

Land Use and Colorado's Water Plan

NWCOG QO

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Water Supply Planning

Colorado Water Conservation Board

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COLORADO

Colorado Water
Conservation Board

Department of Natural Resources

COLORADO'S
WATER PLAN

Overview of CWCB's Conservation Program

Office of Water Conservation and Drought Planning provides technical and financial assistance for:

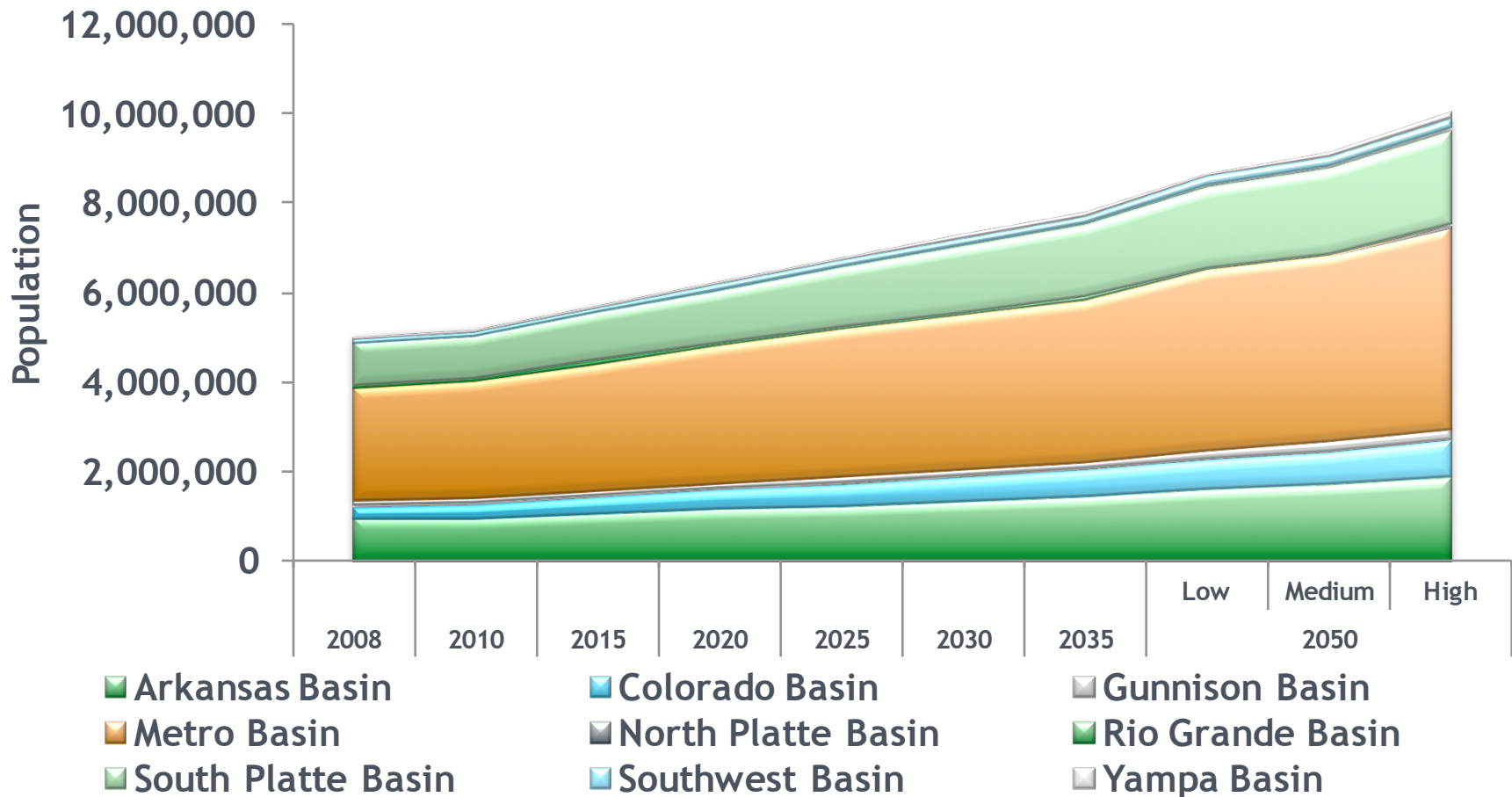
- Water Efficiency Planning and Implementation
- Drought Mitigation Planning

