

Federal Aviation Administration  
National Park Service

Grand Canyon National Park  
Arizona



# NEPA Impact Analysis General Methodology

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# Impact Topics Evaluated in the EIS

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- **Based on issues and concerns received during the scoping process**
- **Topics presented at this meeting**
  - Soundscape, wildlife, special-status species, wilderness, visitor use and experience, cultural resources, socioeconomics, and others



# Framework for Evaluating Impacts

- **Evaluation includes**
  - Context
  - Duration, and
  - Intensity of effects
- **Using a combination of approaches per agency guidelines**



# Impact Intensity

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- **Intensity levels may vary by impact topic**
  - 2 levels: determination of significant effect
  - 4 levels: negligible, minor, moderate, and major effects
- **Impairment**



## What is Impairment?

- **NPS requirement in evaluation of effects to natural and cultural resources**
- **Major adverse effects can result in impairment of those resources that are fundamental to fulfilling the park's purpose**



## Evaluating Impacts

- **Methodologies designed to address each impact topic**
- **Methods based upon**
  - Scientific literature
  - Resource experts
  - Best available data, and
  - Best professional judgment



# Evaluating Impacts

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- **Impacts evaluated in terms of the intensity, duration, and frequency of noise based on modeling results**
- **Quantitative and qualitative or a combination of approaches**
- **Methodologies currently being developed by FAA and NPS**



# Evaluating Impacts

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- **Cumulative Effects**

Incremental impact of action plus other past, present, and future actions

Noise from other aircraft

Other human activities

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# Natural Resources

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# Wildlife and Special-status Species

- Focus on species most likely to be affected by air tours

- General wildlife

Birds – golden eagle,  
peregrine falcon, other  
raptors

Mammals – bighorn sheep,  
mule deer





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# Wildlife and Special-status Species

- **Special-status species**
  - Mexican spotted owl
  - California condor
  - Bald eagle
  - Western yellow-billed cuckoo
  - Desert tortoise
- **Consultation with USFWS and ADGF**

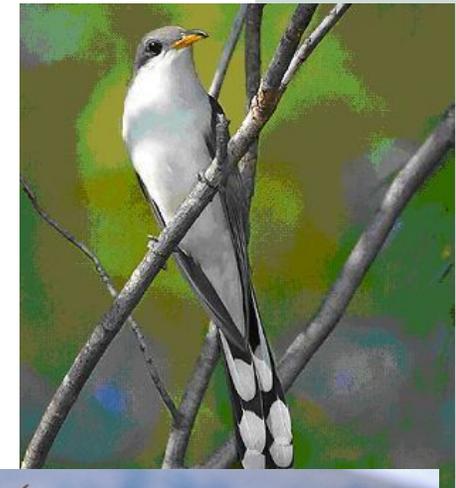




# Impact Analysis Overview

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- Evaluating noise and presence of air tour aircraft on
  - Abundance
  - Distribution
  - Behaviors
  - Habitat use
- Percent of population and/or habitat affected and
- Time of year when effects are occurring





# Wilderness

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- **Inside Park**

Proposed wilderness

94% of the park

- **Outside Park**

Managed by the USFS and BLM

Saddle Mtn., Kanab Creek, Mt. Trumbull,  
Mt. Logan





# Wilderness

- **Wilderness must be managed in a manner that leaves it unimpaired for future use and enjoyment as wilderness.**
- **Wilderness values**
  - Affected primarily by the forces of nature  
... imprint of man's work substantially  
unnoticeable**
  - Opportunities for solitude**
  - Opportunities for primitive recreation**



# Impact Analysis Overview

- Noise and visual impact in wilderness areas
- Amount of wilderness area affected

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# Cultural Resources/ Ethnographic Resources

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# What are ethnographic resources?

