Colorado Water and Growth Dialogue

Colorado Water Wise Symposium

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COLORADO

Colorado Water Conservation Board

Department of Natural Resources

A Growing Opportunity

- By 2050, Colorado's population is projected to nearly double, greatly increasing the demand for water.
- Colorado is already a water short state.
- By 2050, most people will live in buildings that are yet to be built.
- To date, there has been little integration of land and water planning

The Colorado Water and Growth Dialogue

"If we grow the next 5 million people like we grew the first, there won't be enough water"

"Before we spend the political capital required to reduce landscaping and increase density, we need to know whether these things will move the needle"

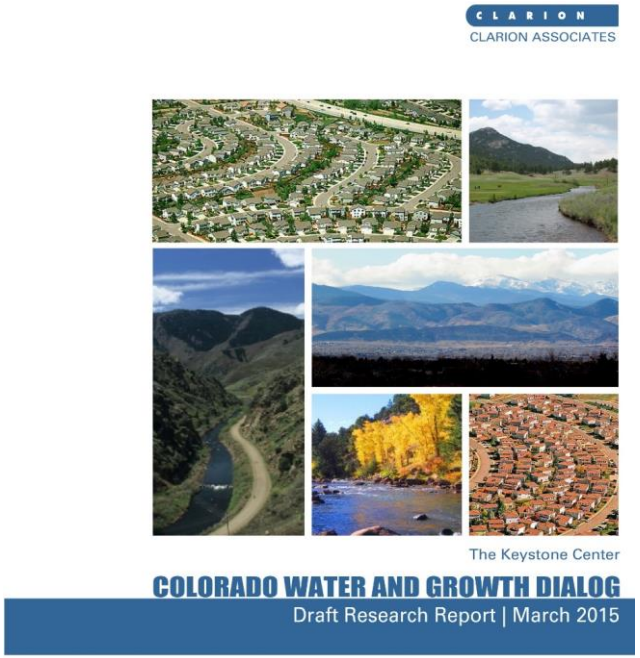
Goals:

- Demonstrate how much water can be saved through the integration of water and land use planning;
- Develop a consensus-based set of recommended strategies;
- Provide local communities with data, information and a tool box of strategies so that they may make better informed decisions

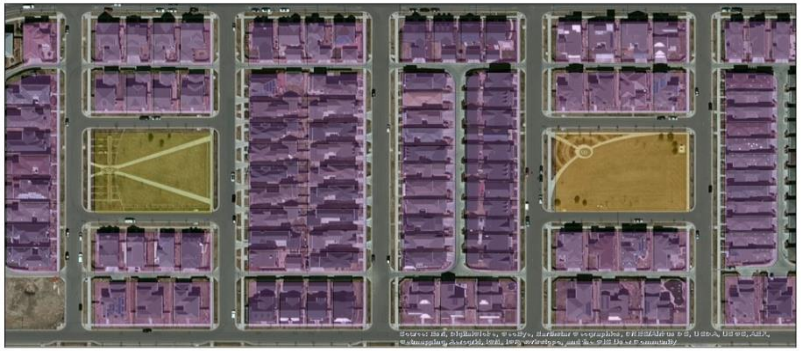
Clarion Report

- Clarion Associates developed a report that identified existing studies linking land use planning and water demand reduction, and suggested land use forms that might further that goal.

- The following 4 recommended land use pattern changes helped the dialogue focus on what to examine:
  - Land use patterns that are recommended for further examination
    - Build smaller single-family parcels
    - Changing from single-family to multifamily
    - Build denser multifamily
    - Enact landscape restrictions



Smaller Single Family Lots



Legend

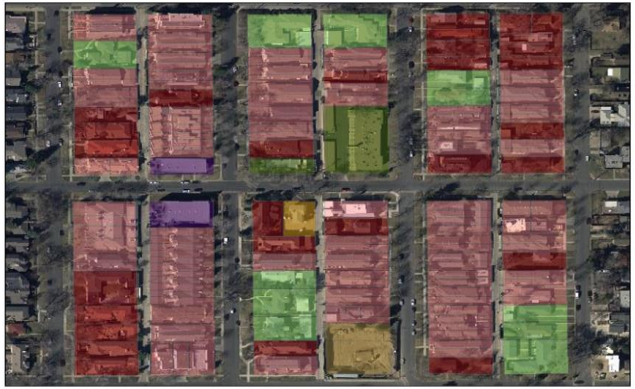
D_CLASS_CN

- SINGLE FAMILY
- VCNT LAND 0-1 ZONE
- VCNT LAND R-2, RS-2 ZONE

0 125 250 Feet

N

Changing from Single Family to Multifamily



Legend

D_CLASS_CN

- APT LOW-RISE>9UNT, WALK-UP
- APT W/2 UNITS
- APT W/3 UNITS
- APT W/4 UNITS
- APT W/5 UNITS
- CONDOMINIUM
- OFFICE W/RESID
- ROWHOUSE
- SINGLE FAMILY
- VCNT LAND R-2, RS-2 ZONE

