

Rocky Mt. Land Use Institute Conference

Ecosystem Services Value and State Trust Lands



March 2, 2012

Environmental Markets

1. Government innovation creates a framework

- Aligning economic incentive & environmental performance
- 4 universal framework elements

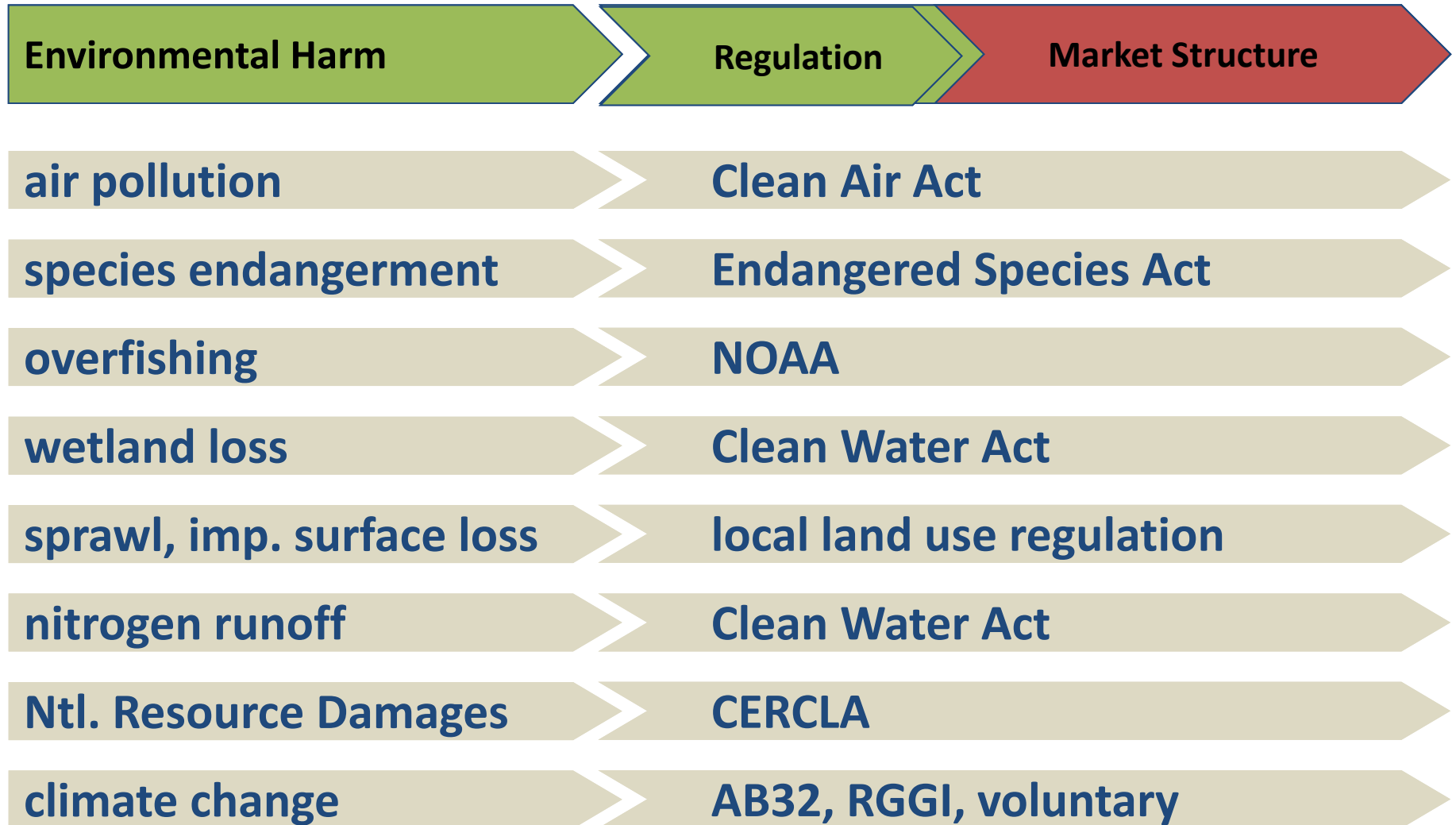
2. Incentives vs. Rules

3. E-Sector markets address wide range of issues

4. Harnessing capital and targeting spending

- Environmental markets vs. payments for E-services

Laws and regulations for the environment



The government innovation of incentives

Environmental Harm

Market Structure

air pollution

SO₂ trading

species endangerment

conservation banking

overfishing

total allowable catch & ITQ

wetland loss

wetland mitigation banking

sprawl, imp. surface loss

TDR's

nitrogen runoff

TMDL's

Ntl. Resource Damages

DSAY's

climate change

CO₂ trading

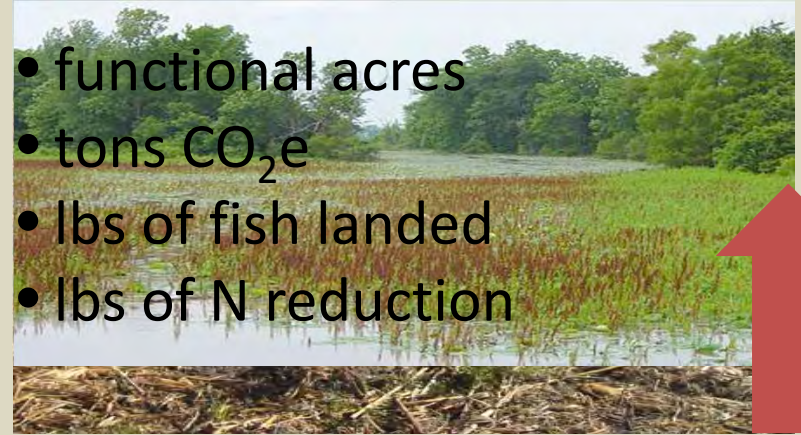
A pattern emerges from early innovations

LIMIT

- “no net loss”
- “cap and trade”
- “individual tradable quota”
- “total maximum daily load”

