

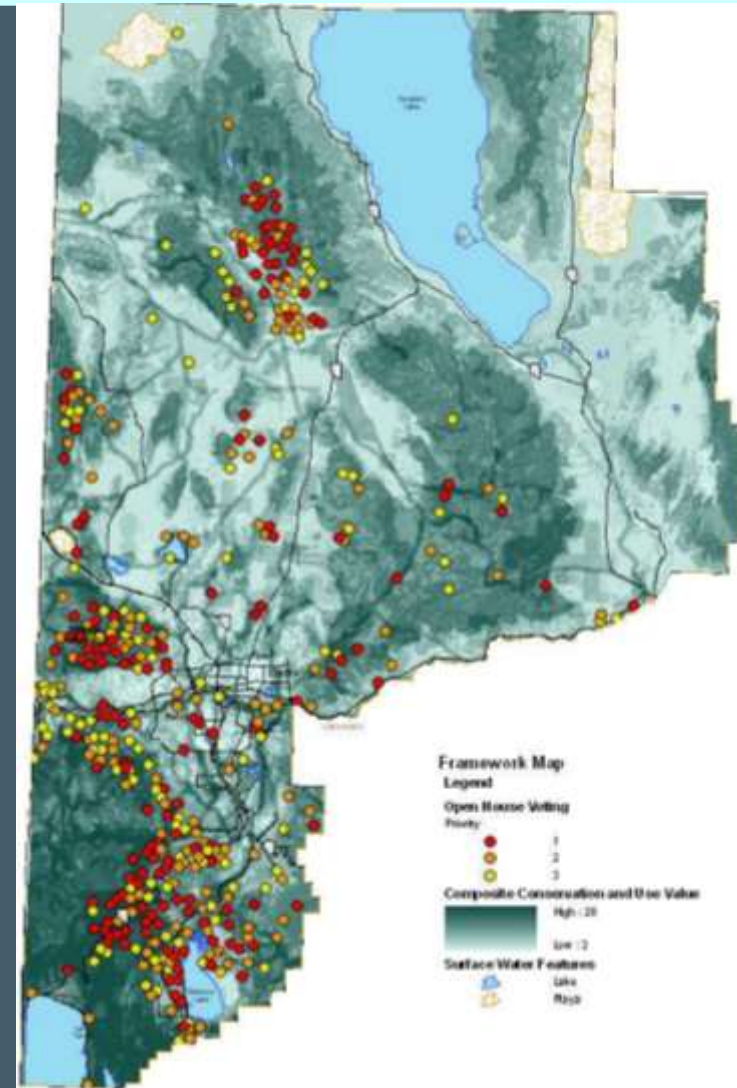


Ecosystem Services and Open Space Planning

Idaho APA Conference
October 2010

Topics

- Measuring the Environment
- Ecosystem Services
- Tradable Market Systems
- Washoe County Example



Developing a Measure

Measurement is a persistent challenge

- Lack of integration
- Inconsistent protocols
- Difficulty sharing

How do we know we've done well?



Courtesy: Memotions @ Flickr

Parametrix

Developing a Measure

US Forest Service

USFWS

Corps Jurisdiction

Local Rules:
Floodplain, etc



Ecosystem Services

It is impossible to devise effective environmental policy unless it is based on sound scientific information... In particular, there has never been a comprehensive global assessment of the world's major ecosystems.

~Secretary General Kofi Annan



Ecosystem Services

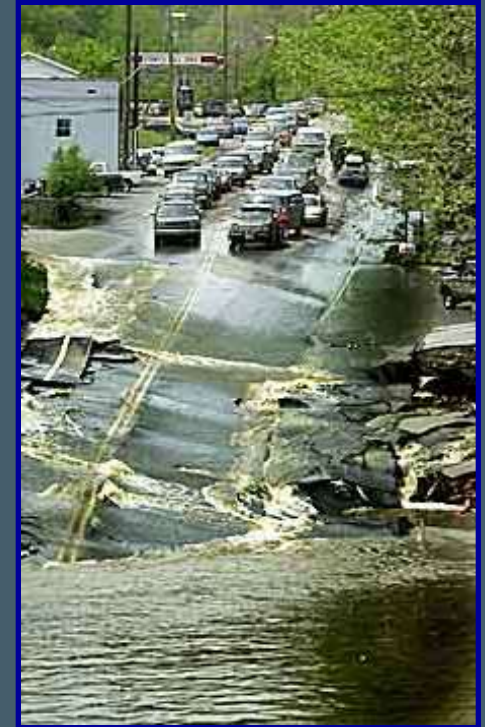
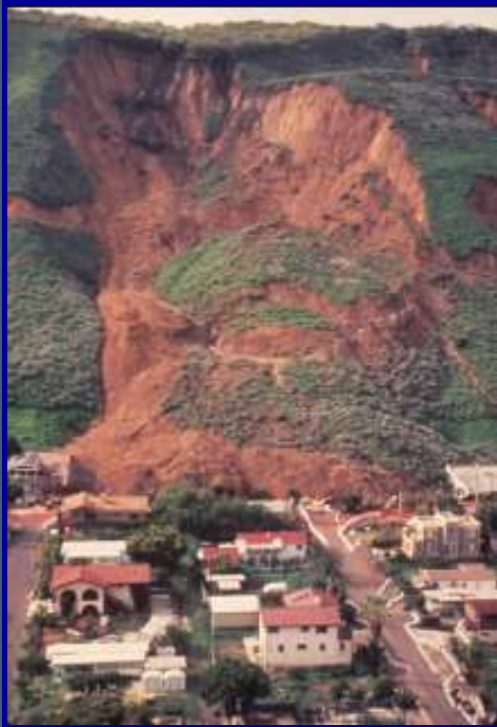
Ecosystem Services Defined:

The goods and services provided by our environment that communities rely on to be healthy, prosperous and safe

Ecosystem Services

The ecosystem performs functions we depend on for survival and quality of life

If those functions are lost, we must replace them if we can



Ecosystem Services

Replacement of ecosystem services is not optional, although how we replace them is . . .



