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PUBLIC WORKS & DEVELOPMENT

Arapahoe County Water Supply Study

Study Session, September 2024

Agenda

- Study Overview
- Engagement Summary
- Study Findings
- Policy Recommendations
- Next Steps

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Study Overview

Plan for current and future water needs.

- Assess water supplies and demands up to the year 2050.
- Identify potential shortages.
- Identify how water can be used more efficiently in the years ahead.
- Engage residents to better understand needs and concerns.
- Complete a study seeking to balance demands with supplies.

Study Goals

Goal 1: Close potential gaps between future supply and demand.

Goal 2: Improve Water Use Efficiency to address anticipated supply gaps.

Goal 3: Extend the life of Denver Basin aquifers to sustain a long-term supply.

Tasks & Deliverables

- Land Use and Socioeconomic Scenario Development
- Groundwater Analysis
- Review of Water Conscious Landscaping Standards
- Assessment of Water Conservation Plans on Future Water Demand
- Demand and Supply Analysis
- Water Reuse Analysis
- Recommendations for Regulatory Modifications
- Water Supply Study (Final Report)

Engagement Summary

Outreach:

- Community interest form
- Website
- Banners
- Email distribution
- Social media
- Flyers
- Participation at the county fair
- Coordination with Advisory Committee and REAP

Community Survey:

- 498 Respondents
- 15,681 Survey data points

3 Public Meetings

Public Meetings and Open Houses

January 31, 2024, Virtual Public Meeting

April 24th, 5pm, Smoky Hill Library

May 9, 5pm at the Kelver Library

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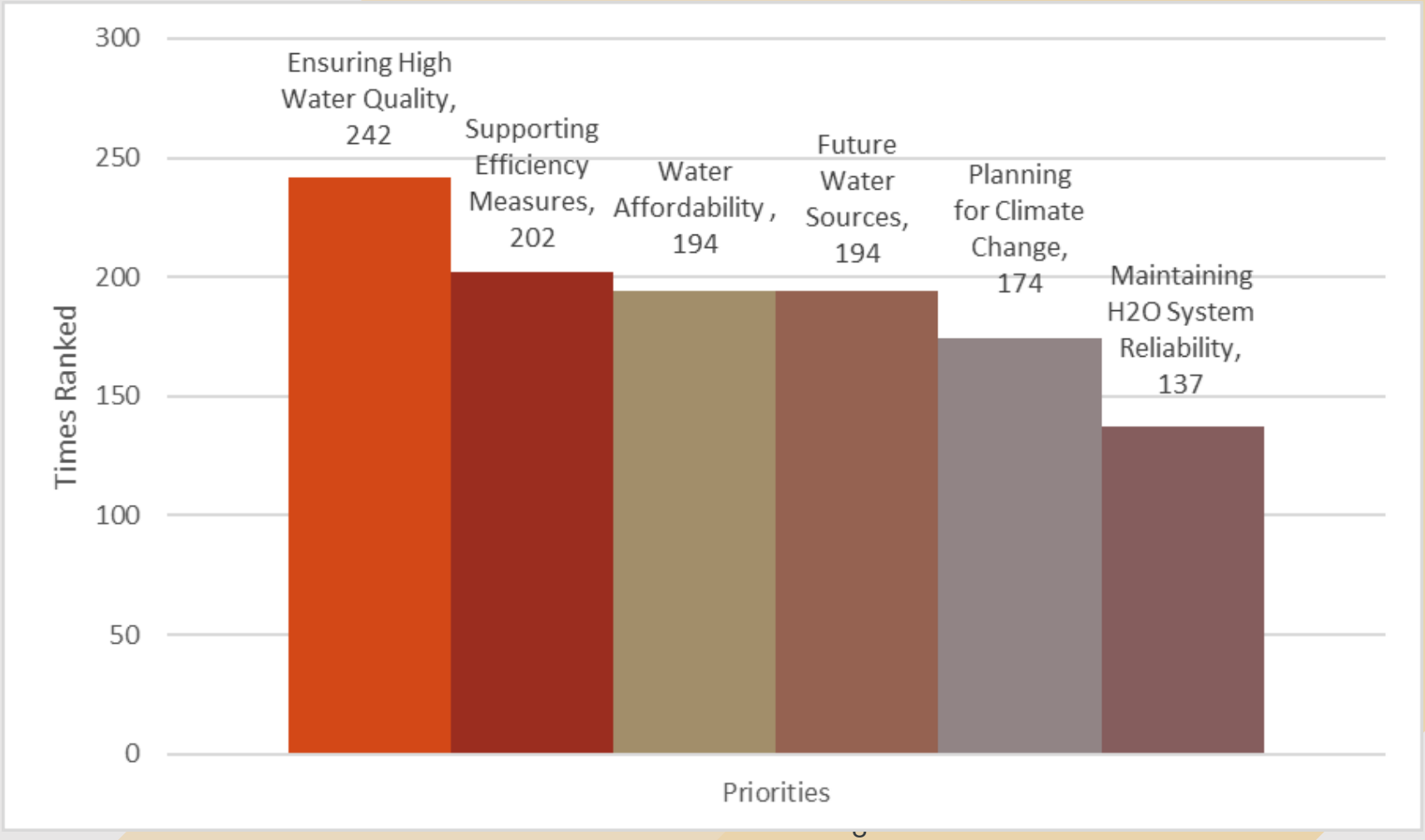
Water Supply Priorities