- Ethnographic resources at Grand Canyon are cultural and natural features of significance to Native American peoples traditionally affiliated with the land



## What are TCPs?

- Some ethnographic resources also may be Traditional Cultural Properties (TCPs) that are eligible for inclusion in the National Register of Historic Places



## Why consider TCPs?

- Section 106 of the NHPA requires evaluation of effects on National Register-eligible properties (e.g. TCPs)
- Consistent with prior assessments, TCPs will be discussed in this environmental document



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## Consideration of TCPs

- **Native Americans have a strong concern for privacy and protection of TCPs; this document will not include:**

**Site-specific descriptions of cultural sites or**

**Details of traditional practices**





# Government-to-Government Consultation

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- Consultation has included affiliated tribes identified during the scoping process
- Consultation among FAA, NPS, and affiliated tribes is on-going and will continue in the future



# Ethnographic Issues and Concerns

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- Quiet and privacy are important for proper conduct of Native Americans' traditional practices and religious ceremonies
- Impacts can be auditory or visual



# Examples of Potential Noise Impacts

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- Noise can interrupt or intersect prayers, chants, songs, or other sacred activities
- Noise can impact the setting and integrity of sacred places



# Examples of Potential Visual Impacts

- Aircraft entering practitioners' viewshed may create a visual distraction during on-going ceremonies, prayers, etc.
- Traditional practitioners may feel a sense of intrusion when flight passengers are able to look down on private religious or ceremonial activities



## Potential Indirect Effects

- Flights over sacred sites could inadvertently reveal specific locations of sites, leading to later site desecration or loss
- If practitioners are unable to conduct particular ceremonies or prayers at a particular time and in a particular place, the prayers may not have the desired effect



## Impact Analysis Overview

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- **TCPs identified in the 2000 EA will be used as the basis for analysis because they are representative of the issues and were agreed upon during previous consultation**
- **Continuing consultation will reconfirm areas of special ethnographic concern and identify any new concerns**

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# Ground-Based and Air Tour Visitor Use and Experience

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# Visitor Use and Experience Issues

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- Providing a diverse range of experiences while protecting park resources
- Protecting solitude, natural conditions, primitiveness, remoteness, and inspirational qualities of the park and
- Providing a quality air tour experience while protecting park resources



## Two Separate User Groups Affected

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- Effects of aircraft noise and visual impacts on ground-based visitors will be evaluated
- Effects on air tour visitors will also be addressed



# The Park Manages Ground-based Visitor Experiences in Three Zones

- Developed
- Corridor (trails)
- Proposed Wilderness

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# Developed Zone

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# Corridor Zone (trails)

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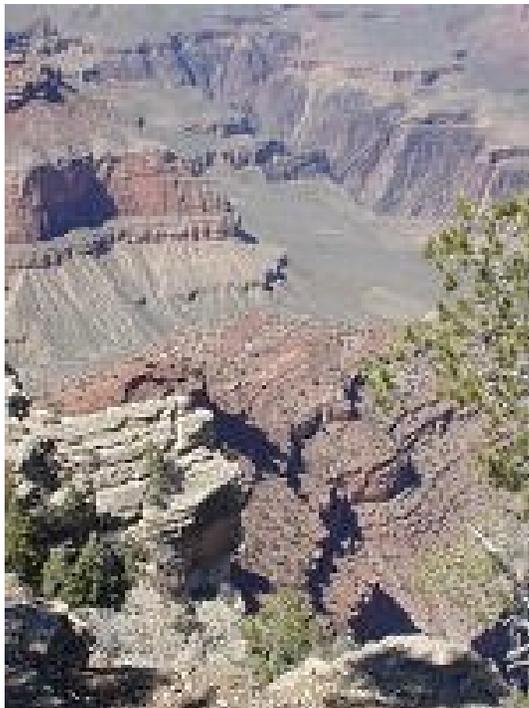
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# Proposed Wilderness

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# Noise Can Potentially Affect Visitor Experience

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- Park visitors indicate that natural quiet is an important element of their visit
- Unwanted or inappropriate sounds can affect the visitor experience



# Impact Analysis Overview

## Ground-based Visitor

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- **Analysis will consider noise and visual impacts, including changes in opportunities to enjoy**

Natural soundscape

Outstanding scenic views

Interpretive programs



# Impact Analysis Overview Ground-based Visitor

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- Effects may be evaluated by incorporating the results of noise modeling to determine
  - Quantity of visitors affected in the three management zones
  - Level of impacts at specific high-value sites



# Impact Analysis Overview

## Air Tour Visitor

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- **Effects on air tour visitors will be evaluated by considering**