Ecosystem Services



Ecosystem Services



Ecosystem Services



Performance of Functions



Natural Area

Restored Natural Area

Mimicking Natural Systems
(e.g. Constructed Wetland)

Modified Natural
(e.g., Green BMPs)

Integrated Non-Natural
(e.g., Green roof)

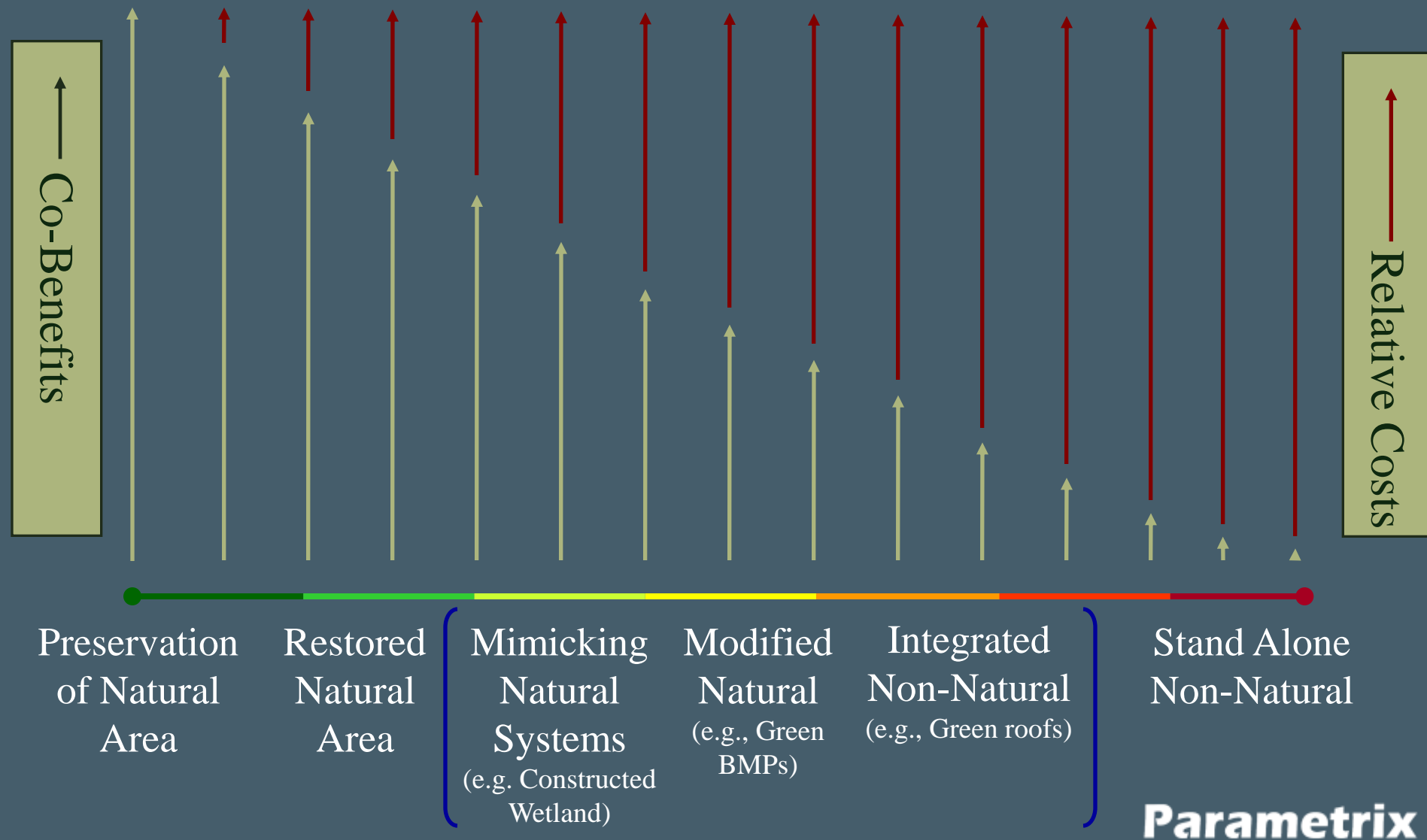
Technological Solution

Benefit provided solely through natural process

Benefit provided through mix of technology and natural processes

Benefit provided solely through technology

Performance of Functions



Ecosystem Services

CONSTITUENTS OF WELL-BEING

ECOSYSTEM SERVICES



Source: Millennium Ecosystem Assessment

Tradeable Markets

Young Creek Bridge

- Combine Clear Measure
- Integrate with Services
- Create Tradable Options



Courtesy: Congaman @ Flickr

Nature of Goods

Consumption or Rivalness

High

Low

Excludability or Control
High
Low



Once its eaten.... its eaten
No one controls access — *yet*.
Access and use is controlled.
No one can control the view
Use by one person does limit
Use by one person does not
Everyone can enjoy it
impede other users — *mostly*