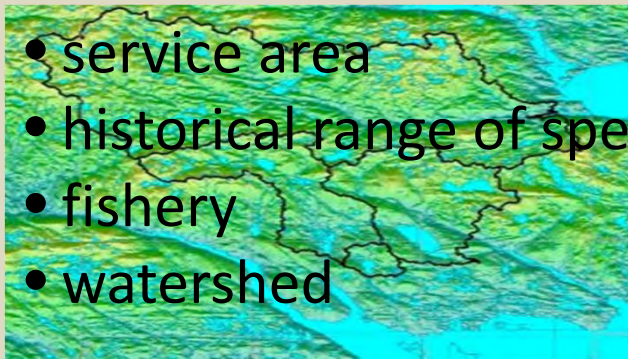
UNIT

- functional acres
- tons CO₂e
- lbs of fish landed
- lbs of N reduction



GEOGRAPHY

- service area
- historical range of species
- fishery
- watershed



TRANSFER

- mitigation bank
- conservation bank
- catch shares
- water quality trading



The role of offsets v. don't drive on the beach



“Markets” vs. “Payments for E-Services”

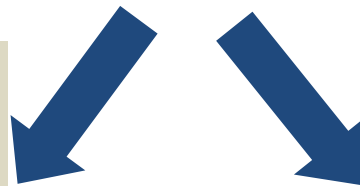
**private
investment**

**public
spending**



**compliance
credits**

**public
priorities**



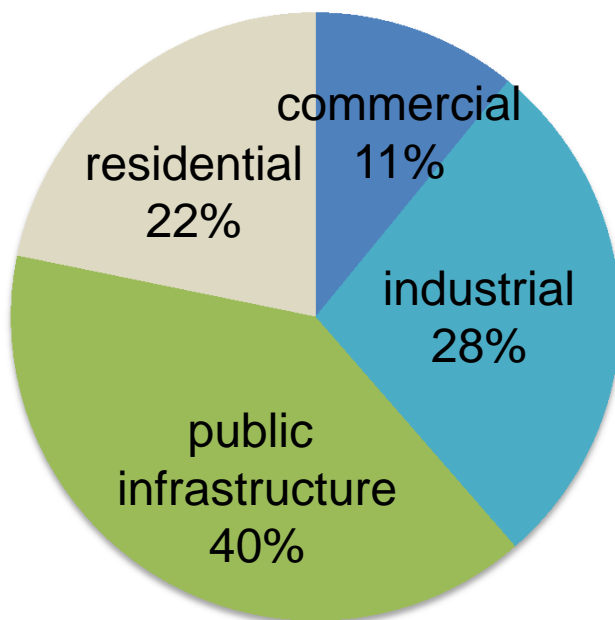
Engaging with the regulated community

fines

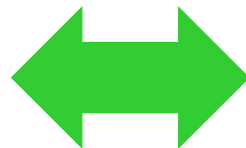
fees

incentives

impacts



offsets



CWA Sec. 404, 2008 + 2009

E-Services and siting of critical infrastructure

DEVELOPMENT IMPACTS: Cover/Nesting Portion of the Songbird Support Function Mixed Grass/Shrub Upland Habitat

PRIMARY INDICATORS
Secondary/Supporting Indicators

In this example, a wind turbine tower is constructed on one-half of the map unit.
Below is an illustration of the impacts to the baseline scores for that map unit.

