

**WATER RESOURCES  
REVIEW COMMITTEE**  
Land use and water efficiency

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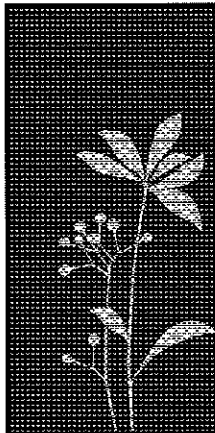
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**LAND USE AND WATER  
EFFICIENCY ON THE  
RURAL-URBAN  
INTERFACE**  
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**Land use & ag land conversion**

- Why preserve agriculture/working landscapes?
- Why encourage higher density urban development?
- How is this happening at the farm, local, state and federal levels?

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### Why preserve agriculture and working landscapes?

- The (real estate and commodity) market captures only part of agriculture's contribution to society
- True value includes:
  - Lifestyle and community culture
  - Viewshed
  - Wildlife habitat
  - Recreational uses
  - Community separators
  - Water quality and quantity regulation
  - Air quality
  - Disaster risk reduction
- In addition to food and fiber!

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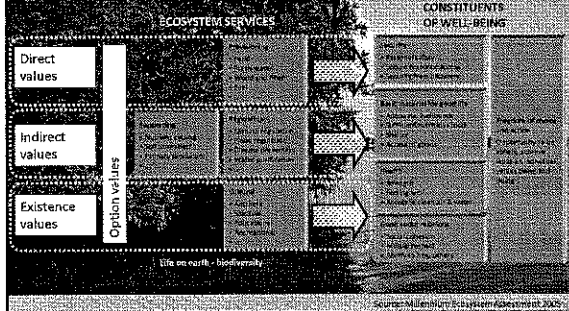
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### Valuing working landscapes & ecosystems

Valuation: expresses economic significance of the links




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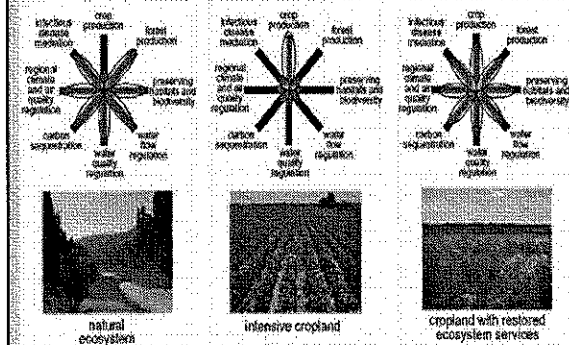
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### Managing for a portfolio of ecosystem services




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**The Economics of Ecosystems & Biodiversity**

**Growing consumer demand for 'green' products and services**

- Global sales of organic food and drink = US\$ 60 billion in 2009
- Sales of certified 'sustainable' forest products increased four-fold between 2005 and 2007
- The global market for eco-labeled fish products grew by over 50% from 2008 to 2009, to a retail value of US\$ 1.5 billion
- Major consumer brand owners and retailers have added 'ecologically-friendly' attributes to key product lines:
  - Mars (Rainforest Alliance cocoa)
  - Cadbury (Fairtrade cocoa)
  - Kraft (Rainforest Alliance Kenco coffee)
  - Unilever (Rainforest Alliance PG Tips)




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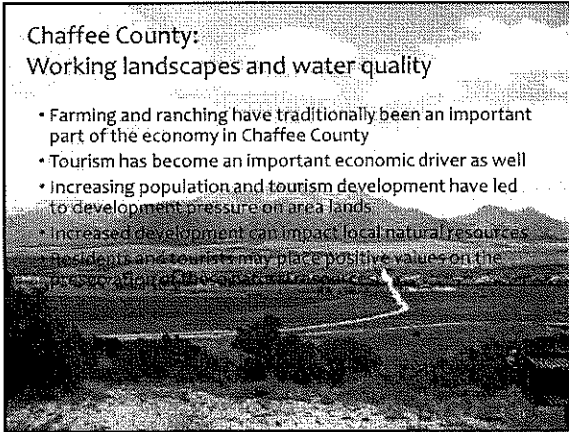
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**Chaffee County: Working landscapes and water quality**

- Farming and ranching have traditionally been an important part of the economy in Chaffee County
- Tourism has become an important economic driver as well
- Increasing population and tourism development have led to development pressure on area lands
- Increased development can impact local natural resources
- Residents and tourists may place positive values on the preservation of local natural resources




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**Change in Water Quality**



**Change in Working Landscapes**




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### Willingness to Pay for Water Quality

	100%	200%	300%
Mean WTP	\$ 45.14	\$ 72.40	\$ 59.00
Number of Visitors	100,495	100,495	100,495
<b>Aggregate WTP</b>	<b>\$ 4,536,344</b>	<b>\$ 7,275,838</b>	<b>\$ 5,929,205</b>

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### Willingness to Pay for Working Landscapes

	100%	200%	300%	400%
Mean WTP	\$ 59.61	\$ 42.80	\$ 66.55	\$ 56.00
Number of Visitors	100,495	100,495	100,495	100,495
<b>Aggregate WTP</b>	<b>\$ 5,990,507</b>	<b>\$ 4,301,186</b>	<b>\$ 6,687,942</b>	<b>\$ 5,627,720</b>

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### Why encourage higher density urban development?