N

0 110 220 440 Feet

Increase Multifamily Density

Legend

D_CLASS_CN

- APT LOW-RISE>9UNT, WALK-UP
- APT MISC, PKG, CLUBHOUSES
- CONDOMINIUM
- OFFICE BLDG
- PBG MID-RISE, EL, 1-9 STY
- REST. W/RESID
- RESTAURANT
- RETAIL W/RESID
- ROWHOUSE
- SINGLE FAMILY
- VCNT LAND - RES RATIO

N

0 125 250 500 Feet

Turf Restrictions

~40% turf

~15% turf

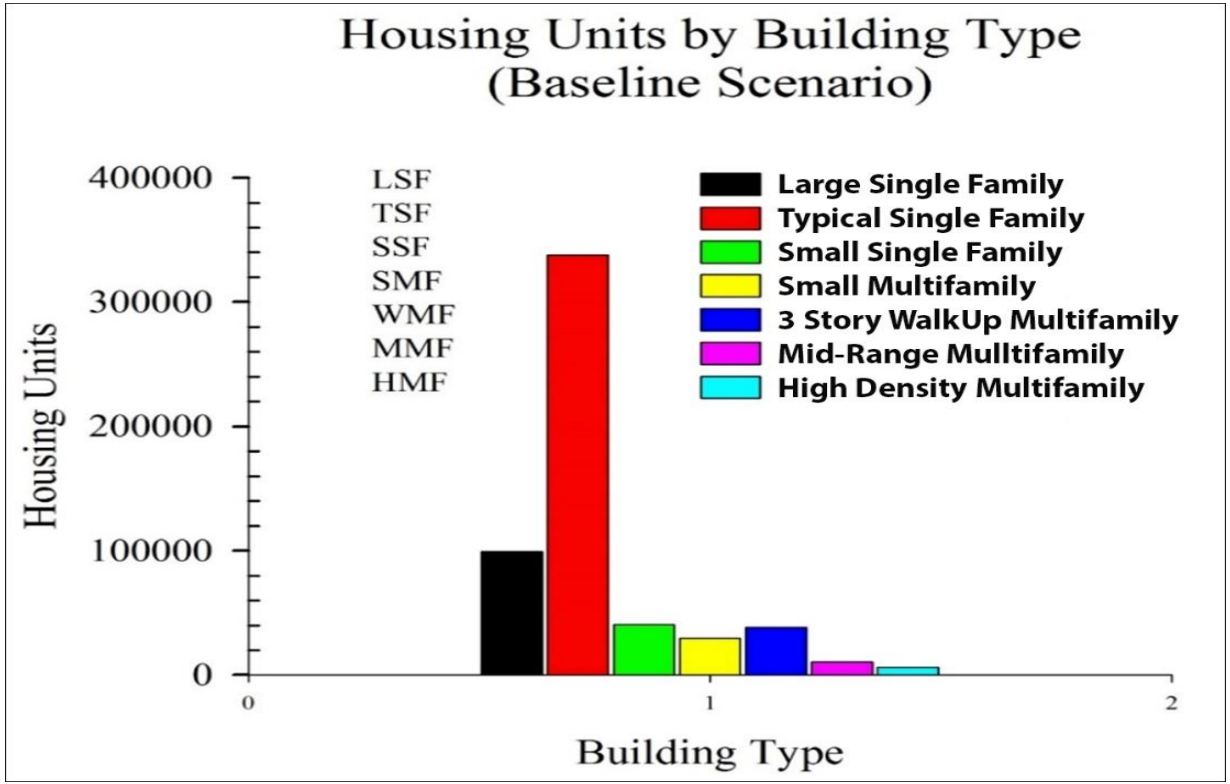
~20% turf

No maintained turf

Density

2010 Census	People per Square Mile
New York	27,000
	26,000
	25,000
	24,000
	23,000
	22,000
	21,000
	20,000
	19,000
	18,000
San Francisco	17,000
	16,000
	15,000
	14,000
	13,000
Chicago	12,000
	11,000
	10,000
	9,000
Baltimore	8,000
	7,000
Denver Water Service Area 2050	6,000
St. Louis	5,000
Denver Water Service Area 2010	4,000
	3,000
	2,000
Nashville	1,000