DEVELOPED PORTION

Measurement	Supporting Indicator Scores	Primary Indicator Scores
Number of Strata	0	0
Terrestrial Vegetation Structure		0
1. Percent ground cover	0	
Herbaceous (Measurement 0, Score 0)		
Shrub (Measurement 0, Score 0)		
Tree (Measurement Approx. 0, Score 0)		
2. Total canopy cover	0	
3. Number of species all strata	0	
Snags	0	0
1. Number present	0	
2. Number size classes present	0	
3. Number decay classes present	0	

Divide by number of indicators: 0 / 3

0

COVER/NESTING
SCORE
Part of the
Songbird Support
Function



UNDEVELOPED PORTION

Measurement	Supporting Indicator Scores	Primary Indicator Scores
Number of Strata	3	10
Terrestrial Vegetation Structure		3.78
1. Percent ground cover	3.33	
Herbaceous (Measurement <10%, Score 2)		
Shrub (Measurement Approx. 65%, Score 4)		
Tree (Measurement Approx. 90%, Score 4)		
2. Total canopy cover	Approx. 75% 6	
3. Number of species all strata	2 2	
Snags	0	0
1. Number present	0	
2. Number size classes present	0	
3. Number decay classes present	0	

13.78

Divide by number of indicators: 13.78 / 3

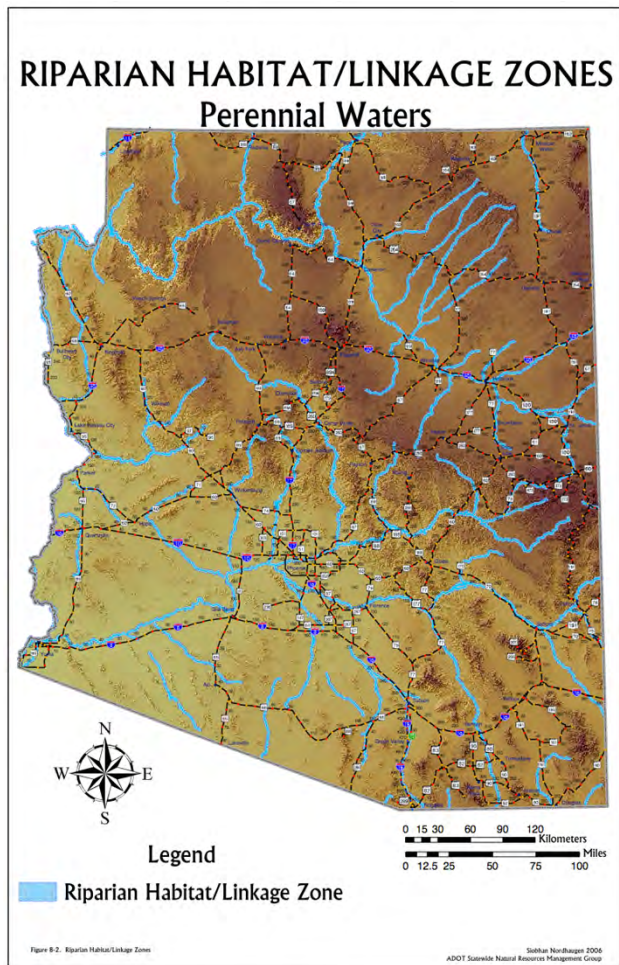
4.6

COVER/NESTING
SCORE
Part of the
Songbird Support
Function

Parametrix

Arizona Credit Demand Analysis

USACE, USFWS and AZ Game and Fish regulate impacts to eco-features.

