Conservation Development in the West: Trends in Regulation and Practice

SARAH REED, LIBA PEJCHAR & LINDSAY EX
AGENDA

1. DEFINITIONS AND TRENDS

2. REGULATIONS AND INCENTIVES

3. CASE STUDY OF LAND USE AND HOME SALES

4. RESEARCH AND OUTREACH ACTIVITIES

5. QUESTIONS AND DISCUSSION
DEFINITIONS AND TRENDS OF CONSERVATION DEVELOPMENT ACTIVITY IN THE UNITED STATES
Can we design developments to achieve conservation success in ways that are also economically and socially sustainable?
Conservation Development

An approach to land use planning and site design that combines development and land protection while providing functional protection for natural resources

Source: The Conservation Fund
CONSERVATION DEVELOPMENT ON THE LAND USE SPECTRUM

Conservation Development

[NONE]

Amount of Conservation →

↓ Amount of Development

Conservation preserves

Conservation buyer and limited development projects

Cluster development ... conservation subdivisions

Planned developments Master planned communities

Conventional suburban development

Large lot development

City centers

**U.S. Survey Results**

- **Total:** 3,884 projects (1968-2008)

<table>
<thead>
<tr>
<th>Type</th>
<th>Number surveyed</th>
<th>% of land protected by CD</th>
<th>Median size - ha (acres)</th>
<th>% of land undeveloped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation buyer</td>
<td>3132</td>
<td>81</td>
<td>81 (200)</td>
<td>98</td>
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<tr>
<td>Limited development</td>
<td>219</td>
<td>10</td>
<td>87 (215)</td>
<td>86</td>
</tr>
<tr>
<td>Conservation subdivisions</td>
<td>477</td>
<td>1.8</td>
<td>32 (79)</td>
<td>53</td>
</tr>
<tr>
<td>Master planned communities</td>
<td>56</td>
<td>7</td>
<td>648 (1608)</td>
<td>54</td>
</tr>
</tbody>
</table>

EXTENT AND TRENDS

- Permanently protected: 4 million ha (10 million acres; Size of New Hampshire + Connecticut)

- Rate of land protection from 2000-2008 was 278,000 ha/year (686,953 acres/year)

- Accounts for 25% of private land conservation

PROTECTED LAND MANAGEMENT

- All conservation buyer and 93% of limited development projects managed by landowners (restricted by easements)

- 86% of conservation subdivisions and 35% of master planned communities managed by homeowners associations

Our vision:

1) Synthesize data on existing CD practice

2) Establish a rigorous scientific basis for evaluating CD projects and policies

3) Engage with planning, development, and conservation practitioners to inform the design and monitoring of future CD projects
Our approach:

1) Facilitate *exchange of ideas* among members and partners from diverse disciplines and organizations

2) Write an interdisciplinary *literature review* on the interaction between residential land development and open space

3) Conduct a *case study* of existing CD projects in Colorado

4) Launch an *outreach network* for planning, development, and conservation practitioners
Conservation Development = Sustainable Communities?

- ecological
- social
- economic
Questions or Comments
Local Land Use Regulations and Incentives for Conservation Development

Sarah E. Reed¹,², Jodi A. Hilty¹, and David M. Theobald²

¹ North America Program
Wildlife Conservation Society

² Department of Fish, Wildlife, and Conservation Biology
Colorado State University
GUIDING QUESTIONS

• Where and when have counties adopted land use regulations that establish guidelines or create incentives for CD?

• How do the characteristics of counties that have adopted CD ordinances compare to those that have not?

• What are the objectives of CD ordinances, what incentives do they include, and what are their requirements for ecological site analysis, protected area design, ownership and management of protected lands, and developed area design?
WHY COUNTIES?