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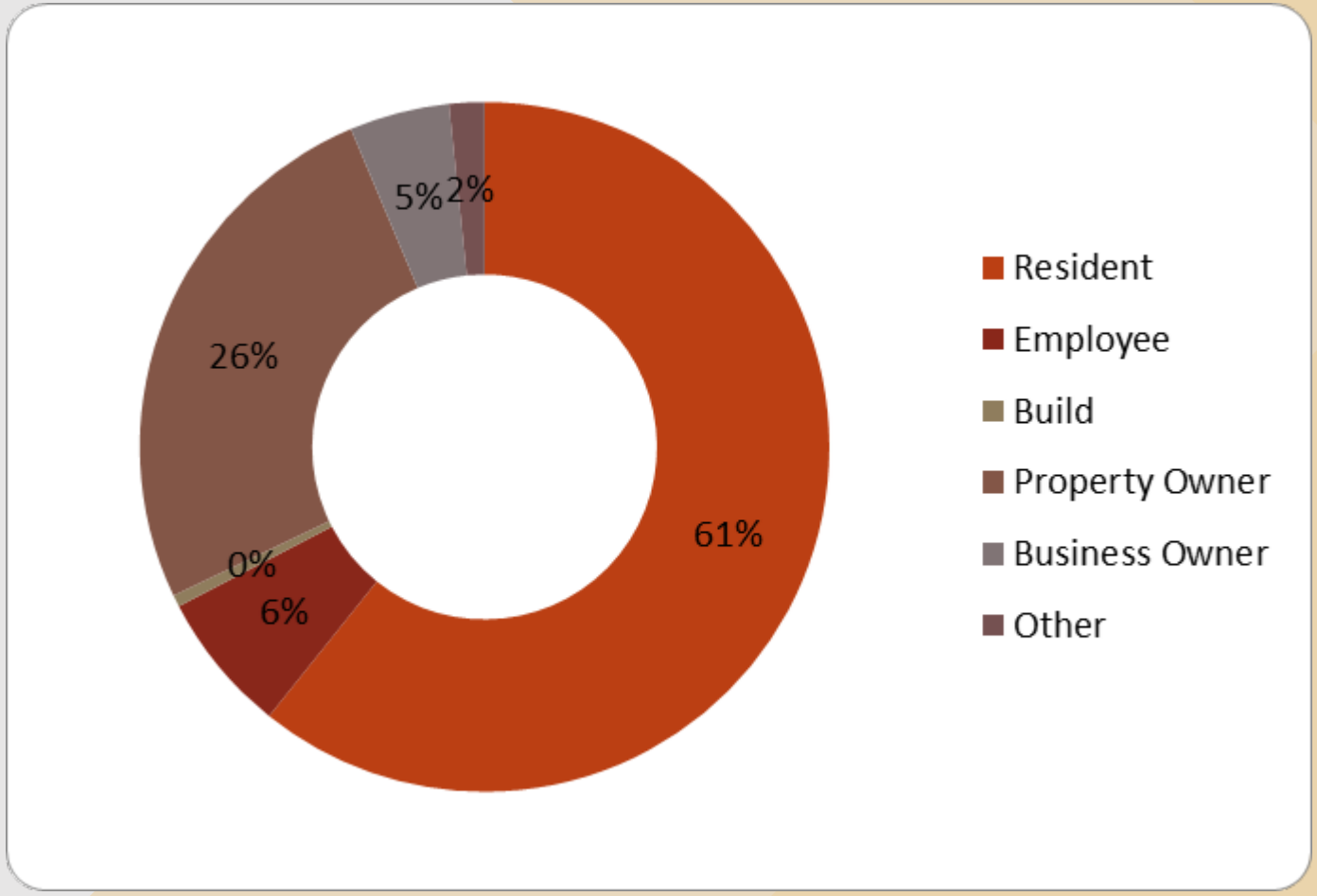
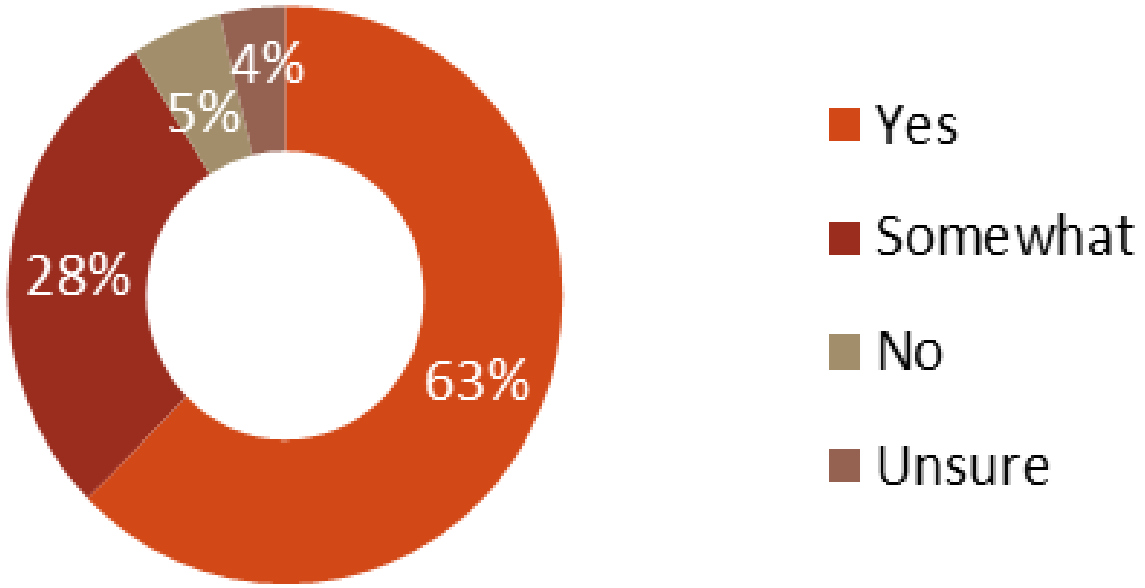
What is your connection to water in Arapahoe County?