The Office has created guidance documents and sample plans for both areas

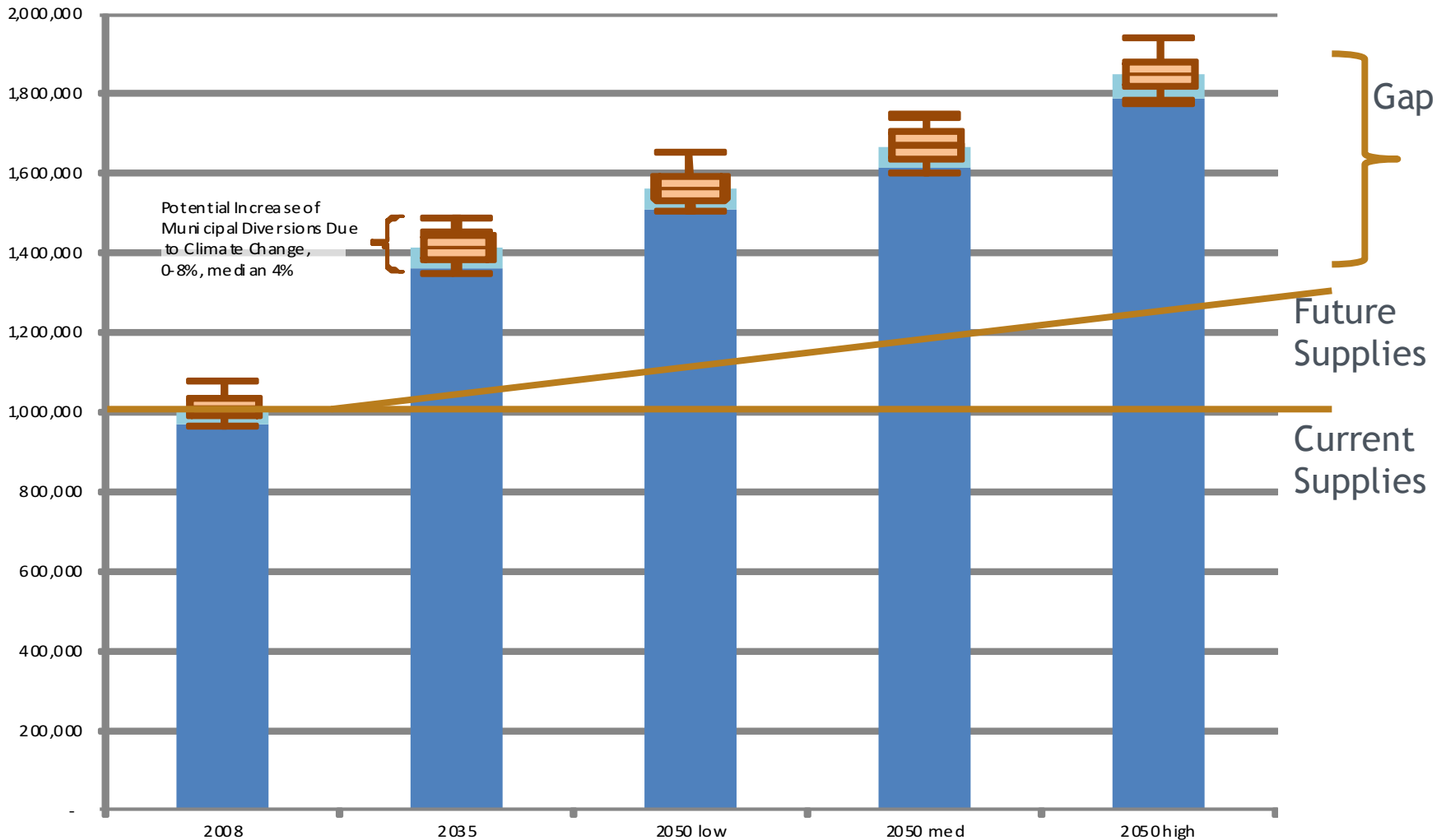
C.R.S. 137-60-126 requires covered entities (retail water delivery > 2000 AF annually) to create a state approved water conservation plan