Nature of Goods

Consumption or Rivalry

High

Low

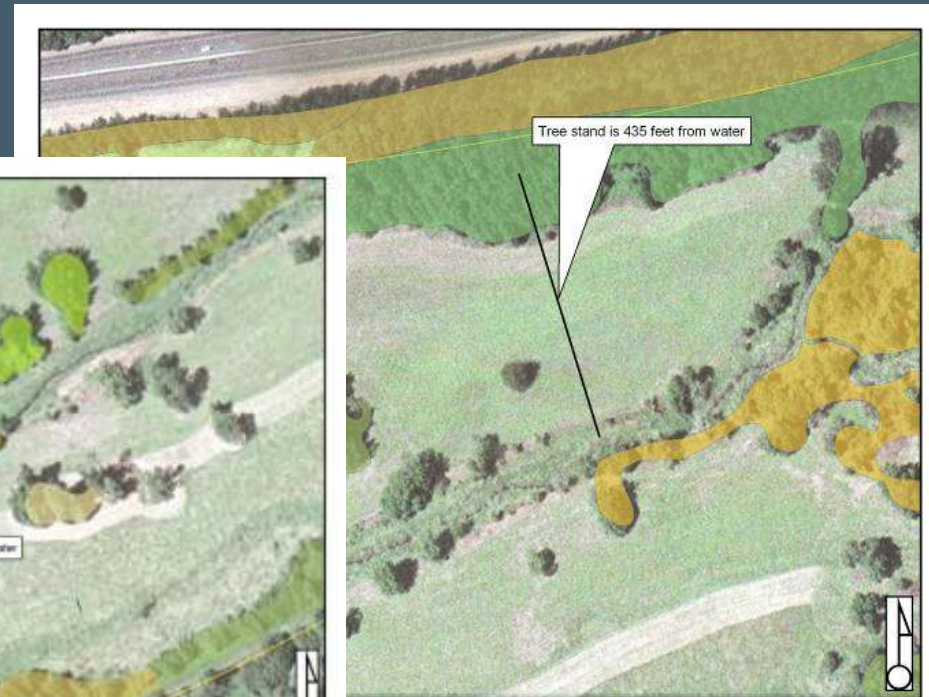
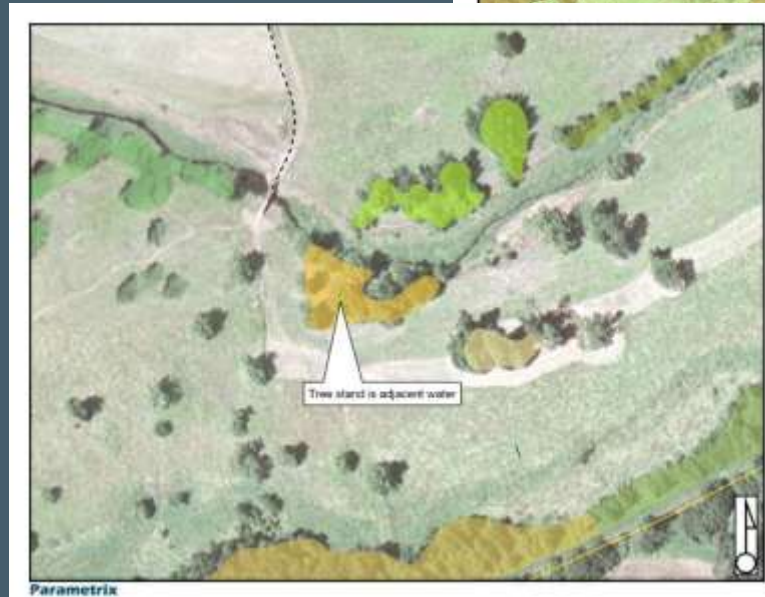
Exclusion or Control
High
Low

Private Goods	Toll Goods
Common Pool	Public Goods



Dimensions of Credits

- Type: Quality or Integrity
- Spatial: Extent or Applicability
- Time: Lifespan of Credit



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Example of Measurement

PRIMARY INDICATORS

Secondary/Supporting Indicators

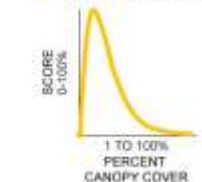
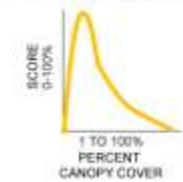
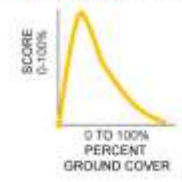
PERCENT OF NON-NATIVE SPECIES GROUND/CANOPY COVER SCORE

Herbaceous Ground Cover + Shrub Canopy Cover + Tree Canopy Cover
3 (Number of supporting indicators)

Herbaceous Ground Cover

Shrub Canopy Cover

Tree Canopy Cover



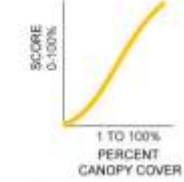
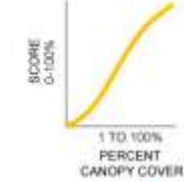
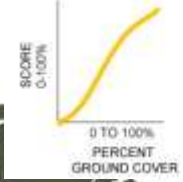
NUMBER OF NATIVE SPECIES SCORE

Herbaceous Species + Shrub Species + Tree Species
3 (Number of supporting indicators)