- Most low-density development is projected to occur in rural areas.
- Counties have jurisdiction over development decisions on > 97% of private land area in western US.
COUNTIES WITH CD ORDINANCES

Percent of counties

<table>
<thead>
<tr>
<th>State</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>74%</td>
</tr>
<tr>
<td>CO</td>
<td>53%</td>
</tr>
<tr>
<td>UT</td>
<td>41%</td>
</tr>
<tr>
<td>AZ</td>
<td>33%</td>
</tr>
<tr>
<td>CA</td>
<td>24%</td>
</tr>
<tr>
<td>MT</td>
<td>23%</td>
</tr>
<tr>
<td>ID</td>
<td>23%</td>
</tr>
<tr>
<td>NV</td>
<td>18%</td>
</tr>
<tr>
<td>OR</td>
<td>17%</td>
</tr>
<tr>
<td>NM</td>
<td>6%</td>
</tr>
</tbody>
</table>

(n = 414 counties, 87% response rate)
INCREASING TREND OF ADOPTION

Number of CD regulations adopted

- 1971-1975
- 1976-1980
- 1981-1985
- 1986-1990
- 1991-1995
- 1996-2000
- 2001-2005
- 2006-2010

LAND USE REGULATIONS

SCHOOL OF GLOBAL ENVIRONMENTAL SUSTAINABILITY
COUNTY CHARACTERISTICS

Population and housing change
Land use composition
Socioeconomic characteristics
Land use planning capacity
COUNTY CHARACTERISTICS

Population and housing change

Land use composition
Socioeconomic characteristics
Land use planning capacity

Total population:

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a</td>
</tr>
<tr>
<td>Pending</td>
<td>ab</td>
</tr>
<tr>
<td>No</td>
<td>b</td>
</tr>
<tr>
<td>Unknown</td>
<td>b</td>
</tr>
</tbody>
</table>

Legend:
- a
- b
COUNTY CHARACTERISTICS

Population and housing change

Land use composition

Socioeconomic characteristics

Land use planning capacity

Exurban density:

- Yes: a
- Pending: ab
- No: b
- Unknown: c

0% 5%
Population and housing change

Land use composition

Socioeconomic characteristics

Land use planning capacity

93% of CD regulations were adopted by counties with a planning department
REVIEW OF CD ORDINANCES

Objectives & Applicability

Site Analysis Requirements

Conservation Area Design

Conservation Area Management

Development Incentives
REVIEW OF CD ORDINANCES

Objectives & Applicability

- Site Analysis Requirements
- Conservation Area Design
- Conservation Area Management
- Development Incentives

Most common objectives stated in CD regulations:

- 65% preserve local open space
- 62% reduce infrastructure
- 56% conserve agricultural lands
REVIEW OF CD ORDINANCES

Objectives & Applicability

Site Analysis Requirements

- Conservation Area Design
- Conservation Area Management
- Development Incentives

13% of CD regulations require site analysis for ecological features
5% of CD regulations require site analysis for ecological features prior to developed area design.
REVIEW OF CD ORDINANCES

Objectives & Applicability

Site Analysis Requirements

Conservation Area Design

Conservation Area Management

Development Incentives

Open space requirements:

Number of counties

% of site area

0-20  21-40  41-60  61-80  81-100

0  10  20  30  40

LAND USE REGULATIONS

SCHOOL OF GLOBAL ENVIRONMENTAL SUSTAINABILITY
REVIEW OF CD ORDINANCES

Objectives & Applicability

Site Analysis Requirements

Conservation Area Design

Conservation Area Management

Development Incentives

28% of CD regulations require a plan for managing conserved lands
REVIEW OF CD ORDINANCES

Objectives & Applicability
Site Analysis Requirements
Conservation Area Design
Conservation Area Management

Development Incentives

52% of CD regulations offer a density bonus as an incentive
REVIEW OF CD ORDINANCES

Objectives & Applicability
Site Analysis Requirements
Conservation Area Design
Conservation Area Management

Development Incentives

52% of CD regulations offer a density bonus as an incentive
71% mean increase in development yield permitted as a bonus
CONCLUSIONS

- CD ordinances are more widespread than expected

- Growing trend in the adoption and revision of CD ordinances in county land use regulations

- Important differences between ideal conservation design process vs. guidelines in CD ordinances
Case Study of Land Use and Home Sales in Colorado CD Projects

Lindsay Ex\(^1,2\), Sarah E. Reed\(^3,4\), Liba Pejchar\(^3\), Steve Laposa\(^5\), Christopher Hannum\(^5\), and David M. Theobald\(^3\)

\(^1\) City of Fort Collins
\(^2\) Center for Collaborative Conservation
  Colorado State University
\(^3\) Department of Fish, Wildlife & Conservation Biology
  Colorado State University
\(^4\) North America Program
  Wildlife Conservation Society
\(^5\) Department of Finance and Real Estate
  Colorado State University
GUIDING QUESTIONS

• How many CD projects have been developed in Colorado and where have they been developed?