- Some public infrastructure increases in cost with increases in distance/reductions in density
  - E.g., schools, emergency services, water/sewer, roads, gas/electric
- Community health challenges increase in cost with commuter times
- Population growth increases conversion
- Income growth increases conversion
- Proportion of public to private land increases conversion

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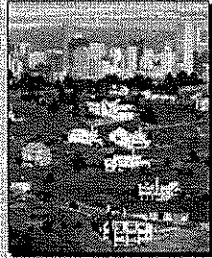
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### COCS Literature Says

- Residential:
  - \$1.15 to \$1 (AFT)
  - \$1.24 to \$1 (USDA)
- Farm & Forest:
  - \$0.35 to \$1 (AFT)
  - \$0.38 to \$1 (USDA)
- Commercial:
  - \$0.27 to \$1 (AFT)




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### Colorado Results

- Crop & Rangeland are net contributors to county revenues.
- Ag land acres & Urban population are net contributors to school district revenues.
- 35 acres of ag land converted to residential use costs \$1.65 in services for each \$1 in tax revenues generated.
- Thresholds found at 6X increase in income/residential value
- 62 Colorado counties show this negative fiscal impact of dispersed development.

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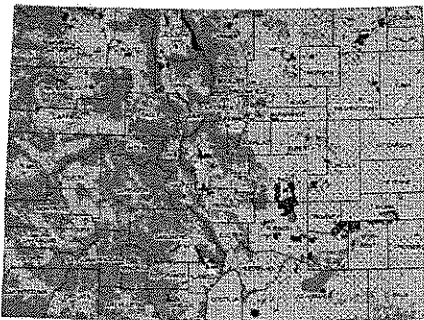
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### Statewide General Ownership



- Legend**
- OWNER**
- Federal Government
  - State Government
  - Local Government
  - Land Trust/NGO
  - Private
- \*The public acres on private lands, including COCS land parcels, unless otherwise noted.




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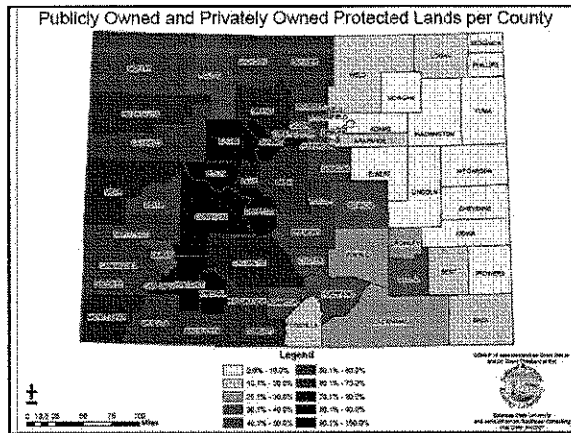
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Federal policy: Likely direction of effect (for discussion)

- Farm Bill programs decrease conversion
- Farm Bill increasingly encourages diversification & portfolio management, so decreases conversion
- Conservation easement right offs decrease conversion
- Disaster policies decrease conversion
- Energy policies decrease conversion, but can cause labor, so ag profitability challenges
- Inheritance taxes are ambiguous w.r.t. conversion
- DOT funds are ambiguous w.r.t. conversion
- Home mortgage interest right offs increase conversion

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State policies: Likely direction of effect (for discussion)

- Differential (land in use) taxation decreases conversion
- Right-to-farm legislation decreases conversion
- Conservation easement secondary market decreases conversion
- COCO decreases conversion
- Enabling conditions for land trusts decrease conversion
- Predictable access to adequate water decreases conversion, and will increase ag profitability
- Mobility of water is ambiguous w.r.t. conversion, but will reduce ag profitability
- 35-acre rule increases conversion

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### Local policies

- PDR, PACE, Cluster, Conservation Development and TDR programs decrease conversion.
- Zoning & regulatory programs decrease conversion, but reduce ag land values.
- Parks, green space, (rails to) trails and open space programs reduce conversion.
- Big box and 'cherry stem' development increase conversion and hurt smaller local businesses.
- Unplanned & ad hoc development increases conversion.

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### Local action

- Agritourism, local food markets, local procurement, diversify product portfolios, increase local support for agriculture and reduce conversion.
- New or emerging markets for carbon, biodiversity, organics, etc., diversify product portfolios and reduce conversion.

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### Land use and water efficiency

- Out of crisis (fire, flood, financial, fiscal) comes:
- A) The same solutions that got us in trouble in the first place, or
  - B) innovative solutions to Colorado's economic development and resource management challenges.

In general, we need to measure better so that we can manage better.

Integrated policy approach is needed that:

- Respects local context,
- Properly values the resource base,
- Dynamically reveals opportunities,
- Punishes waste and inefficiency, and
- Rewards stewardship.

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