Herbaceous Species

Shrub Species

Tree Species



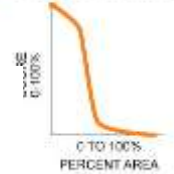
SNAGS SCORE



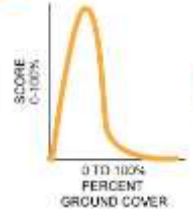
DISTANCE TO WATER SCORE



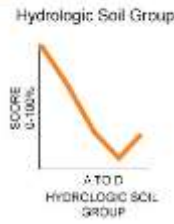
SOIL DISTURBANCE SCORE



BARE GROUND



PERMEABILITY SCORE



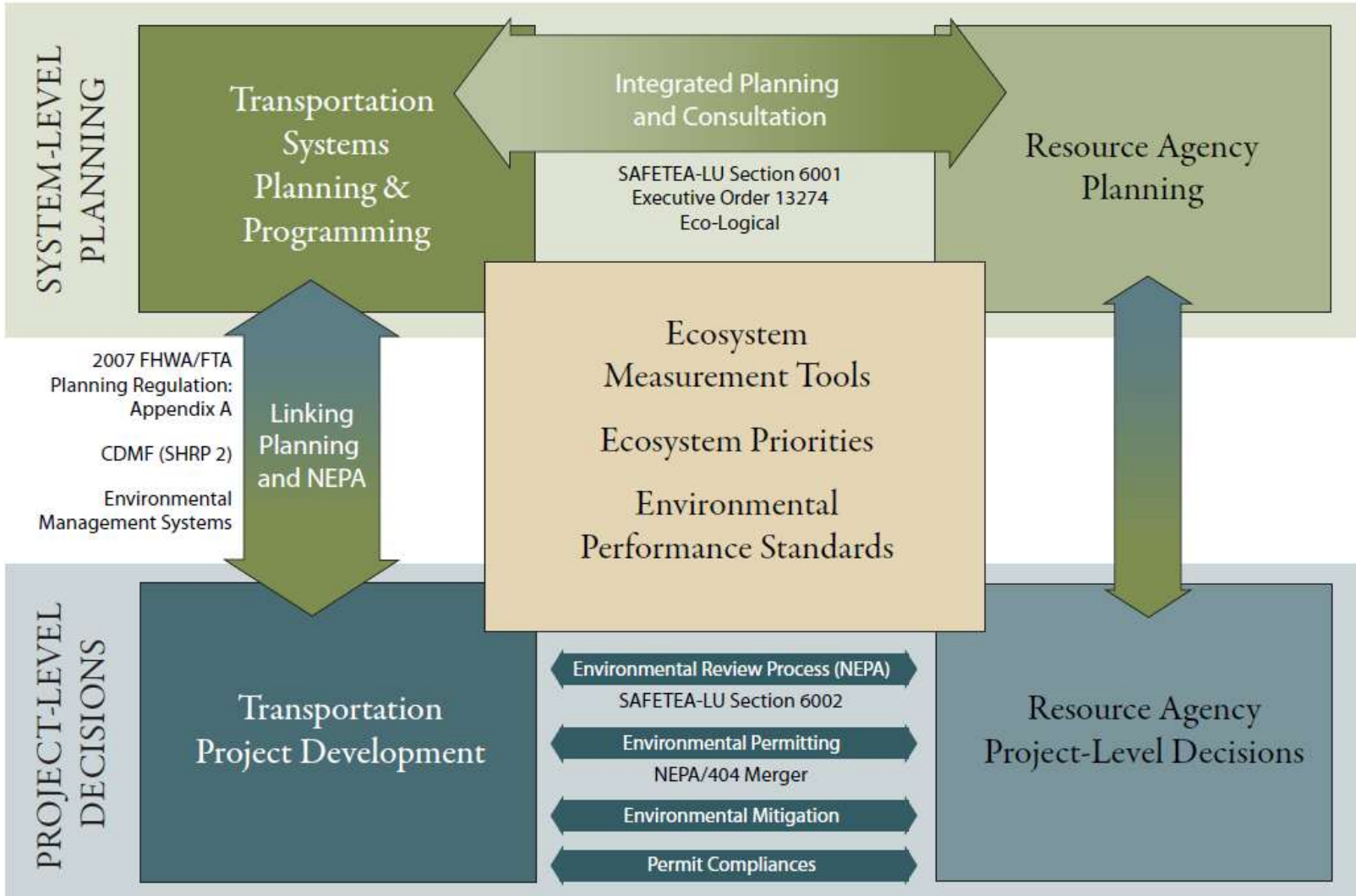
Function =

Distance to Water + Soil Disturbance + Non-Native Species + Native Species + Bare Ground + Snags + Permeability

7 (Number of Indicators)



Integration Example





Looking Ahead

- International Initiatives:
 - UN, World Business Council, Business for Social Responsibility
- Federal Initiatives:
 - DOI, USDA, USGS, USFS, and on and on
- Local:
 - Open space and land use planning

Washoe County Open Space and Natural Resource Plan



Idaho APA Conference
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Key Points

- Ecosystem approach to land management
- Outcomes based approach
- New method for decision making
- Landscape vs. site specific systems



Two Overarching Goals

- Institutionalize the concept of ecosystem services within the region
- Manage open space and natural resources for “no net loss” of ecosystem services



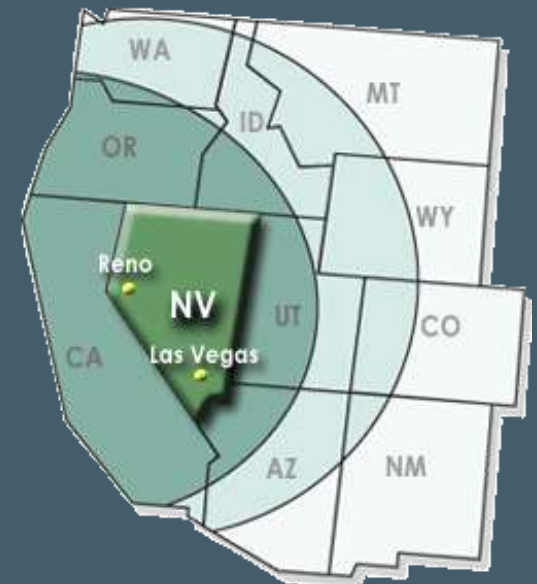
Why Plan? Timing and Opportunities

The Region is Growing

- A testimony to the Region's strength
- A challenge as more call the Region home

Open Space & Natural Resources at Risk

- Conflicts are growing
- Costs are growing
- Balance between conservation and development is more complex