• What do CD projects in Colorado look like on the ground?

• How do the land uses within CD projects compare to other subdivision development options?

• Are CD projects more profitable than other development options?
COLORADO CASE STUDY
DATA COLLECTED AS OF FEBRUARY 2012

LEGEND
Colorado Counties - Regulation Status — US Interstates
Data Available — State of Colorado
Data Unavailable — Unknown Regulatory Framework

N
0 30 60 Kilometers
0 25 50 Miles
### STATEWIDE ANALYSIS

<table>
<thead>
<tr>
<th>County</th>
<th># of CD projects</th>
<th>Mean area of CD projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archuleta</td>
<td>1</td>
<td>Unknown(^1)</td>
</tr>
<tr>
<td>Boulder</td>
<td>180</td>
<td>28 ha (70 ac)</td>
</tr>
<tr>
<td>Chaffee</td>
<td>21</td>
<td>61 (150)</td>
</tr>
<tr>
<td>Clear Creek</td>
<td>2</td>
<td>123 (303)</td>
</tr>
<tr>
<td>Delta</td>
<td>1</td>
<td>80.9 (200)</td>
</tr>
<tr>
<td>Douglas</td>
<td>16</td>
<td>434 (1071)</td>
</tr>
<tr>
<td>Eagle</td>
<td>8</td>
<td>27.9 (68.9)</td>
</tr>
<tr>
<td>Grand</td>
<td>1</td>
<td>752 (1857)</td>
</tr>
<tr>
<td>Gunnison</td>
<td>1</td>
<td>184.7</td>
</tr>
<tr>
<td>Jefferson</td>
<td>7</td>
<td>110 (272)</td>
</tr>
<tr>
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<td>67.5 (166.8)</td>
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<td>Mesa</td>
<td>20</td>
<td>29 (73)</td>
</tr>
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<td>Montezuma</td>
<td>8</td>
<td>20 (50)</td>
</tr>
<tr>
<td>Pueblo</td>
<td>5</td>
<td>399 (987)</td>
</tr>
<tr>
<td>Routt</td>
<td>16</td>
<td>234 (577)</td>
</tr>
<tr>
<td>San Miguel</td>
<td>6</td>
<td>243 (601)</td>
</tr>
<tr>
<td>Summit</td>
<td>6</td>
<td>152 (377)</td>
</tr>
<tr>
<td>Weld</td>
<td>1</td>
<td>51.9 (128.2)</td>
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<tr>
<td><strong>Overall</strong></td>
<td><strong>408</strong></td>
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\(^1\) Unknown indicates project has either not been located or data were unavailable.
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¹ Unknown indicates project has either not been located or data were unavailable.
COLORADO CASE STUDY
Comparative and sales transaction analyses

LEGEND
- CD Projects
- Colorado Counties Analyzed
- US Interstates
- All Colorado Counties

North
0  30  60 Kilometers
0  25  50 Miles
Unknown indicates project has either not been located or data were unavailable.

Note: Do we want a slide that says why we chose this counties up front, using Exhibit 2 from the sales transaction report?

