 concession contracts will be renewed in the next two years, creating an opportunity to incorporate environmental best management practices into the contracts (which average ten years in length) – old ones have no or limited environmental clauses; new ones will have more environmental requirements (such as developing and implementing an environmental management program)
- Some sustainability messaging is occurring but there is no coordinated or cohesive approach; Xanterra Parks & Resorts places environmental tips cards in all lodging rooms, has environmental messages on key cards, and requires guests to request linen and towel changes every day, for example
- Xanterra Parks & Resorts has conducted audits, keeps records related to sustainability issues, and prepares reports; has made a corporate commitment to sustainability and environmental stewardship; is phasing in low-flow fixtures but there is no baseline on what has and has not been changed
- There is less baseline data on other concessioners – energy and water consumption, messages, and metering and recordkeeping, messages
 - Need to look at “front of the house” and “back of the house” for baseline and goals



Short-Term Goals/Actions

1. Prepare a booklet on “what we can do, what you can do” for visitors

- a. Champion – Lisa McNeilly
- b. Barriers – cost

- c. Opportunities
- d. Cost – \$-\$ depending publication
- e. Partners – NPS interpretation, Xanterra Parks & Resorts

Concession workgroup ideas presented

on type of



Xanterra Environmental Award



Xanterra Warehouse

2. Place recycling messages and labels on all bins parkwide (clarify what can be put in each bin) – consider
 - multi-lingual message and symbols
 - a. Champion – Laura Shearin
 - b. Barriers – cost, making them attractive
 - c. Opportunities
 - d. Cost – \$
 - e. Partners

Xanterra – recycled paper stock

3. Establish a collaborative group to work on cohesive, coordinated messages



Concession workgroup ideas

- a. Champion – Nick Hardigg

- b. Barriers – staff time

- c. Opportunities

- d. Cost – low, staff time

- e. Partners – NPS interpretation staff, maintenance staff with all concessioners

4. Develop retail messages

- a. Champion – Chris Hindle

- b. Barriers

- c. Opportunities

- d. Cost – \$

- e. Partners – Delaware North Parks Services, Xanterra Parks & Resorts

5. Develop baseline information on all concessions (including current messaging, energy and water improvements, green procurement, waste and recycling, hazardous materials)

- a. Champion – Nick Hardigg, Lisa McNeilly, CoEMP (Wendy Behrman)

- b. Barriers – time, cost

- c. Opportunities

- d. Cost – ?

- e. Partners – CoEMP, concessioners

6. Include environmental elements in prospectuses under development

- a. Champion – Nick Hardigg

- b. Barriers

- c. Opportunities

- d. Cost

- e. Partners – CoEMP

7. Conduct all-concessioner briefing on charrette results and encourage involvement in greening activities (probably as part of a regularly-scheduled meeting)

- a. Champion – Nick Hardigg and Laura Shearin

- b. Barriers – finding a time convenient for all

- c. Opportunities – regular meeting

- d. Cost – none or very low

- e. Partners – all concessioners in park

8. Participate on the parkwide Green Team

- a. Champion –



- b. Barriers –
 - c. Opportunities –
 - d. Cost – staff time
 - e. Partners –
9. Maintain, update, and use “matrix” (see below) to help in tracking activities, identifying areas where baseline information is needed and looking for opportunities to engage additional concessioners
- a. Champion – Nick Hardigg and all
 - b. Barriers – time
 - c. Opportunities
 - d. Cost – low, staff time (is a tool to help with other tasks)
 - e. Partners – all

*Christine Chui
presents*

“Matrix” Concept

The group developed a tool to help organize its consideration of *topics* for actions and messages and *locations/ opportunities* for pursuing those actions and messages. The tool is presented below.

Eventually, each cell of the matrix could be explored to identify appropriate actions. For example, actions to save water and education of visitors about water use could occur in guest lodging, food and beverage operations, restrooms, etc.

	Guest Lodging	Food and Beverage	Retail	Guided activities	Transport	Facilities	Short-term visitors	Public rest rooms	Other?
Water									
Energy									
Environmental Education									
Purchasing									
Waste Reduction									
Wildlife									
Air quality									
Other?									



Concessions workgroup action items

Potential messages

- Don’t feed the wildlife
- Climate change
- Water conservation
- Energy conservation
- Waste reduction
- Litter
- Earth Day/Arbor Day
- Condors and endangered species
- Air quality

Media

- Food and beverage –

- napkins, cups, bags, coasters, table tents, sandwich wrappers, menus, placemats, buttons for staff, receipts
- Retail – bags, receipts, buttons for cashiers, signs and posters, t-shirts, tags on items, videos, seminars, employee training and messages, rental equipment
 - Lodging – staff, in-room information, in-house television channel, shuttle schedule and weather channel, labels for recycle bins in rooms, rest room doors (guest rooms and public), key cards

Mid-Term Goals and Actions

1. Replace all fixtures with low-flow, energy conserving ones and waterless urinals or composting toilets where appropriate.
2. Use no potable water for irrigation.
3. Install separate meters for workplace and residential buildings where feasible.
4. Investigate one or two Grand Canyon channels to be broadcast in lodging – one for weather and shuttle information and one with scenic and informative videos; both would include sustainability messages on steps within the Grand Canyon NP and ideas to take home.

Closing

At the conclusion of the charrette, Kate thanked the group for their hard work. She supported the ideas and said that she was glad to see that they ranged from the very practical and immediate to the more conceptual that could shape future planning efforts. She said that she looked forward to the report.

Several themes emerged during the charrette:

1. The Grand Canyon NP has already accomplished a great deal – this momentum should continue and the park should build on and promote its successes and lessons learned to visitors and other parks.
2. Interpretation is key - take-home messages to visitors can multiply the impact of the park's sustainability efforts.
3. Communication and collaboration are important – there are many sustainable activities that are being undertaken by one or two individuals in isolation; opportunities might be missed to get others involved.



Charrette participants listen and discuss goals