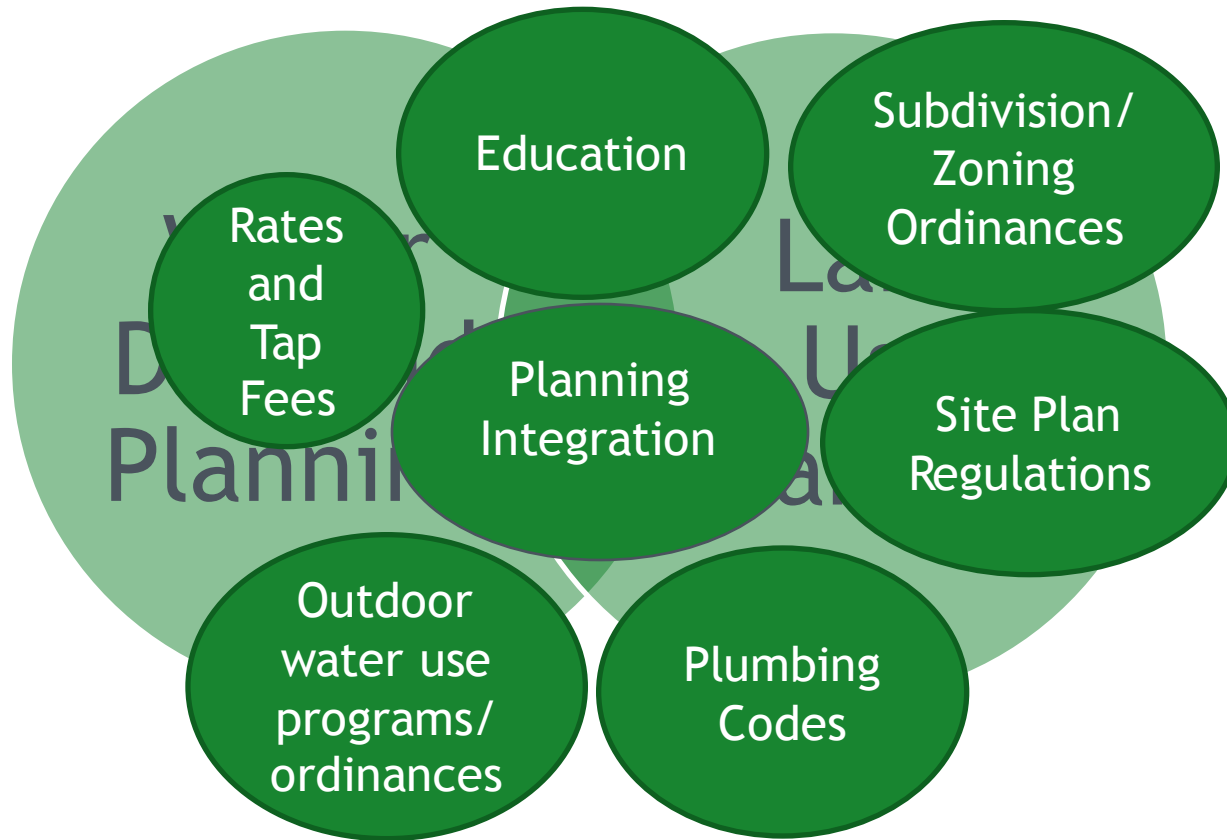
By 2050, Colorado's Population is Expected to Nearly Double



Municipal & Industrial Gaps



Land Use-Water Nexus



Land Use and Colorado's Water Plan

- Land use is governed at the local level and Colorado's Water Plan will not change that.
- There may be opportunities, however, where the state can provide incentives or benefits to encourage development to occur in a way that maximizes water efficiency.
- Incentivizing development that is more water-sustainable is one of our tools that can help ensure that Colorado enjoys a secure water future.

Land Use and Colorado's Water Plan

“Every community can do better on water conservation and efficiency via locally determined measures, such as, but not limited to, reinvestment in aging infrastructure, community education, enhanced building codes, and water-sensitive land-use planning.”

Guiding statement for county commissioners Boulder County, City and County of Denver, City and County of Broomfield, Eagle County, Grand County, Pitkin County and Summit County, *Comments on the Colorado Water Plan (March 5 - May 1, 2015)*, Item No. 67. May 1, 2015.



By 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.

The CWCB will work with the Department of Local Affairs, local governments, water providers, Colorado Counties Inc., Colorado Municipal League, the Special District Association, councils of governments, and homebuilders (Colorado Association of Homebuilders) to examine and strengthen the tools they collectively possess to help Colorado reach this objective.



Land Use and Colorado's Water Plan-Incentives/Initiatives

- Expedited permitting/tax incentives for buildings and developments with high levels of density that incorporate certain water efficiency measures
- Structured impact (tap) fees that are designed to promote water-wise developments and in-fill
- Water budget rate structures to help maintain initial projected water budgets for each site
- Linking comprehensive plans with water supply/demand management plans



Land Use and Colorado's Water Plan-Funding

- Water Efficiency Grant Program and Water Supply Reserve Account grant funds could be used to include demand management strategies in local comprehensive plans
- WEGP funds could be used to study land use patterns to ascertain demand reductions associated with certain land use patterns
- WSRA funds could be used for larger regional efforts as they tie more directly into the Basin Roundtables and regional projects.