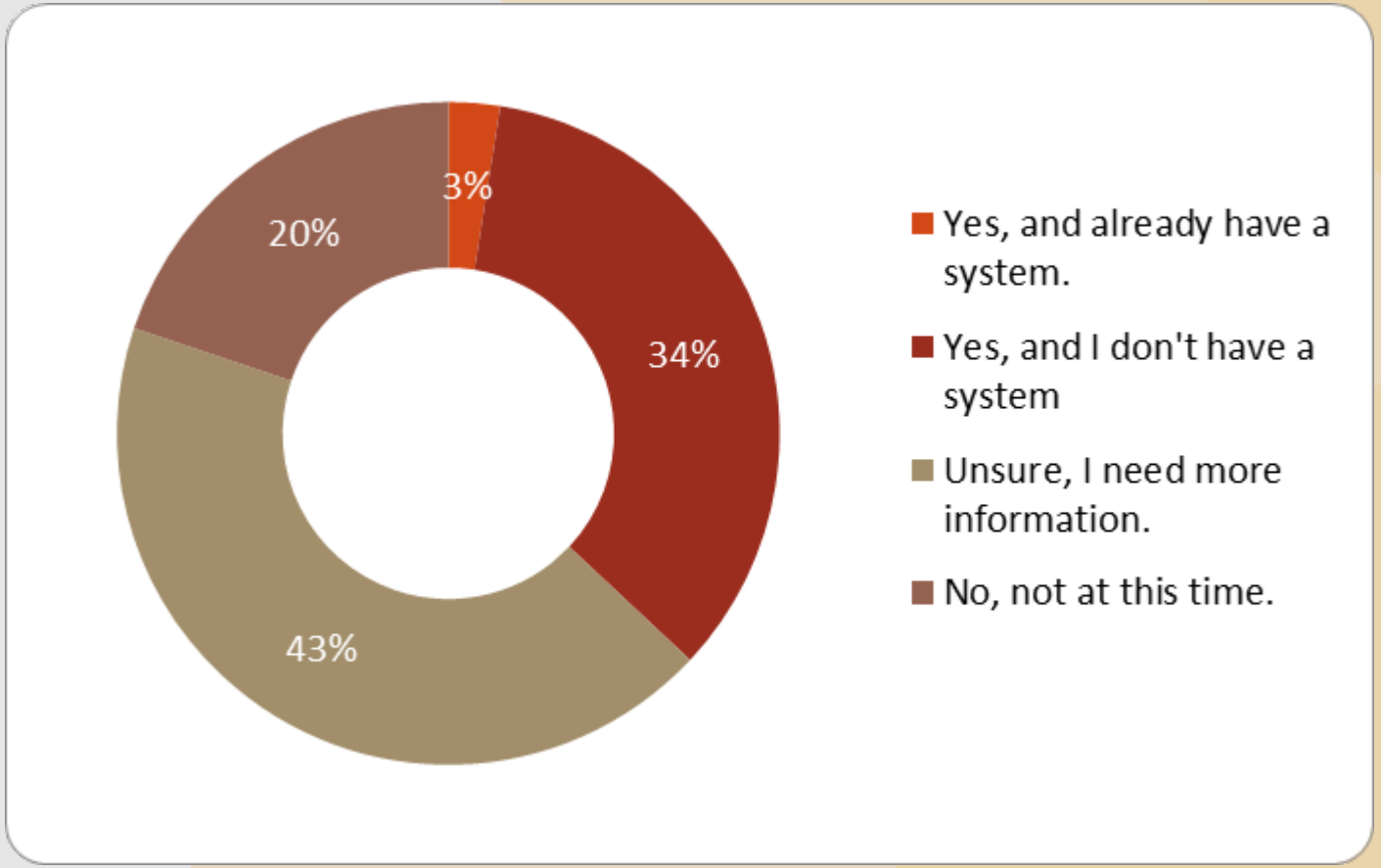


91% of respondents receive their water from a water provider.

Are you concerned about the future water supply in Arapahoe County ?



Are you interested in home water recycling?



