



# National Park Service



## Whole Building Commissioning

### Alaska Region

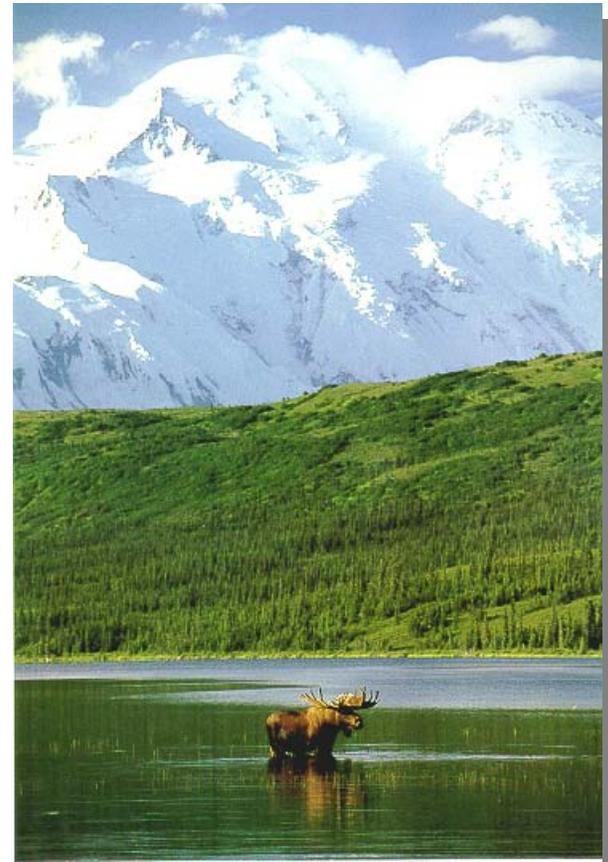


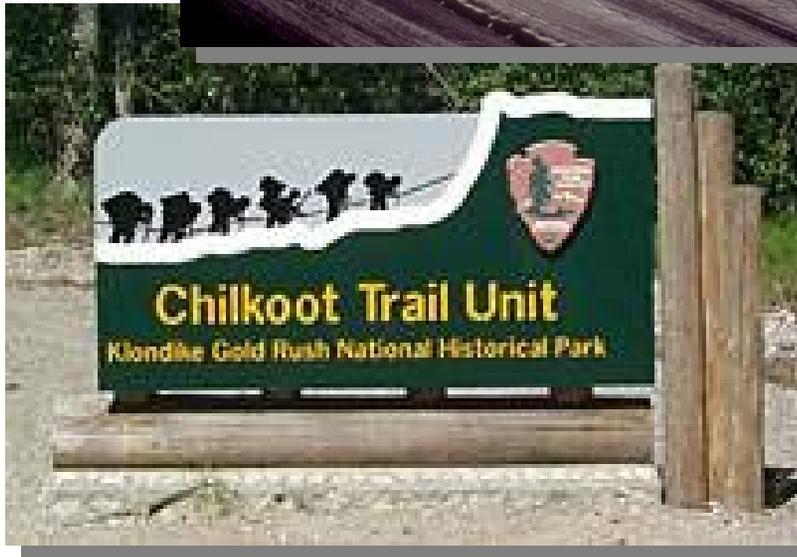
EXPERIENCE  
YOUR  
AMERICA

## Alaska National Parks

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### 15 National Park Units





## Alaska National Parks Facilities

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750 Buildings



- 150 Miles of Roads
- 50% of Operating Costs Relate to Maintenance and Energy

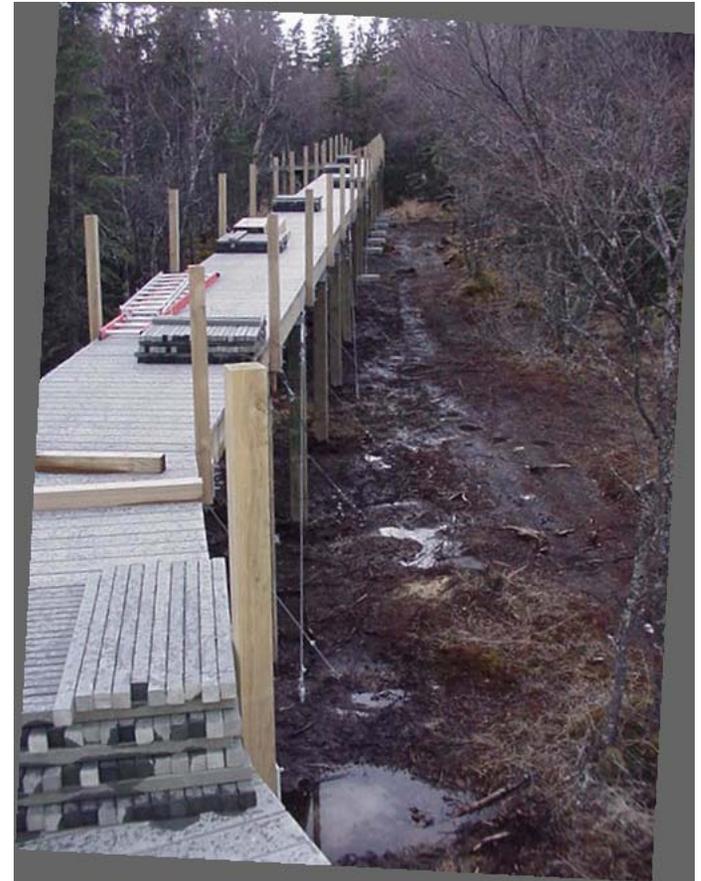


## What We've Been Doing

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- 10-15 million/year construction
  - buildings, roads, utilities

1 million/year in A/E work



## Recent or Current Projects

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- 70 +/- Million in Design and Construction
  - Denali Entrance Area Facilities (30,000k)
  - Denali Eielson Visitor Center (8,000K)
  - Glacier Bay Maintenance Facility (4,000K)
  - Wrangell-St. Elias Visitor Center/Headquarters and Ahtna Museum (8,000K)
  - Northwest Alaska Heritage Center (15,000k)
  - Sitka Visitor Center (3,000k)

## Wrangell-St. Elias NP Visitor Center

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## Northwest Arctic Heritage Center



## Sitka NHP Visitor Center

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# Glacier Bay NPP Maintenance Facility

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- Cold Climate Design Strategies
  - Alaska Craftsman Home Program
  - ASHRAE Sustainable Design Principles
- Select Renewable Energy Projects
  - PV (50+ systems)
  - Wind
  - Fuel Cell
  - Micro Hydro



## “Standard Design”

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- Good Insulation Package
- Optimum Orientation
- Controlled Ventilation
- High Performance Windows



- High Efficiency Heating Equipment
- Compact Fluorescent Lighting
- Locally Available Materials



## NPS Strategic Plan

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- Inform/ Educate Visitors
- Work with Communities
- Train Employees



## NPS Strategic Plan

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- Reduce Transportation Fuel Use
- Build with the Environment
- Reduce Energy Use
- Promote Renewables
- Protect Resources