**Important scenic features viewed**

**Duration, timing, and frequency of tours**

**Potential changes in costs of air tours**

**Quality of the air tour experience**

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# Socioeconomics





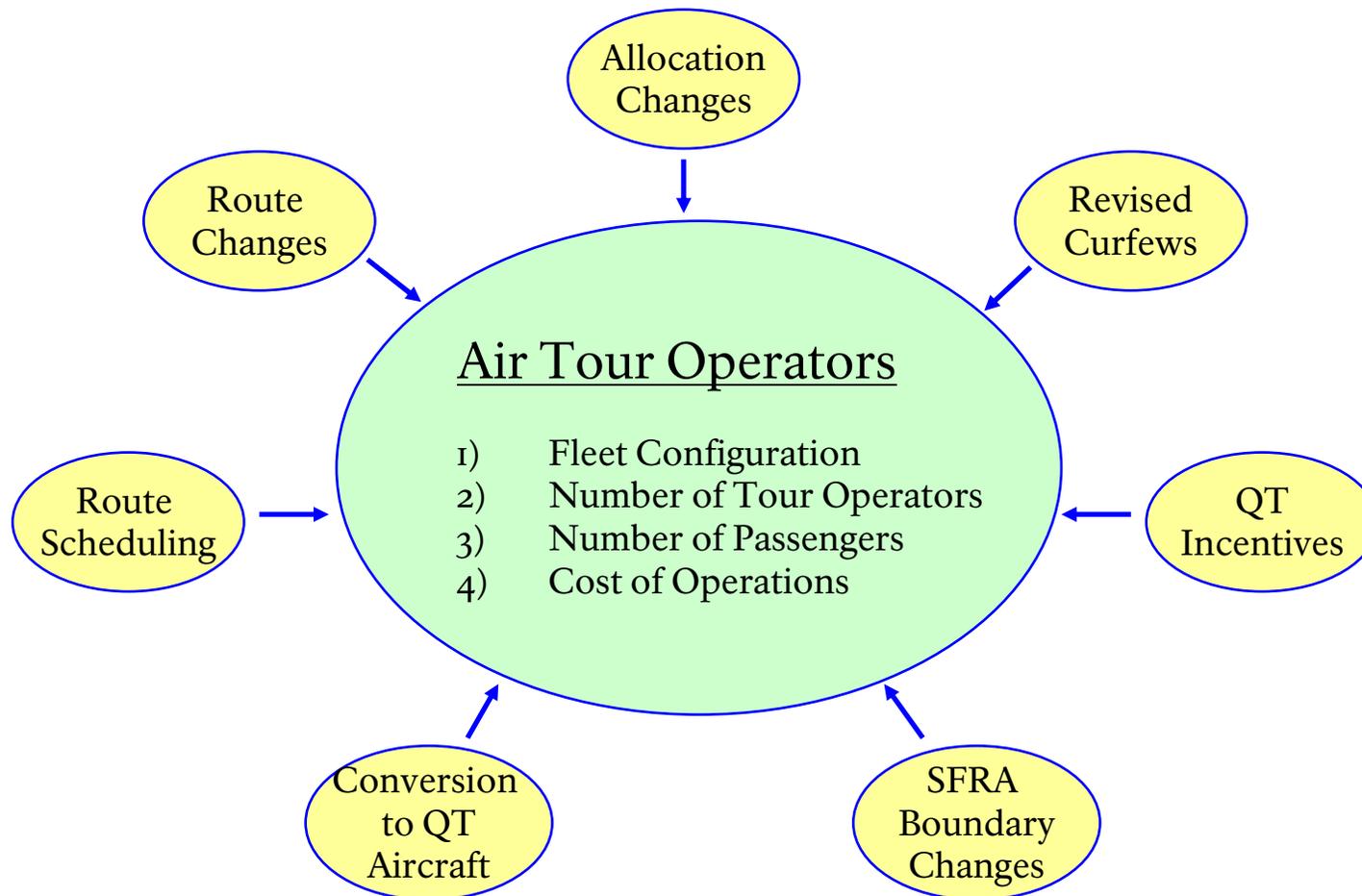
# Impact Analysis Overview

- Primary Parties Affected**
- Air Tour Operators
  - Tribal Groups and Reservations
- Secondarily Affected Groups**
- Gateway Communities, Region
  - Other Interested Parties



## Effects on the Air Tour Industry

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## How Will We Evaluate the Impacts?