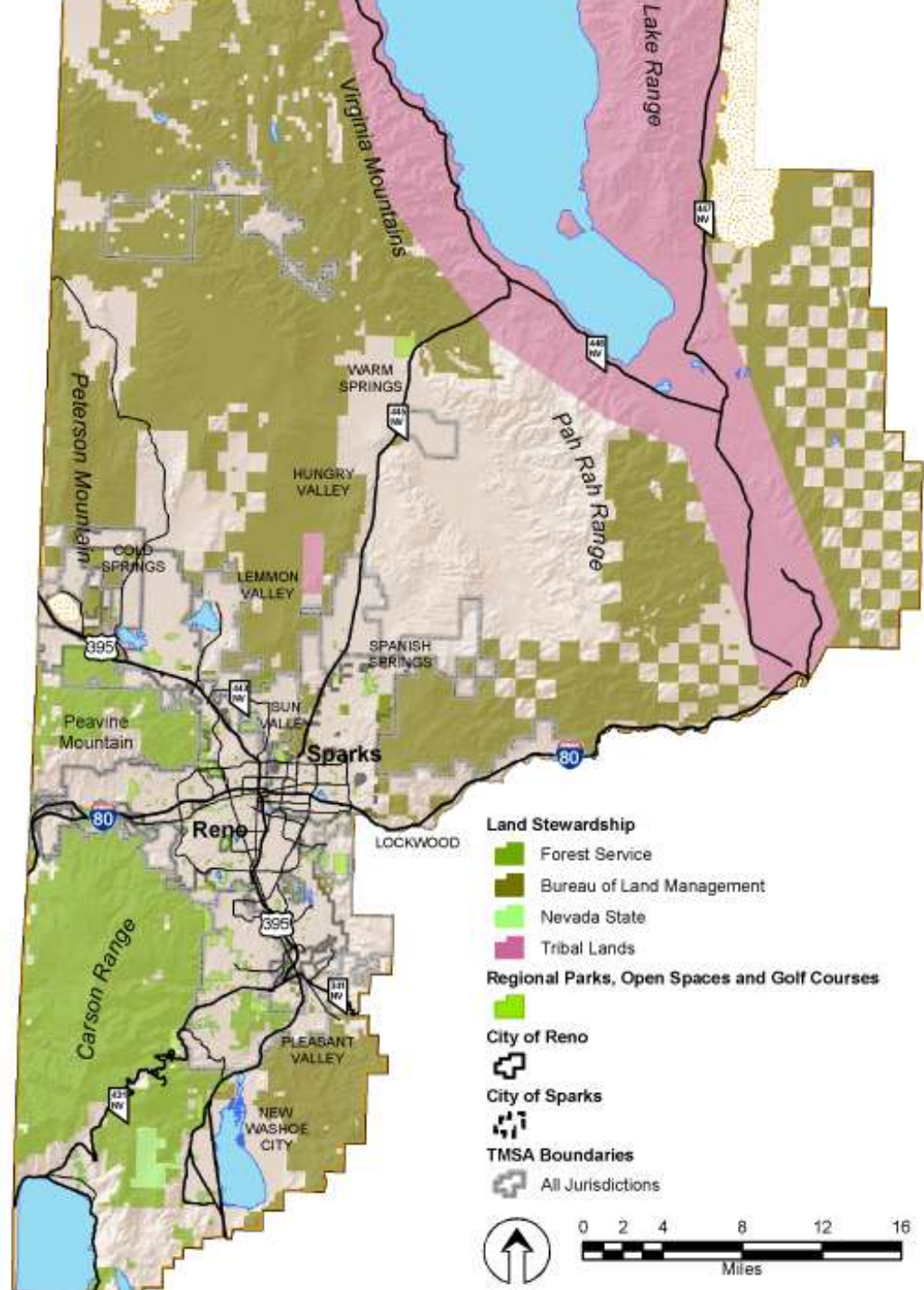


Why Plan? Decision Making Benefits

- Buying land without goals
- Everything is a priority
- Creating momentum and support



Study Area

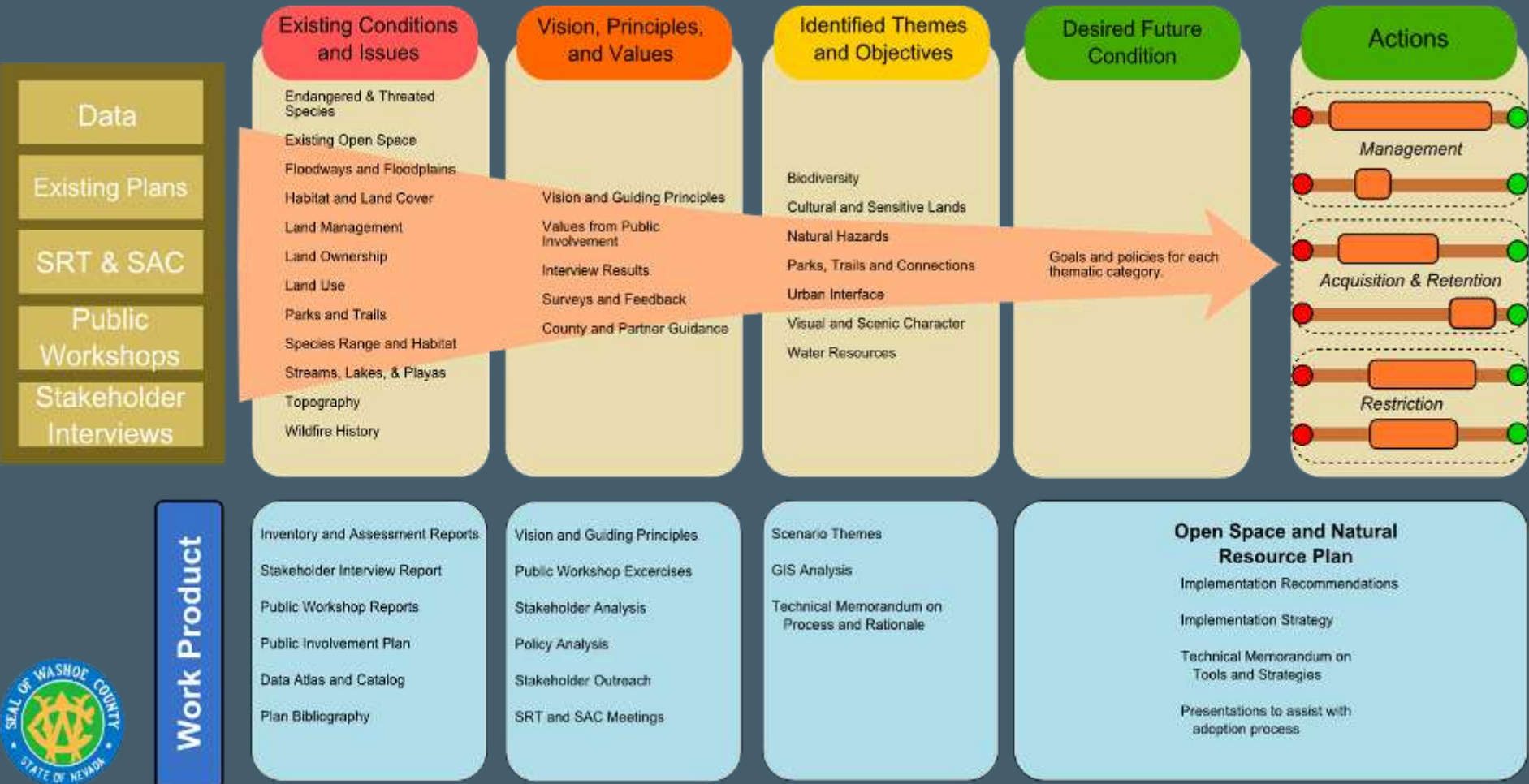


Plan Process

- Science Review Team
- Stakeholder Group
- Public events and education
- Vision
- Guiding Principles
- Goals