## NPS Strategic Plan

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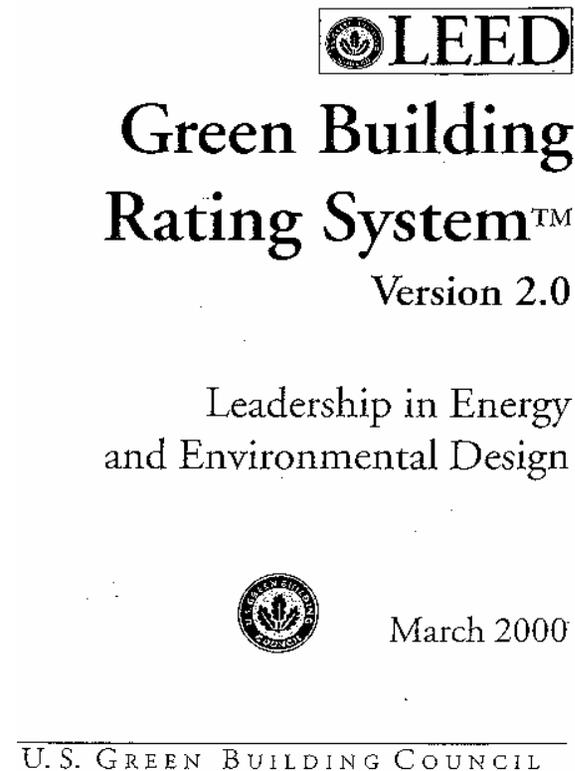
- Purchase Green Products
- Reduce Water Consumption
- Reduce Solid Waste Generation
- Hire Green Vendors (A/E)
- Partner with Concessioners
- Measure Compliance (LEED)



## LEED

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- Evaluation Criteria
  - site
  - water efficiency
  - energy and atmosphere
  - materials and resources
  - indoor environmental quality

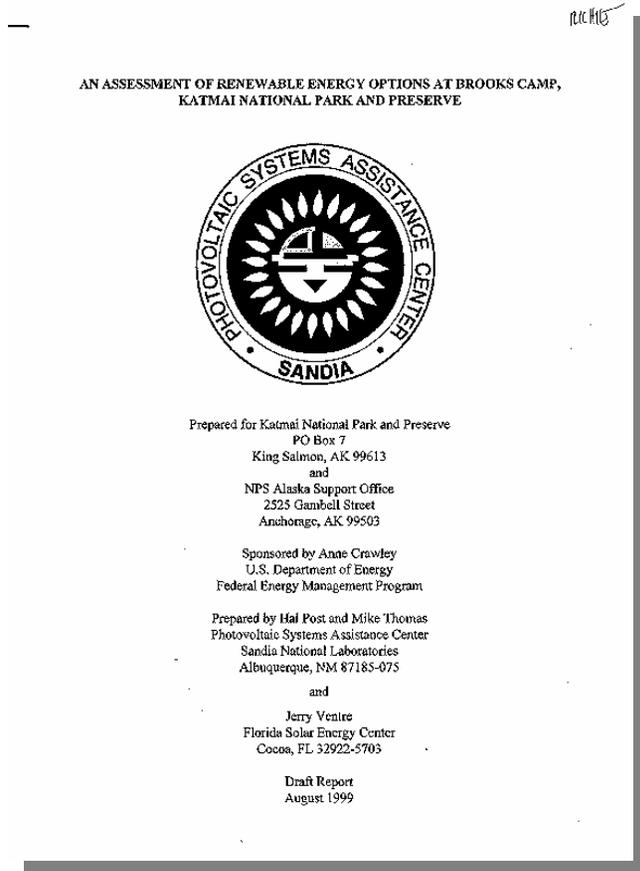




## FEMP Assistance

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- Katmai
  - Brooks Camp
- Yukon-Charley
  - Coal Creek Camp
- Wrangell-St.Elias
  - Kennecott
- Denali
  - Eielson VC/ Wonder Lake RS
  - Entrance Area





## Alaska Commissioning Initiative

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- Why commission?
  - LEED Prerequisite
  - High Facility Operating Costs
  - Limitations of trained staff
  - Lack of system support centers
  - Large upcoming projects



## Alaska Commissioning Initiative

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- How we began?
  - FEMP Grant for Denali
    - technical assistance
    - start up dollars (15k)
  - Allocation from Regional LIC funds
    - multi-year plan for design and construction



## Lessons Learning

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- Upfront Investment
  - .5% of net construction cost during Design
  - 1% of net during Construction
- Learning Curve for Design/Construction Contractors
- Start Early
- Focus Effort for Payback