Comparative and sales transaction analyses

<table>
<thead>
<tr>
<th>County</th>
<th>Population</th>
<th>Median Home Value</th>
<th>Land Area</th>
<th>Persons per square mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaffee</td>
<td>17,809</td>
<td>$248,100</td>
<td>1013.40</td>
<td>17.6</td>
</tr>
<tr>
<td>Larimer</td>
<td>299,630</td>
<td>$246,000</td>
<td>2596.00</td>
<td>115.4</td>
</tr>
<tr>
<td>Mesa</td>
<td>146,723</td>
<td>$221,000</td>
<td>3328.97</td>
<td>44.1</td>
</tr>
<tr>
<td>Routt</td>
<td>23,509</td>
<td>$422,300</td>
<td>2362.03</td>
<td>10.0</td>
</tr>
</tbody>
</table>
LAND USE ANALYSIS - METHODS
LAND USE ANALYSIS - METHODS

Phase 1: Buffer Developments 100 m

100 m Buffer

100 m Buffer
LAND USE ANALYSIS - METHODS
LAND USE ANALYSIS - FINDINGS

**CD Projects**

Number of Projects

Mean Area of Open Space

Land Use in Protected
   Open Space in CD Projects
LAND USE ANALYSIS - FINDINGS

**CD Projects**

**Number of Projects**

Mean Area of Open Space

Land Use in Protected Open Space in CD Projects

[Bar chart showing the number of CD projects in Chaffee, Douglas, Larimer, Mesa, and Routt counties.]
LAND USE ANALYSIS - FINDINGS

CD Projects

Number of Projects

Mean Area of Open Space

Land Use in Protected Open Space in CD Projects

![Graph showing mean area of open space protected in CD projects.]

Open space requirements:
LAND USE ANALYSIS - FINDINGS

CD Projects

Number of Projects

Mean Area of Open Space

Land Use in Protected Open Space in CD Projects

Most common objectives stated in CD regulations:

- **65%** preserve local open space
- **62%** reduce infrastructure
- **56%** conserve agricultural lands

Note: Chaffee was excluded due to inadequate delineation of open space areas.
COmParatIvE LAND USE ANALYSIS

- How do CD projects compare to other subdivision development options?
COLORADO CASE STUDY
ROUTT COUNTY

CONSERVATION DEVELOPMENTS AND COMPARATIVE SUBDIVISIONS

LEGEND
- Routt - Conservation Development Subdivisions
- Routt - 35-Acre Exempt Subdivisions
- Colorado Communities
- Counties with Regulations - Data Being Collected
- Counties with Regulations - Data Unavailable
- Counties without CD Regulations

35-acre subdivision
Unregulated CD

Colorado Case Study: Routt County
Conservation Developments and Comparative Subdivisions

Legend:
- Routt - Conservation Development Subdivisions
- Routt - 35-Acre Exempt Subdivisions
- Routt - Large Lot Subdivisions
- Routt - Unregulated CD Subdivisions
- Colorado Communities
- Counties with Regulations - Data Being Collected
- Counties with Regulations - Data Unavailable
- Counties without CD Regulations
COMPARATIVE LAND USE ANALYSIS - FINDINGS

**CD Projects**

Number of Projects

Mean Area of Open Space

Land Use in Protected Open Space in CD Projects

**Comparative Sites**

Mean Area of Open Space

Fragmentation in CD versus comparative subdivisions
## LAND USE ANALYSIS - FINDINGS

### CD Projects

<table>
<thead>
<tr>
<th>Number of Projects</th>
<th>Mean Area of Open Space</th>
<th>Land Use in Protected Open Space in CD Projects</th>
</tr>
</thead>
</table>

### Comparative Sites

<table>
<thead>
<tr>
<th>Mean Area of Open Space</th>
<th>Fragmentation in CD versus comparative subdivisions</th>
</tr>
</thead>
</table>

![Graph showing comparative sites and fragmentation in CD versus comparative subdivisions](chart.png)
## COMPARATIVE LAND USE ANALYSIS - FINDINGS

### CD Projects
- Number of Projects
- Mean Area of Open Space
- Land Use in Protected Open Space in CD Projects

### Comparative Sites
- Mean Area of Open Space
- Fragmentation in CD versus comparative subdivisions

---

*Note: Mesa was excluded due to lack of comparative data.*
COMPARATIVE LAND USE ANALYSIS - FINDINGS

CD Projects

- Number of Projects
- Mean Area of Open Space
- Land Use in Protected Open Space in CD Projects

Comparative Sites

- Mean Area of Open Space
- Fragmentation in CD versus comparative subdivisions

Note: Mesa was excluded due to lack of comparative data.
COMPARATIVE ANALYSIS: SALES TRANSACTIONS – GUIDING QUESTIONS

• Are CD projects more profitable than other development options?
  