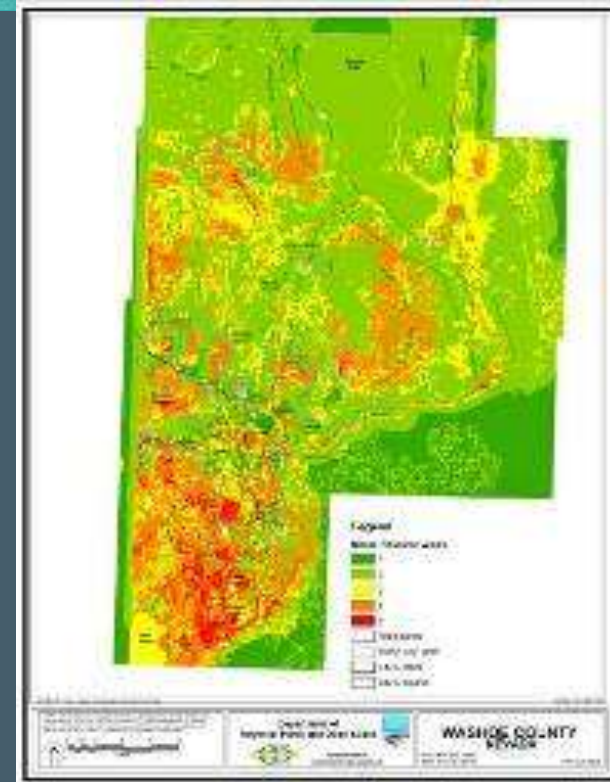


Scenario and Plan Development Process



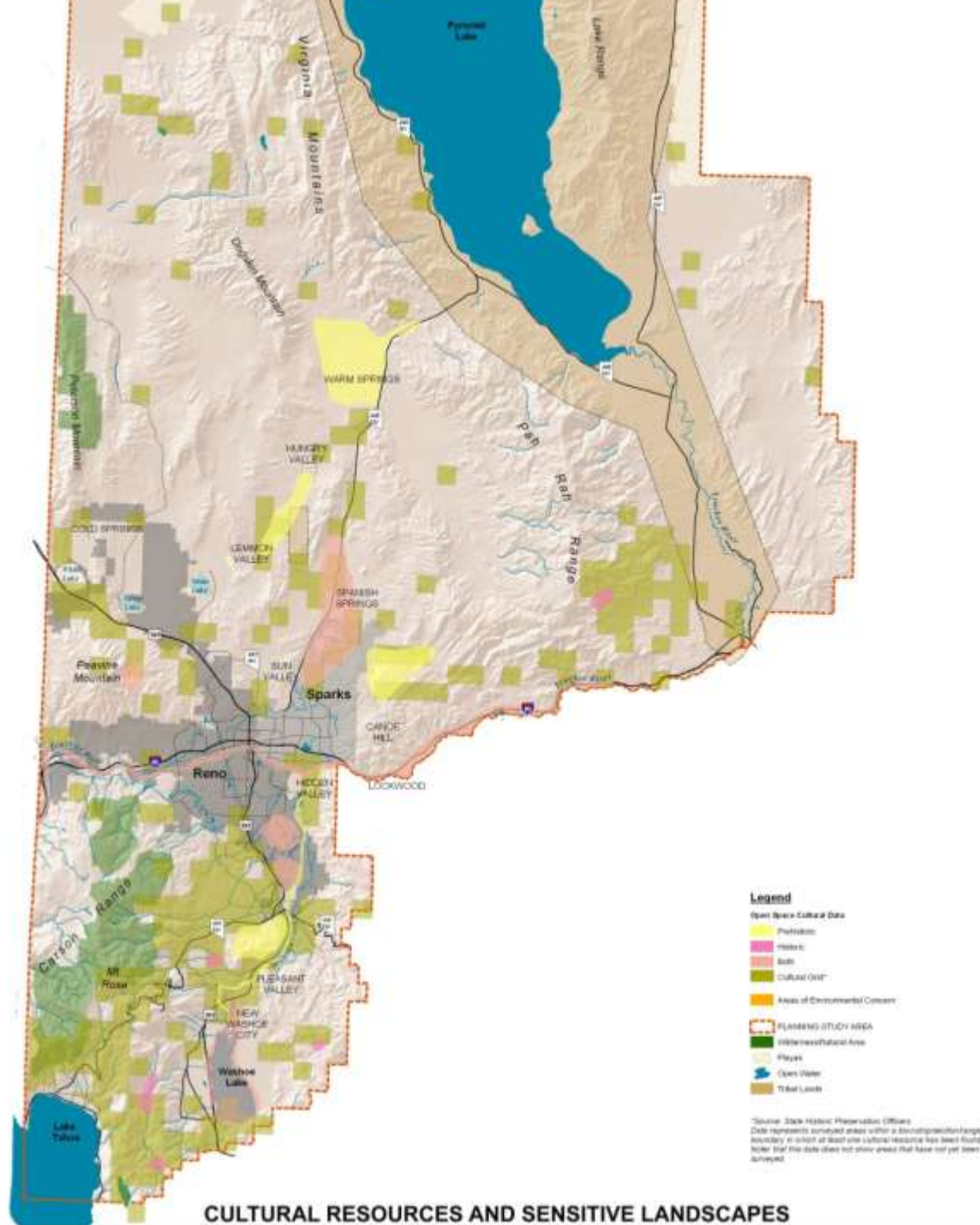
Plan Components

- 1. Background:** Inventory and Assessment
- 2. The Plan:** Long-Term Policy Guidance
- 3. Implementation Strategy:**
 - Prioritization of actions to carry out Plan
 - Monitored to measure progress
 - Updated frequently to reflect changing conditions
 - Updated frequently to seize opportunities



Inventory and Assessment

- Functions Inventory
- Mapping Inventory
- Data Gaps
- Field Verification
- Assessment of Functions (GIS Analysis)



Function Based Assessment

- Focus on functions to drive protection
- Data collected on indicators
- Best available science facilitates agreement
- Multiple benefits measured and protected
- Process is repeatable and understandable



Long-range Plan

- Vision for preferred future
- Identification of challenges
- Prioritization of functions
- Decision making framework



Challenges

- Wildfire
- Invasives
- Multiple Uses
- Development Pressures
- Multiple data sets
- Regulatory driven process