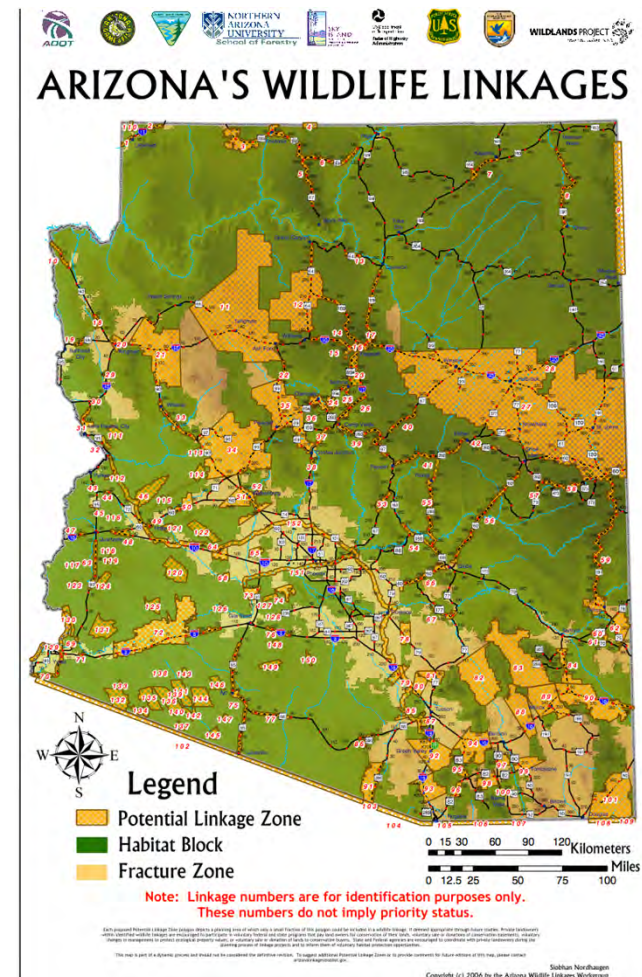


Hassayampa and Agua Fria watersheds

- Review of potential mitigation for aquatic resource and habitat impacts

Tortolita Fan region

- Review of potential mitigation for cactus pygmy owl habitat



Arizona Study Findings

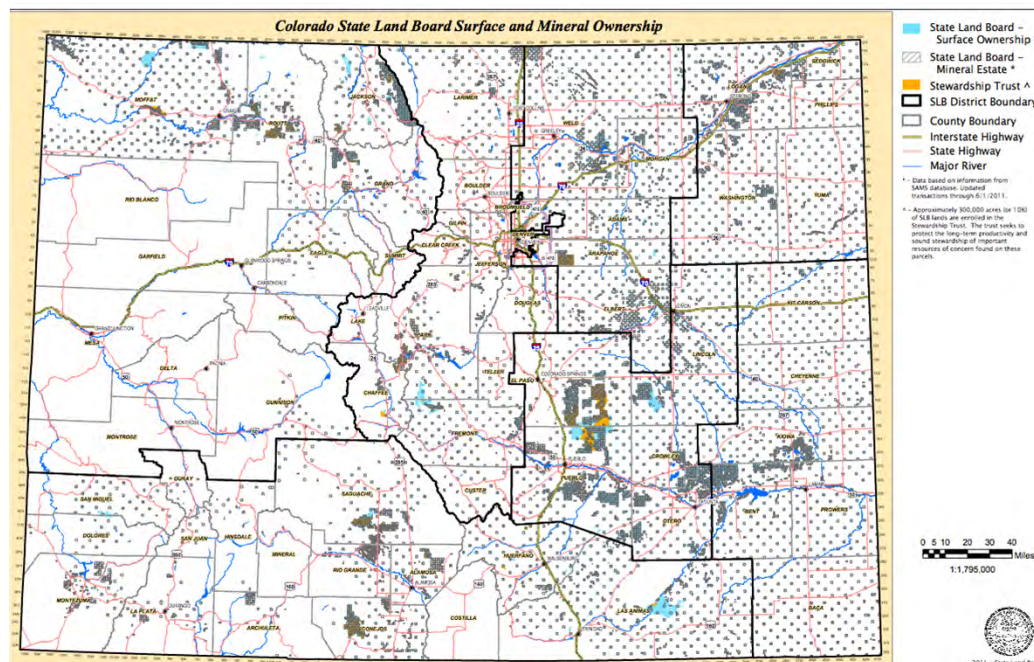
- USACE not supportive of mitigation banking at the time of the study (June, 2007)
- Critical demand for environmental values from ASLD properties likely from ADOT or from development on ASLD lands.
- Pima pineapple cactus is one of the few species that has had banks established in AZ; a potential opportunity for ASLD lands.



Colorado Credit Demand Analysis

Potential demand:

- Highways and other transportation infrastructure
- Purchases of water-related values from upstream properties
- Renewable energy, oil and gas development
- US Markets for carbon sequestration



Colorado Study Findings

- Combination of listed species and energy infrastructure development creating mitigation demand for habitat
- Nearly 1,000 aquatic resource acres have been restored through the actions of 11 mitigation banks
- Watershed protection and management payments by downstream water users offer another possible revenue stream.



Conclusions

- Regulatory support for high quality *advance* mitigation has led to increasing support for mitigation and conservation banking.
- Population growth and related infrastructure – especially oil and gas drilling, transmission lines and renewable energy developments – will be primary drivers of demand.
- Listed species habitat is likely the primary regulatory driver in the Inter-Mountain West, unlike many other parts of the country where aquatic resources protected by the Clean Water Act drive conservation activity.
- State Trust Lands are a unique category of land ownership and management that has a variety of opportunities to participate in new environmental markets.