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### Fleet Configuration

- Divergence from current plan
- Capital requirements
- Ability to obtain aircraft
- Timely ability to raise capital
- Financial impact of increased debt service
- Passenger volume and load factor

### Number of Tour Operators

- Percentage change
- Passenger volume
- Ability to market tour
- Ability to market company
- Coordination with ground tours
- Change in operating costs

### Number of Passengers

- From tour operation numbers
- Marketability of tour
- Passenger satisfaction
- Price
- Total revenues

### Costs of Operations

- Fleet configuration
- Length of route
- Load factor
- Total expenses



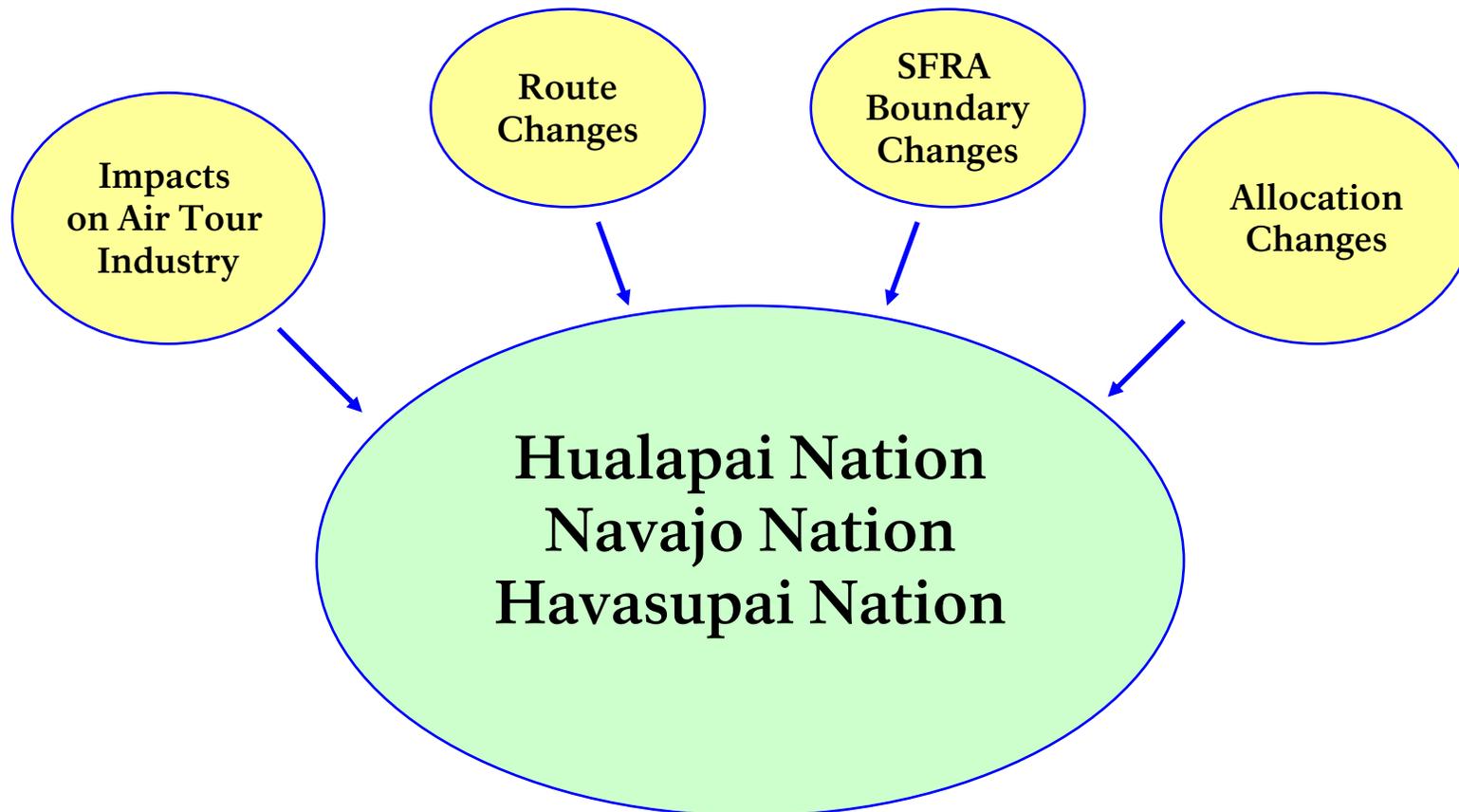
## Key Measures of Effect

- Number of tour operations
- Number of passengers
- Total revenue
- Employment and compensation
- Financial viability of companies and industry



## Effects on Native American Lands

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## How Will We Evaluate the Impacts?