## Entrance Area Visitor Facilities, Denali

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## Entrance Area Visitor Facilities, Denali

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## Denali Entrance Area

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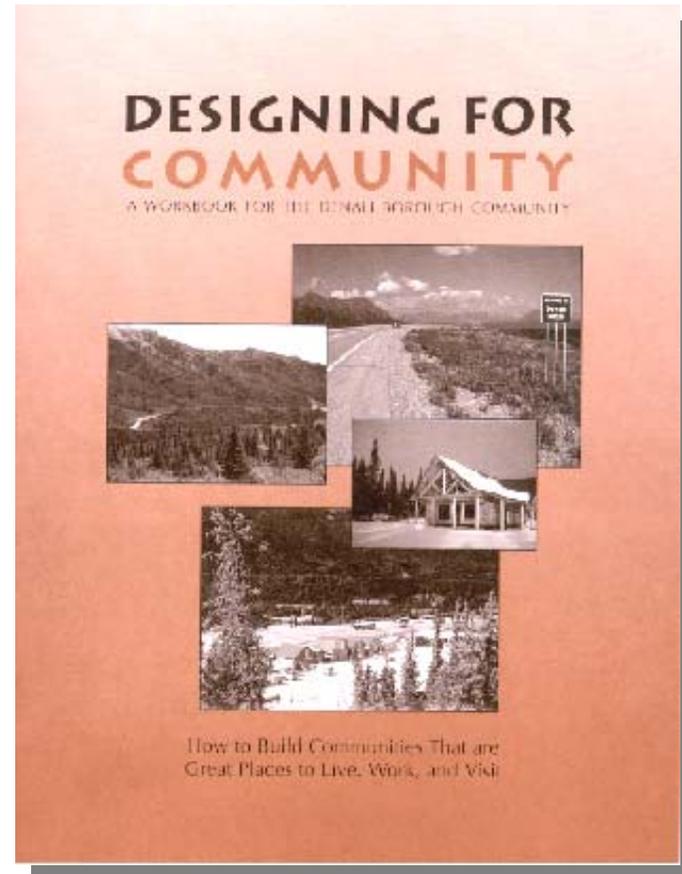
- Park Policies/Guidance Documents
  - General Management Plan 1986
    - Institutionalize Transit System
    - Promote South Side Development
  - Development Concept Plan 1997
    - Enhance “Frontcountry Non-commercial Opportunities
    - Provide “environmentally sustainable” facilities



- Greening of Denali (ENSAR, 11/00)
  - How we're doing
- Special Studies and Funding
  - Alternative Fuel Vehicles
  - Frontcountry Energy Evaluation
    - Fuel Oil to LPG to LNG
  - Daylighting Modeling
  - Energy Analysis
  - Building Commissioning



- Designing for Community Workshop
  - Planning Sustainable Communities
  - Green Building
  - Design Guidelines
  - Site Planning Charrettes



## Visitor Center Specific Guidance

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- Sustainable Design Goals in Design Contract
- LEED Evaluation Of Alternatives
- Green Design Goals (LEED Silver)
- Sustainable Design Workshop
- Construction Commissioning
- Leed Documentation



- Adaptively Re-use Existing Hotel
- Evaluate Use of Renewable Energy Technologies



- Value Based Decision Making
  - Capital Costs
  - Life Cycle Cycle Costs
- Enhance Transportation Systems



## Energy/Green Design Assistance and Funding

### – Entrance Area Design Assistance

- Energy and Daylighting Modeling
- LEED Documentation and Certification
- Whole Building Commissioning

### – Sustainable Design Exhibit

### – Alternative Transportation Funding

- Roads, Parking, Transit Facilities



## Summary

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- Institutionalize Sustainable Design Practices
  - Project Selection
  - Value Analysis
  - Approval of Design
  - Commissioning
  - Measurement Tools

