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

Changing from Single Family to Multifamily

Increase Multifamily Density

Legend

D_CLASS_CN
- SINGLE FAMILY
- VGN'T LAND R-1 ZONE
- VGN'T LAND R-2, RS-2 ZONE

Legend

D_CLASS_CN
- APT LOW-RISE 3-UNIT, WALK-UP
- APT W/2 UNITS
- APT W/3 UNITS
- APT W/4 UNITS
- APT W/5 UNITS
- CONDOMINIUM
- OFFICE W/ESID
- ROWHOUSE
- SINGLE FAMILY
- VGN'T LAND R-2, RS-ZONE

Legend

D_CLASS_CN
- APT LOW-RISE 3-UNIT, WALK-UP
- APT MISC PNG, CLUBHOUSES
- CONDOMINIUM
- OFFICE BLDG
- PUB MED-LT, EL, 1-8 STY
- REST. W/ESID
- RESTAURANT
- RETAIL W/ESID
- ROWHOUSE
- SINGLE FAMILY
- VGN'T LAND - RES RATIO

Legend

D_CLASS_CN
- APT OFR MISC PNG, CLUBHOUSES
- CONDOMINIUM
- OFFICE BLDG
- PUB MED-LT, EL, 1-8 STY
- REST. W/ESID
- RESTAURANT
- RETAIL W/ESID
- ROWHOUSE
- SINGLE FAMILY
- VGN'T LAND - RES RATIO
Turf Restrictions

~15% turf

~40% turf

~20% turf

No maintained turf
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<th>People per Square Mile</th>
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<td>Nashville</td>
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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

**Total Water Use Savings**
(Percent from baseline)

Percent Savings
(\text{Response-Control}/\text{Control})*100

New Growth: Population Movement (%)

- 95th Percentile: 95.4
- Median: 7.8
- 5th Percentile: 1.6

Values for New Growth:
- 10: -1.6
- 20: -3.2
- 30: -3.9
- 40: -6.3
- 50: -7.8
- 60: -9.5
- 70: -11.7
- 80: -12.6
- 90: -15.6
- 100: -19.4
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%.
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?