### Hualapai

- Operator fees
- Tourist access
- Visitor satisfaction
- Employment
- Tribal revenues
- Tribal enterprises
- Cattle and ranching

### Havasupai

- Tribal member access
- Visitor access
- Visitor satisfaction
- Employment
- Tribal revenues

### Navajo/ Cameron Chapter

- Operator fees
- Employment
- Tribal revenues
- Cattle and Ranching

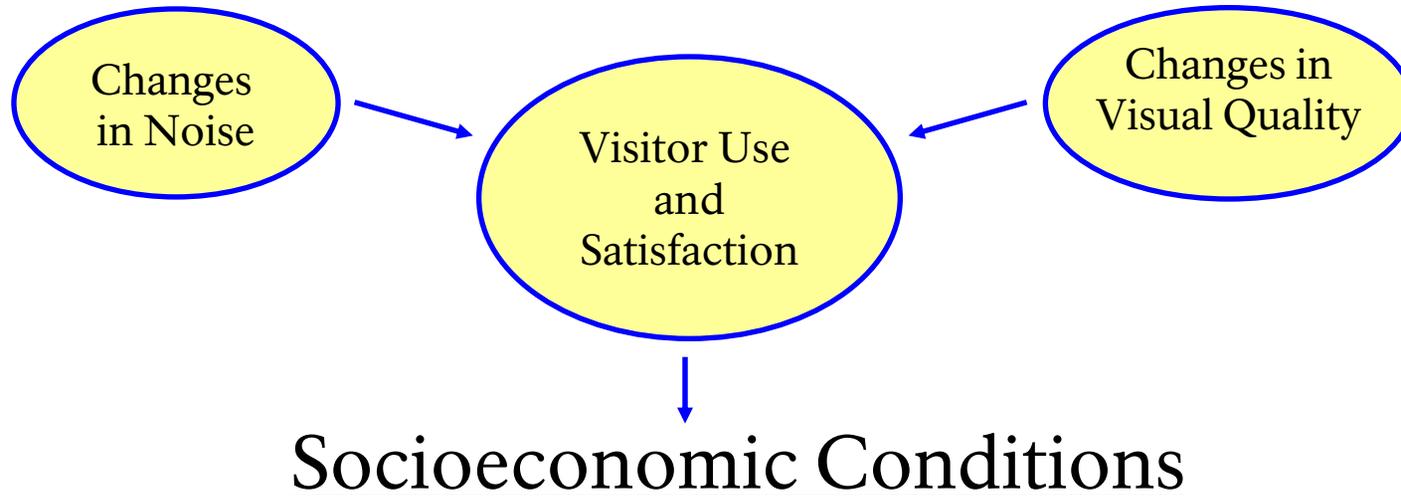


## Key Measures of Effect

- Tribal economies
- Reservation/Chapter budget
- Employment and compensation



## Socioeconomic Effects of Noise Reduction



- Regional Economy
- Intrinsic Values
- Non-Use Values



## How Will We Evaluate the Impacts?

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<u>Regional Economy</u>	<u>Intrinsic Values</u>	<u>Non-Use Values</u>
<ul style="list-style-type: none"><li>▪ Number of days in region</li><li>▪ Regional expenditures</li><li>▪ Secondary effects</li><li>▪ Total dollar impact</li></ul>	<ul style="list-style-type: none"><li>▪ Intrinsic values beyond expenditures</li><li>▪ Total dollar values</li></ul>	<ul style="list-style-type: none"><li>▪ Fundamental perception of Park</li><li>▪ Existence or non-use values</li></ul>



## Key Measures of Effect

- **Number of days in Grand Canyon Region**
- **Total dollar expenditures**
- **Intrinsic and non-dollar values**



# Primary Data Sources

## Air Tour Industry

- Past studies by FAA and NPS
- On-going FAA databases
- Surveys of air tour operators

## Tribal Effects

- Past studies by FAA and NPS
- Interviews with Tribal representatives
- Other studies of Tribal activities

## People and Noise

- Noise impact results
- Visitor use and satisfaction results
- Studies from other Parks

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# Other Topics

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## Other Topics

- **Environmental Justice**

Disproportionate effects on minority or low-income populations

- **4F Evaluation**

Requirement of DOT

Assess the effects of alternatives on a public park, recreation area, wildlife or waterfowl refuge, or any significant historic site

- **Park Operations**