An Ecosystem Approach to Developing Infrastructure

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Presentation Topics

- Integrate Planning
- Eco-Logical Approach
- Landscape Conservation other Agencies
Transportation Goals

- Efficient Transportation
- Sustainable Infrastructure
- Sustainable Ecosystems
- Quality of Life
  - Livability
SAFETEA-LU

- SAFETEA-LU and corresponding regulations specify that the long-range transportation planning process is to include environmental priorities and functions and also includes a planning factor to “...protect and enhance environment, promote energy conservation and improve quality of life” and has been expanded to include “...promote consistency between transportation improvements and State and local planned growth and economic development patterns” [23 CFR 450.206 and 450.306].
Process Objectives

- Efficient and Effective
  - Timely
  - Cost Effective
  - Predictable
  - Transparent
  - Logical Decisions
Program Review

- Planning
- Project Development (NEPA)
- Design
- Permitting
- Construction
- Maintenance
# Transportation Development

## System Planning
- Regional perspective
- Multiple projects

## Transportation Systems Planning & Programming
- Project locations
- Conceptual design

## Resource Planning Processes
- Land use
- Watershed
- Habitat
- Cultural resources

## Resource Project-Level Decisions
- Local land development permits
- State, Federal environmental permits

## Transportation Project Development
- Environmental analysis and permitting
- Right-of-way
- Engineering design

## Project-Level Decision
- Individual projects
- Specific area
Transportation Planning Requirements: Environmental Considerations in Planning

- Environment planning factors
- Consideration of environmental mitigation
- Consultation with resource agencies, including consideration of resource maps and inventories
- Input in Participation Plans
Integrated Planning

A collaborative process that combines transportation planning with federal, tribal, and local land use and cultural and natural resource planning.
Transportation Development

System Planning
- Regional perspective
- Multiple projects

Transportation Systems Planning & Programming
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Resource Planning Processes
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Planning and Environment Linkages

Transportation Project Development
- Environmental analysis and permitting
- Right-of-way
- Engineering design

Resource Project-Level Decisions
- Local land development permits
- State, Federal environmental permits

Project-Level Decision
- Individual projects
- Specific area

격관문 번역과 기타 절차의 일반적인 이해도와 관련된 내용을 아래에 입력문을 추가하여 원문과 일치하도록 수정했습니다.

시스템 계획
- 지역적 관점
- 여러 개의 프로젝트

운송 시스템 계획 및 프로그래밍
- 프로젝트 위치
- 개념적 설계

자원 계획 과정
- 땅 사용
- 수문지
- 환경
- 문화적 자원

계획 및 환경 링크

운송 프로젝트 개발
- 환경 분석 및 허가
- 라이트오브웨이
-ingen무역 설계

자원 프로젝트 수준 결정
- 현장 개발 허가
- 주, 연방 환경 허가
Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects

Multi-Agency Initiative and Publication
Eco-Logical: Approach to Solutions

1. Inter-agency Steering Team* & strategy

2. Develop/Publish Eco-Logical framework, with signatures from all agencies’ HQs

3. Engage participants at all levels, both public & private sector

4. To develop & implement strategies

* (Inter-agency team: 8 federal, 3 state trans, 1 toll agency)
Ecosystem Approach

- Integrated Planning
- Performance Measurement
- Mitigation Options
Eco-Logical: Integration

Integrates across:

- Multiple projects and sites
- Agencies and levels
- Geographic regions (that utilize natural boundaries)
- Multiple resources
- Multiple jurisdictions
- Public & private sectors

Integrated Map: Trans Plan, Urban areas, Natural resource priorities & areas
A Systems Perspective

Ecosystem as the foundation

Land Use System
Transportation System
Water Resources System, example
Other Natural, Cultural Resource Systems

Integrated Outcomes

support multiple benefits & improve quality of life, Based on Ecosystem Foundation
Use Interdisciplinary Participation

Ecosystem Based
Integrated Outcomes

land development proposal
road improvement proposal
legally protected wetlands
natural and cultural resource systems
Focus: Integrating Information, People, & Decisions for:

Infrastructure, Transportation Decisions & Projects

Community Values, Socio-Economics, Prime Farmland, Land Use

Informed Decisions, Integrated Outcomes, Quality of Life

Agency Coordination, Public Participation

Wildlife, Fish, Ecology, Wetlands, Floodplains, Soil, Water

Contaminants, Haz Waste

Cultural & Tribal Resources, 4(f), Parks, Public & Private Lands

Air Quality, Noise, and Other Issues
Eco-Logical: Solutions

- *Fulfill relevant statutes*

- *Healthy ecosystems support sustainable economies and communities*

- *Useful at any time in planning & project development and delivery*

- *Non-prescriptive: Framework that can be adapted to integrate information, decisions, people*
Eco-Logical Approach to Improve:

**Predictability** – Commitments honored by all agencies

**Connectivity** – Contiguous areas to support multiple benefits and reduce fragmentation

**Conservation** – Larger areas, sustain and adapt into long-term

**Transparency** – Public involvement at all key stages, reduces unknowns
Integrated Planning

A collaborative process that combines transportation planning with federal, tribal, and local land use and cultural and natural resource planning.
SHRP 2 Project C02 is developing a performance measurement framework, emphasizing environmental and community measures, that informs the collaborative decision-making process.
C06A Goals & Purpose

- Earlier environmental consultation and decision making
- More strategic and effective conservation and restoration investments/mitigation
- More efficient processes
DRAFT Integration Framework

- Step 1: Build & Strengthen Collaborative Partnerships and Vision
- Step 2: Integrate Ecosystem Plans
- Step 3: Create Regional Ecosystem Framework
- Step 4: Assess Transportation Effects
- Step 5: Establish & Prioritize Ecological Actions
- Step 6: Develop Crediting Strategy
- Step 7: Develop Agreements
- Step 8: Implement Agreements
- Step 9: Monitoring and Adaptive Management
Landscape Conservation Approaches

- Different Agencies
- Different Names
- Similar Approaches
Systems Perspective

- Landscape Conservation
- Ecosystem Conservation
- Watershed Conservation
Strategic Habitat Conservation

- Department of Interior
  - USFWS, USGS,
- Strategic Habitat Conservation is a structured, science-driven approach for making efficient, transparent decisions about where and how to expend resources for species, or groups of species, that are limited by the amount or quality of habitat. It is an adaptive management framework integrating planning, design, delivery and evaluation.
Strategic Habitat Conservation
Five Key Principles

- Biological Planning (setting targets)
- Conservation Design (developing a plan to meet the goals)
- Conservation Delivery (implementing the plan)
- Monitoring and Adaptive Management (measuring success and improving results)
- Research (increasing our understanding)
Landscape Conservation Cooperatives

- 1. Appalachian
- 2. California
- 3. Desert
- 4. Eastern Tallgrass Prairie and Big Rivers
- 5. Great Basin
- 6. Great Northern
- 7. Great Plains
- 8. Gulf Coast Prairie
- 9. Gulf Coastal Plains and Ozarks
- 10. North Atlantic
- 11. North Pacific
- 12. Peninsular Florida
- 13. Plains and Prairie Potholes
- 14. South Atlantic
- 15. Southern Rockies
- 16. Upper Midwest and Great Lakes
- 17. Aleutian and Bering Sea Islands
- 18. Arctic
- 19. Northwestern Interior Forest
- 20. Western Alaska
- 21. Pacific Islands

Unclassified

Albers Equal Area Conic
NAD83
Produced by FWS, RTM, Denver, CO
Map Date: 03162010
Open Space

- USDA Forest Service
- Cooperating across boundaries to sustain working and natural landscapes
- to identify how to best help conserve open space, with an emphasis on partnerships and collaborative approaches.
CWA Section 404 Compensatory Mitigation Rule

- US Army Corps of Engineers
- US Environmental Protection Agency
- 10 April 2008

- Watershed Approach
- Compensatory Mitigation of Waters of the US
Green Infrastructure Approach

- Green Infrastructure
  - Woodlands, Streams, Grasslands,…

- Gray Infrastructure
  - Roads, Buildings, …
Green Infrastructure Approach

- Green infrastructure is strategically planned and managed networks of natural lands, working landscapes and other open spaces that conserve ecosystem values and functions and provide associated benefits to human populations.
Green Infrastructure

![Diagram of Green Infrastructure Network Components](image)
Landscape Conservation

- Wildlife Habitats
- Biodiversity
- Clean Water
- Clean Air
- Climate Change
- Food Production
- Recreation
- Flood Control
- Timber Production
- Jobs
Landscape Conservation

- Rapidly Changing Land use
- Shrinking Resources
- Climate Change
Contact Information

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