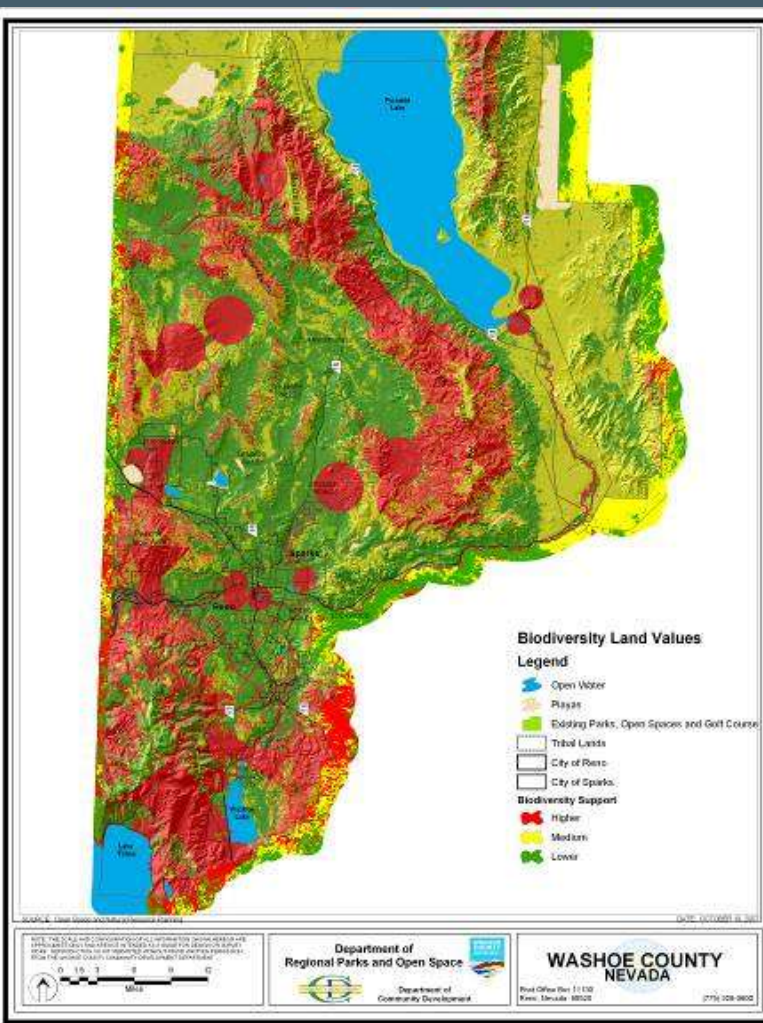
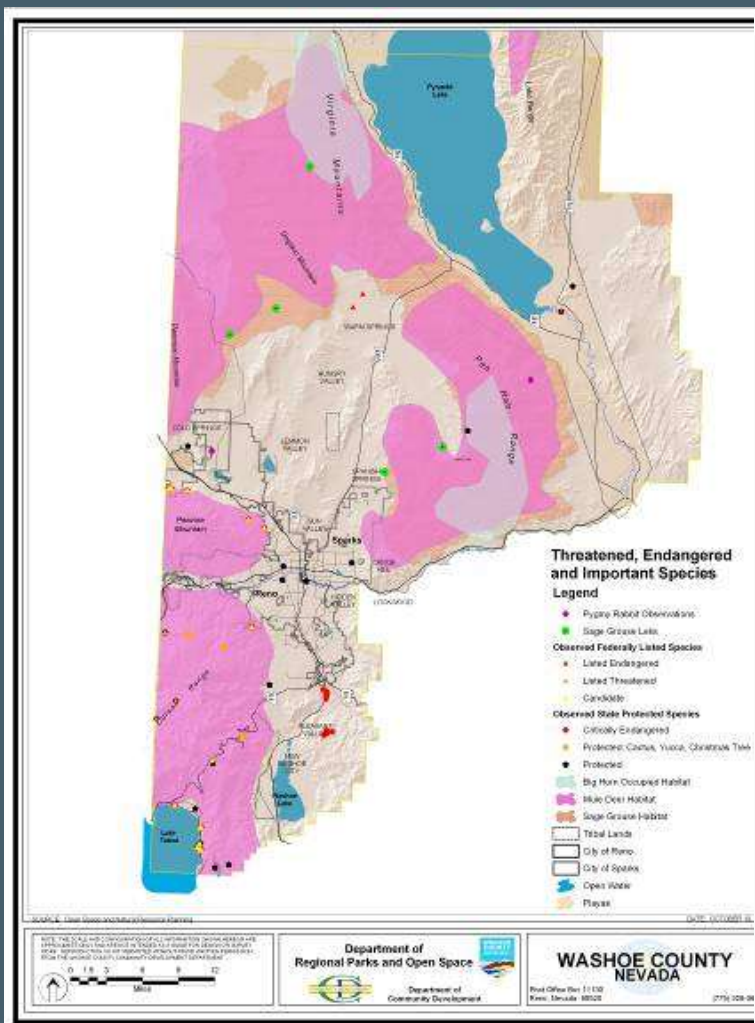