Allocation of Building Types 2040



Scenarios: Increasing Density – Key Concepts

- Scenario Movement

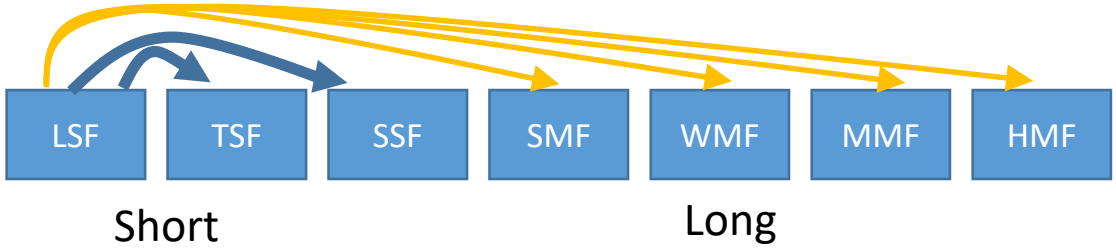
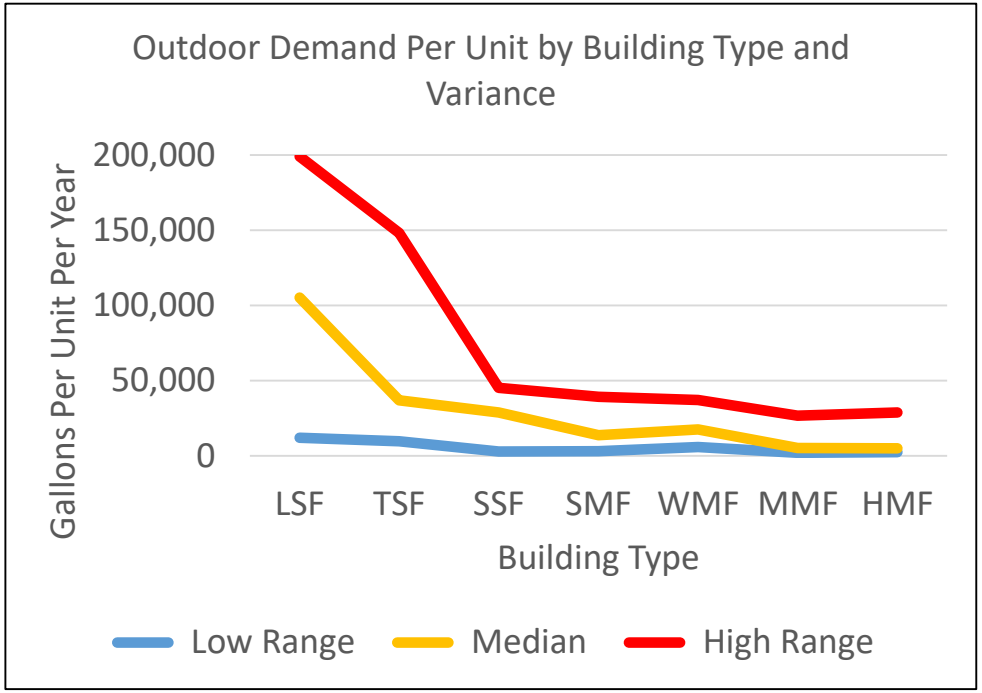