Land Use and Colorado's Water Plan-Education/Training

- The Land Use Leadership Alliance has suggested further education and training on a longer-term basis to help create a culture of collaboration between land use and water supply/demand planning.

Land Use and Colorado's Water Plan-Partnerships

- Partnerships are necessary for successful integration of water and land use
- Partnerships between local government, state government, academia, NGOs, economic development, development/homebuilding industry among others.



Land Use Initiatives in Colorado's Water Plan

- DRCOG Metrovision 2035

- Specifically addresses water conservation
- Goal of 10 % increase in density between 2000-2035

- Net Zero Water Initiative

- A concept that mitigates the water quantity and quality impacts through best practices incorporated into the development or management of a site.
- Net Zero Water planning template includes guidebook and toolkit



Land Use Initiatives in Colorado's Water Plan

Land Use Leadership Alliance Training

- Convened land use and water planners along with city managers, city council members, developers, regional government planning groups, and CWCB staff for four all day sessions focused on the land use and water planning nexus.
- Two rounds of training have been completed to date



Land Use and Colorado's Water Plan-Education/Training

SB 15-008:Concerning the promotion of water conservation in the land use planning process

- Develop and provide training programs for local government water demand and land use planners regarding water demand management best management practices
- Integration of water demand management and water conservation planning into the covered entity's land use planning



CO Water and Growth Dialogue

- Identify and evaluate potential strategies for saving water in urban development and redevelopment including:
 - Quantity potential saving
 - Identify opportunities and barriers
- To provide local communities with data, information and a tool box of strategies so that they may make better informed decisions



Scope

Focus: Strategies to save water prior to residents moving into new residents. Excludes retrofitting and modifying customer behavior.

Geography: The Denver Water and Aurora Water service areas

Planning time horizon: 2040

Stakeholders: Water providers, land use planners, developers, economic development interests, public officials, and other key stakeholders



Process

- Researched strategies and case studies
- Conducting modeling of savings from increased patterns of density and decreased landscaping.
- Development of toolbox of strategies
- Scenario exploration to test and refine strategies
- Consensus and dissemination



The Water and Growth Dialogue Technical Report

- Are there studies identifying water savings with
 1. Different types and densities of land use?
 2. Other land use regulations?
- What other steps have cities and states taken to reduce water consumption --- regardless of whether they have studied or documented the resulting savings?

CLARION
CLARION ASSOCIATES



The Keystone Center

COLORADO WATER AND GROWTH DIALOG

Research Report | March 2015



COLORADO'S
WATER PLAN

Land Use and Residential Density

1. Yes:

1. Smaller Lots (\pm 5,000 sq. ft.) consume less water than larger lots.

2. Townhouses consume less water than small lots.

35-65% per capita

3. Low to Mid-rise multi-family consume less water than townhouses



Land Use and Residential Density

Mostly a matter of amount of irrigated area and the number of people per acre

$$\frac{\text{Water consumption}}{\text{People}} = \frac{\text{Irrigated landscaping}}{\text{People}}$$

So --- reducing irrigated area improves the number

AND

Increasing residential density improves the number



Other regulatory approaches

1. Limits on irrigation -
regardless of lot size - are
effective 50-75%
reduction??
2. Improved plumbing codes
 - IGCC plumbing sections ??
 - ICC and IAPMO green
supplements
3. Improved water pricing and
submetering ±20% ??