Prioritized Functions

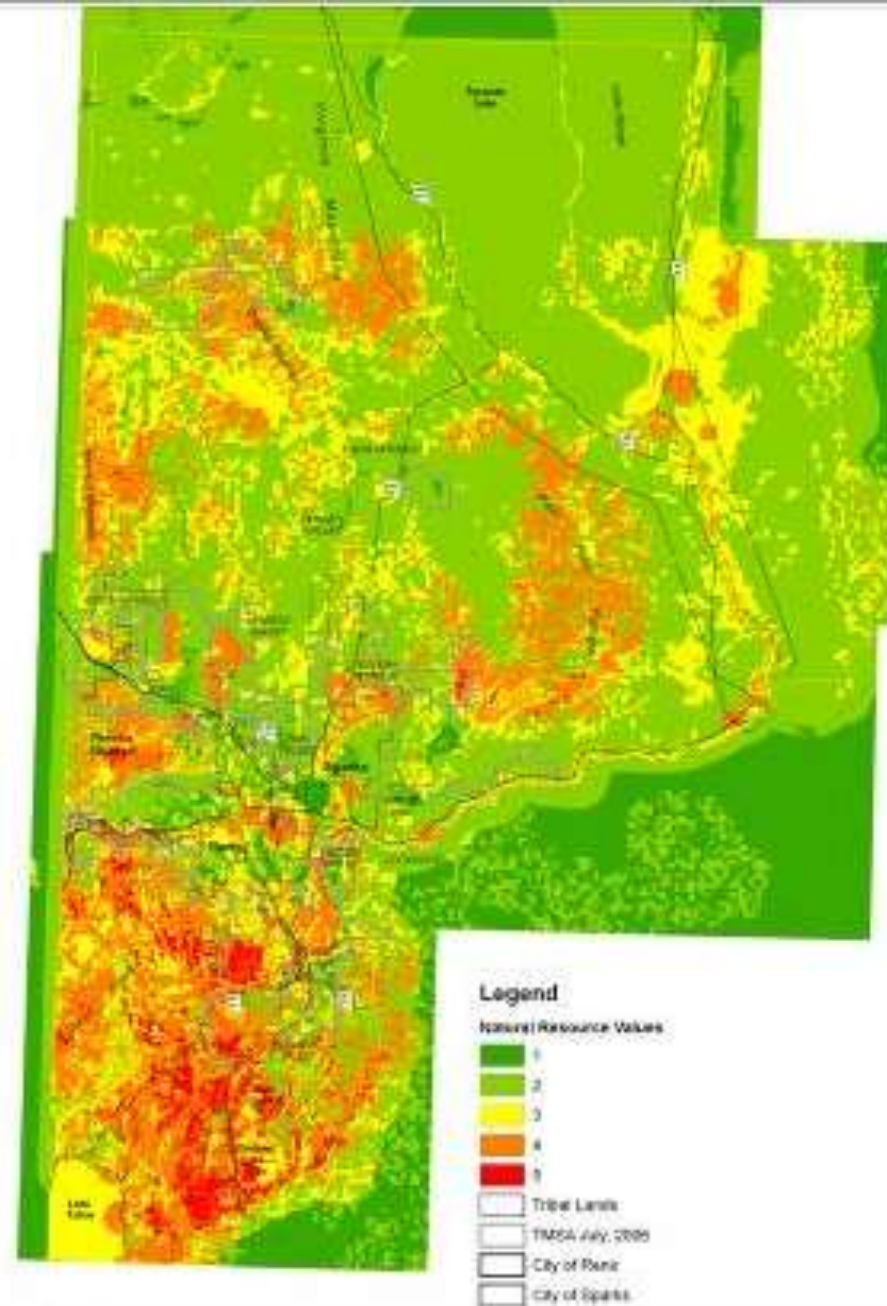
- Biodiversity
- Cultural Resources
- Natural Hazards
- Recreational Resources
- Visual and Scenic Character
- Water Resources



Plan Designed to Make Decisions



Priority Areas Identified



Landscape Approach

- Planning based on secondary data – field verified
- Determines priorities and market direction
- Informs decisions
 - Management
 - Acquisition
 - Retention

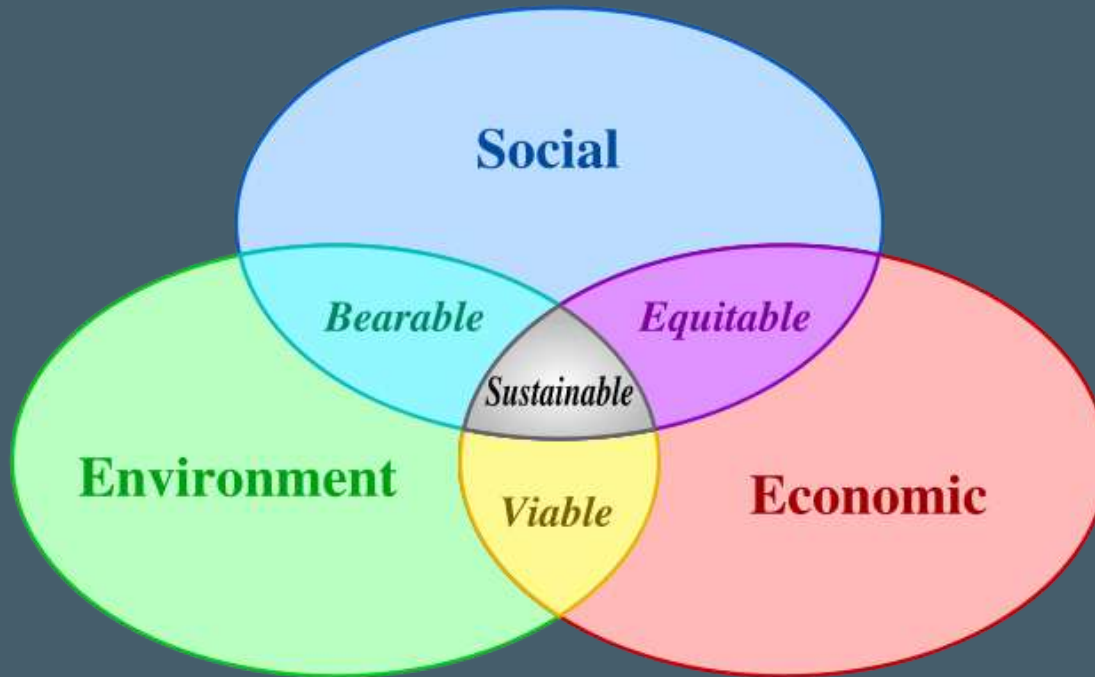


Ecosystem Services Implementation

- Regulatory Context
- On-site assessments
- Mandatory assessments
- Local vs. regional market
- Voluntary vs. Regulated



Moving Towards Ecosystem Markets



Moving Towards Ecosystem Markets

- Balance measurement system
 - simple vs. robust
- Measure small impacts and benefits
- Doesn't need to be perfect, but trusted
- Provide the proper incentives
- Allow for trades between parties and sites



How to Begin

- Vision
- Service and function priorities
- Data collection and verification
- Weight services
- Map priorities
- Determine market application



More Information

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