  • Are there significant differences in prices for homes in CD projects versus the other development options?
  
  • Are there significant differences for homes in CD projects across the five Colorado counties?
COMPARATIVE ANALYSIS: SALES TRANSACTIONS - METHODS

• Characteristics which constitutes an amenity should contribute to the sales price of the home with ‘willingness-to-pay’ estimated from a regression of sales price on housing characteristics

• This project tests whether CD constitutes such an amenity by estimating WTP using hedonic estimation

• Merged national dataset of homesales (Core-Logic) with the CD and Comparative Subdivisions Database
  • 1.9 million sales transactions in Colorado
  • 7,638 transactions across 385 projects initially identified
  • 2,887 transactions across 220 projects included

Note: Projects were excluded from analysis due to lack of sales transactions or incomplete data.
COMPARATIVE ANALYSIS:
SALES TRANSACTIONS - FINDINGS

• Results suggest up to a 19% price premium associated – directly or indirectly – with location within a conservation development.

* Results are statistically significant (α=0.05); controls include living area, lot area, age of home, number of baths, distance to town
COMPARATIVE ANALYSIS: SALES TRANSACTIONS - FINDINGS

- With increased controls, sales premiums change, though still generally remains positive (note Chaffee only has 42 transactions)

* Results are statistically significant ($\alpha=0.05$); additional controls include bedrooms, basement sq. ft., central air, garage, waterfront
COMPARATIVE ANALYSIS:
SALES TRANSACTIONS - FINDINGS

• Strongly supports the idea that conservation developments provide a tangible amenity benefit

• CD subdivisions differ from non-CD subdivisions in the impact of:
  • **Lot square footage:** a larger lot in a CD implies a smaller proportion of the development dedicated to conservation. Sales prices decline.
  • **Age:** CD homes seem to lose value slightly more rapidly with age than other types.
  • **Distance from Town:** CD and Unregulated CD homes, unlike Large Lot homes, do not experience sales price declines as distance from town increases – possibly because of self-selection of consumers
SUMMARY & NEXT STEPS

• **Key Finding** – Open space protection is occurring across the state, almost 50,000 acres in Colorado have been protected through CD regulations (over 78 square miles of land)
  • **Next steps:** (1) Begin to understand the quality of open space protected within the conserved area, and
  • (2) Assess the distribution of CD projects relative to regional land-use patterns and conservation priorities

• **Key Finding** – There is a sales premium (up to 19%) for CD
  • **Next steps:** Evaluate other economic aspects, such as absorption rates

• **Key Finding** – We know much more about CD projects in Colorado
  • **Next steps:** What about the people and institutional contexts behind the CD projects?
**Conservation Development Learning Network**

**Vision:** To engage representatives from the various CD perspectives to collaboratively develop an outreach network that will *cultivate cross-boundary communication* and expertise in CD practice.

**Current Steps:**
- Assembling an advisory board diverse group of stakeholders
- Conducting interviews of CD practitioners
- Online survey to broader audience to prioritize concepts
ACKNOWLEDGEMENTS

CONSERVATION DEVELOPMENT GRCT MEMBERS:

FUNDING:
CSU School of Global Environmental Sustainability, USDA Forest Service – Rocky Mountain Field Station, National Association of Realtors – Realtor University, CSU Center for Collaborative Conservation
Questions for Discussion

1. From your perspective, how would you define success in a Conservation Development project?

2. What do you think are the key barriers and opportunities to more widespread implementation of Conservation Development?

3. What critical ecological, economic, social and/or policy questions related to conservation development have emerged from today’s session?

4. Can you offer suggestions for potential individuals or organizations that might be interested in partnering on conservation development research and outreach?

5. Could you benefit from a learning network on conservation development? If so, what content would you be most interested in and what platforms should we explore?
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