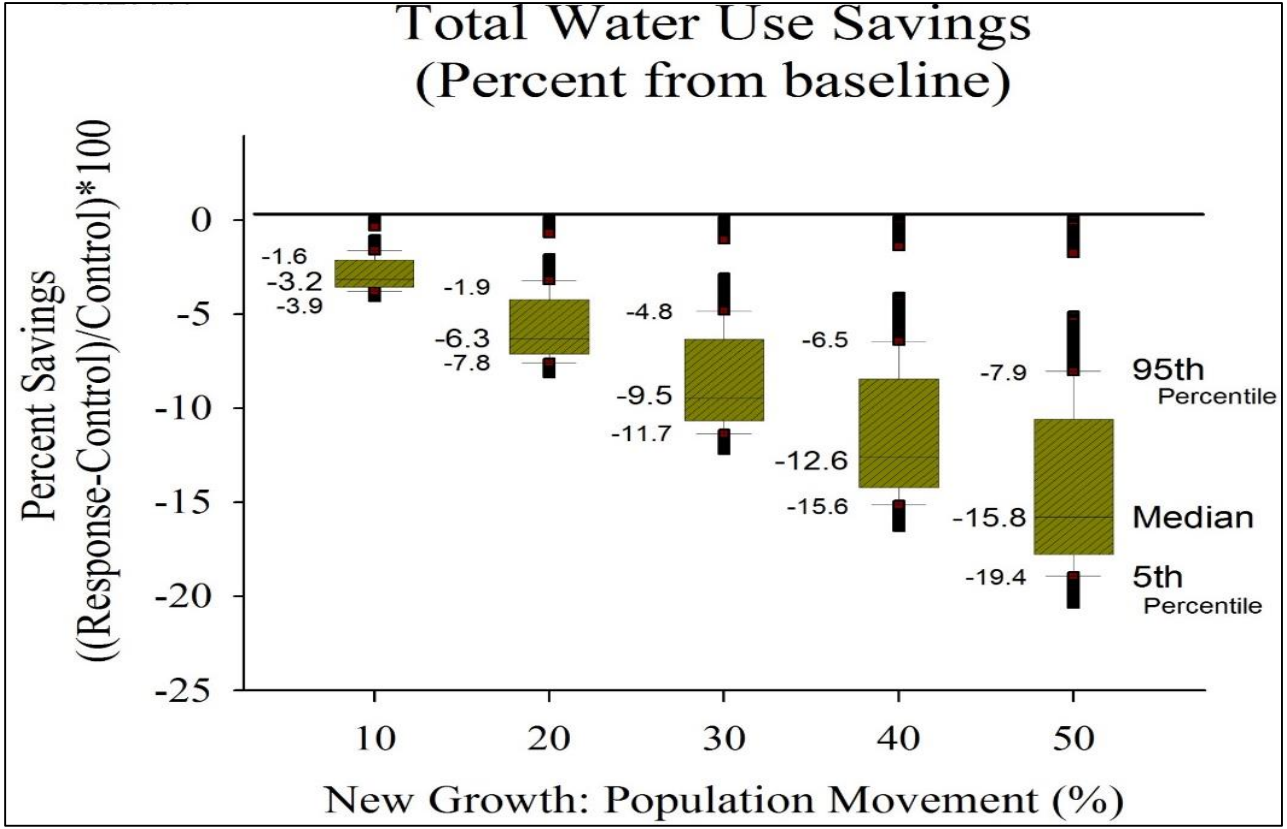
Figure 1

Strategic Insights- Density Increases

- Household movement from the Large Single Family and Traditional Single Family to other building types provides the largest reductions in total water demand of new housing.
- Scenarios that do not include LSF and TSF have little benefit.