Modeling and Analysis

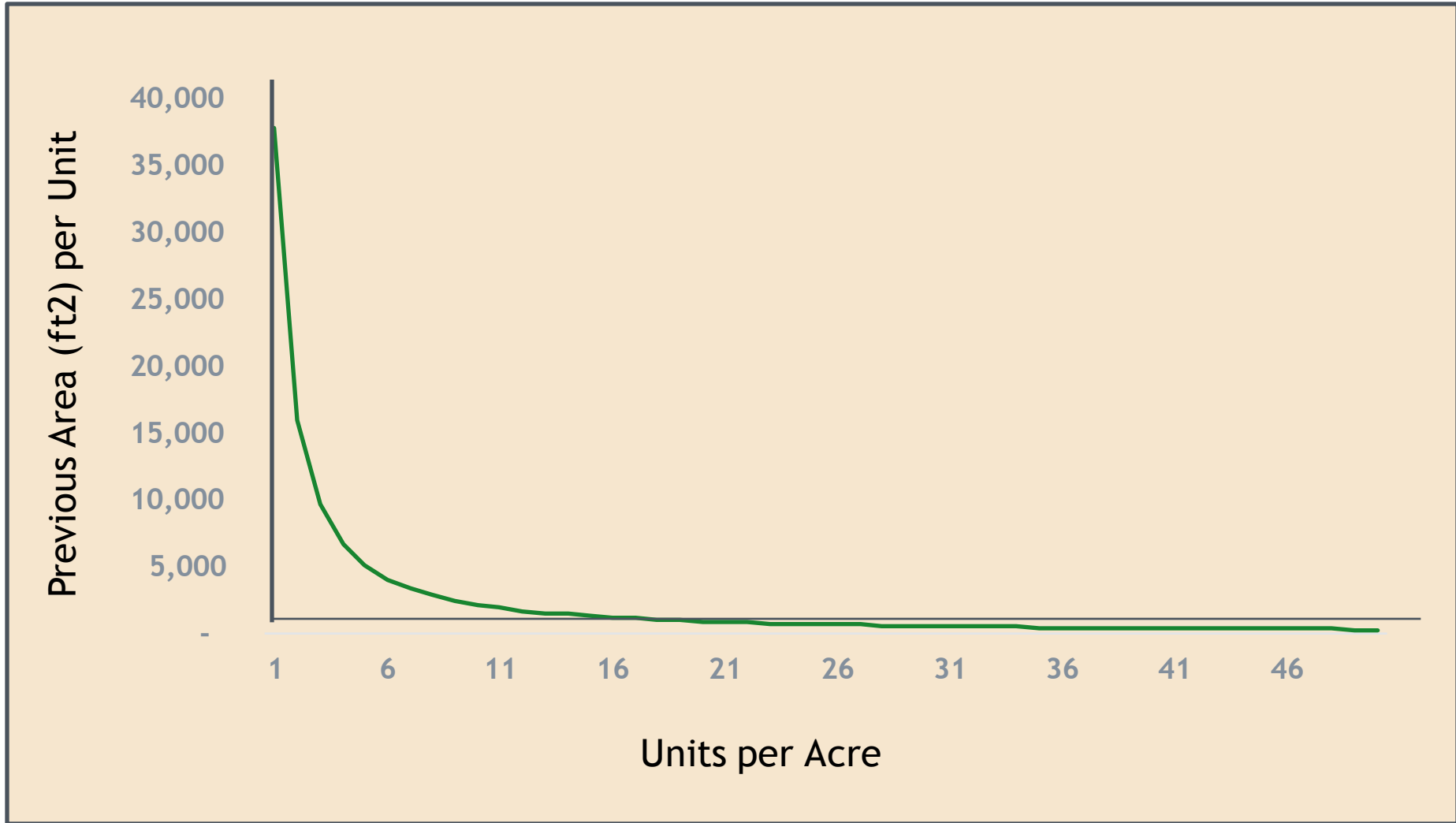
- Assess the relationship between land use development patterns and water consumption in the Denver region
- Evaluate the potential of land use incentives and regulations to save water
- First step is to develop a method to estimate water saving with denser residential land use



Product Type	Units Analyzed	Avg. Units per Zoned Acre	Avg. Pervious Area (ft ²) per Unit	Avg. Indoor GCD	Avg. Outdoor GSF (pervious)
Large Single Family (>10,000 ft ²)	423	2.8	14,305	54	12
Typical Single Family (6,500 - 10,000 ft ²)	363	5.2	5,497	38	8
Small SFR (2,000 - 5,000 ft ²)	371	8.6	2,191	47	21
Townhome	346	16.0	1,302	53	15
3-Story Walkup	1,336	24.3	604	51	32
Mid-Range Multi Family	1,662	71.9	198	56	83
High Density Multi Family	2,060	115.2	146	55	199



Residential Density Reduces Outdoor Use



Next Steps

Modeling

- Incorporate information from Aurora Water service area
- Finish demand model
- Use DRCOG model projections to explore savings from density and turf restrictions
- Continue evaluation and development of a toolbox of options
- Use exploratory scenario analyses to refine the toolbox



Land Use and Colorado's Water Plan

- How do we want to grow and develop? As a state, as local communities?
- How do we integrate water into land use decisions? Vice versa.
- What do our 21st century communities look like through the lens of a lower water supply/higher water demand scenario?



Thank You

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