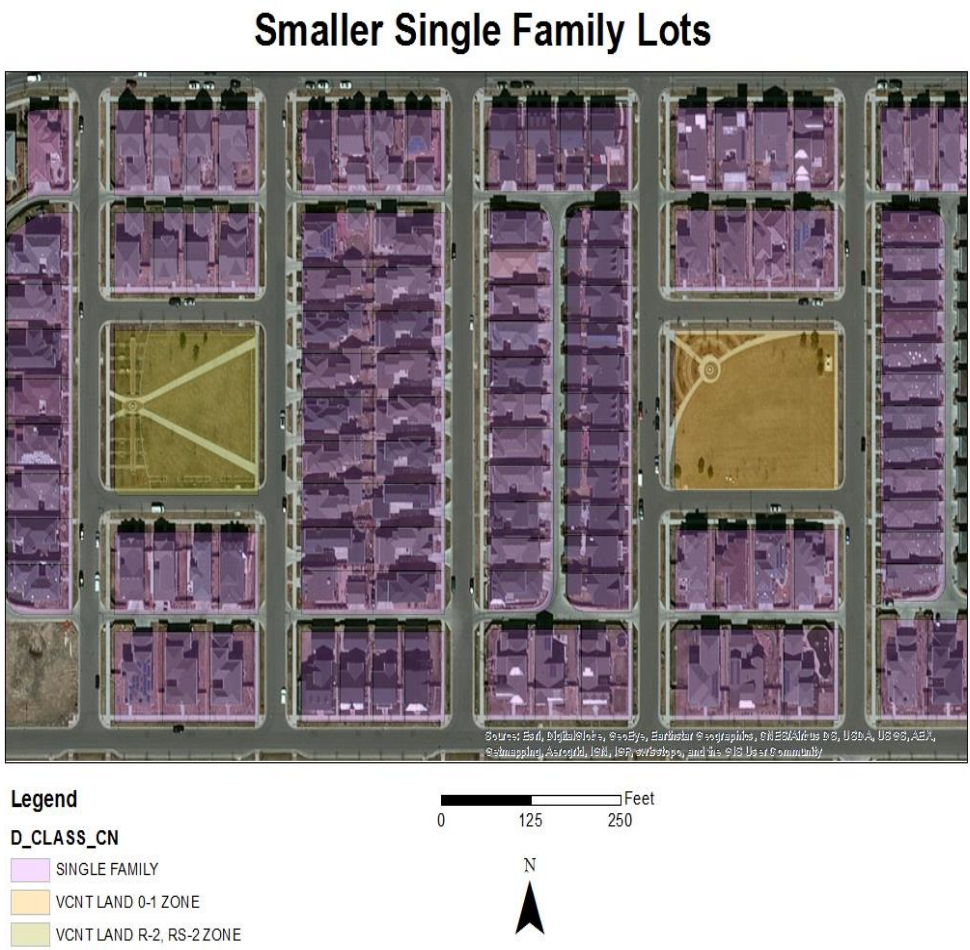


Scenario results



Strategic Insights – Density Increases

- Increasing density may decrease water demand of new growth in the range of 2% to 19%, with higher resource cost density increases associated with the higher (water) savings.
- Lower resource cost density increases may achieve 3% to 8% reduction for new housing.



Strategic Insights - Efficient landscaping

- Increasing the efficiency of irrigation may decrease water demand of new growth in the range of 5 to 25%, and be as effective, if not more, at reducing demand as increasing housing density.

- Combining low “resource cost” residential density increases with low “resource cost” reductions of irrigation may achieve reductions in total residential water demand of new growth by 5 to 15%.

40% turf

20% turf

No turf

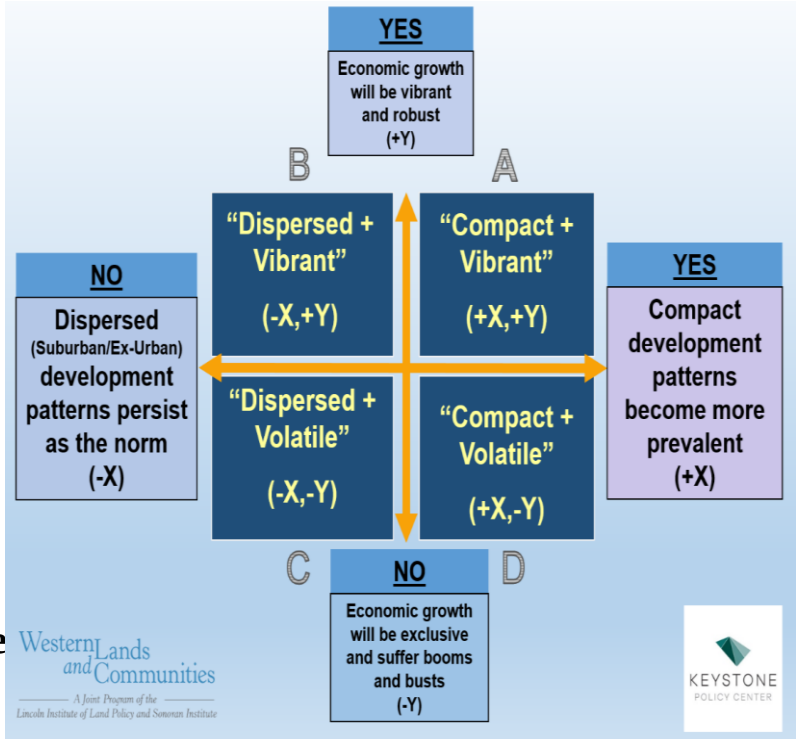
Recommended Strategic Levers

How can changes in urban form and landscaping practices for new growth and redevelopment assist in meeting future urban water demand along the Colorado Front Range?

Strategies were tested to see how well they performed in a variety of plausible futures that varied in terms of:

- **future housing preferences**
- **strength of the economy**
- **innovations in transportation technology**

The strategies that worked well across the range of futures were selected for further consideration.



Recommended Strategic Levers

- Encourage the consideration of higher residential densities as a means to reduce water demand
- Adopt landscaping policies to lower future water demand from population growth
- Incorporate a One Water approach into planning
- Incorporate aspects of water planning into long range planning

Recommended Strategic Levers

- Share success stories and case studies
- Develop, track, and refine new metrics that link water use to land use
- Encourage water smart development through a suite of new local development standards and incentives
- Develop water smart design guidelines and standards for government-owned buildings, public spaces and rights-of-way

Questions?