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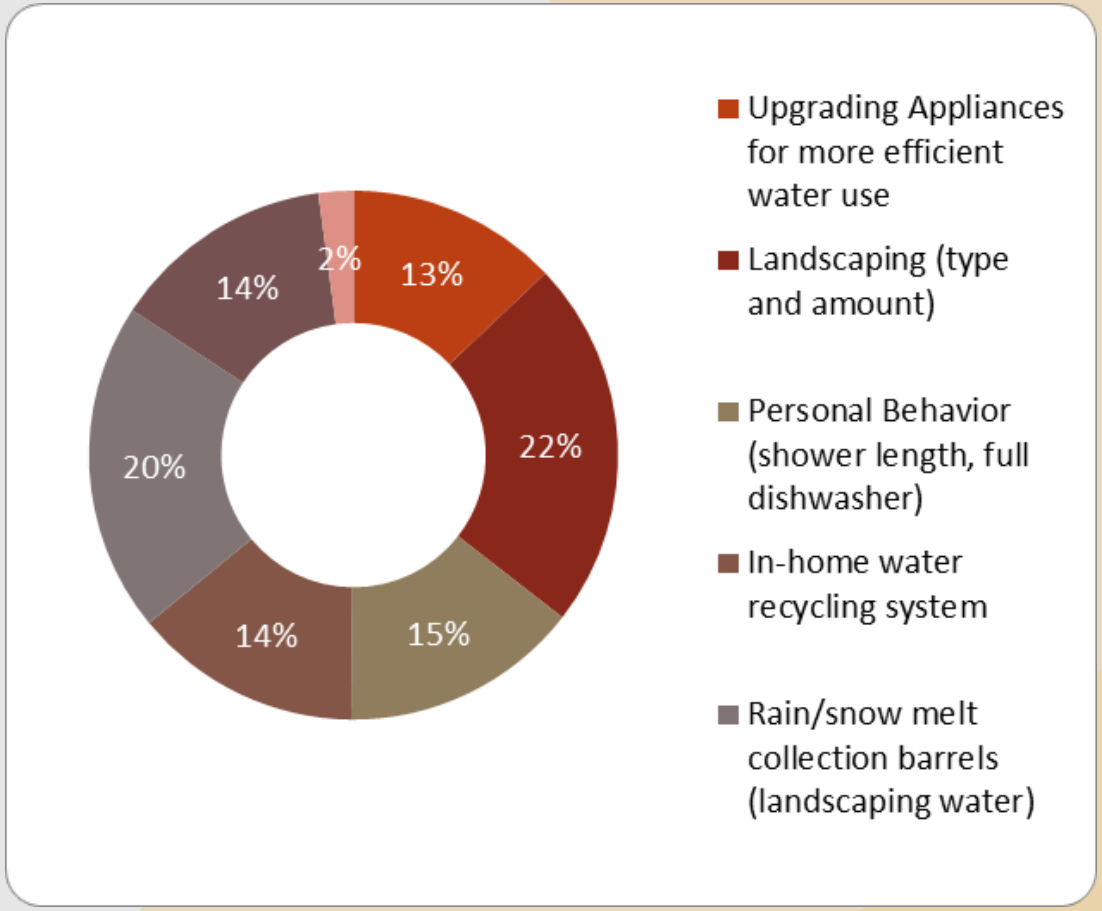
How would you want to/ how would you be willing to save water?



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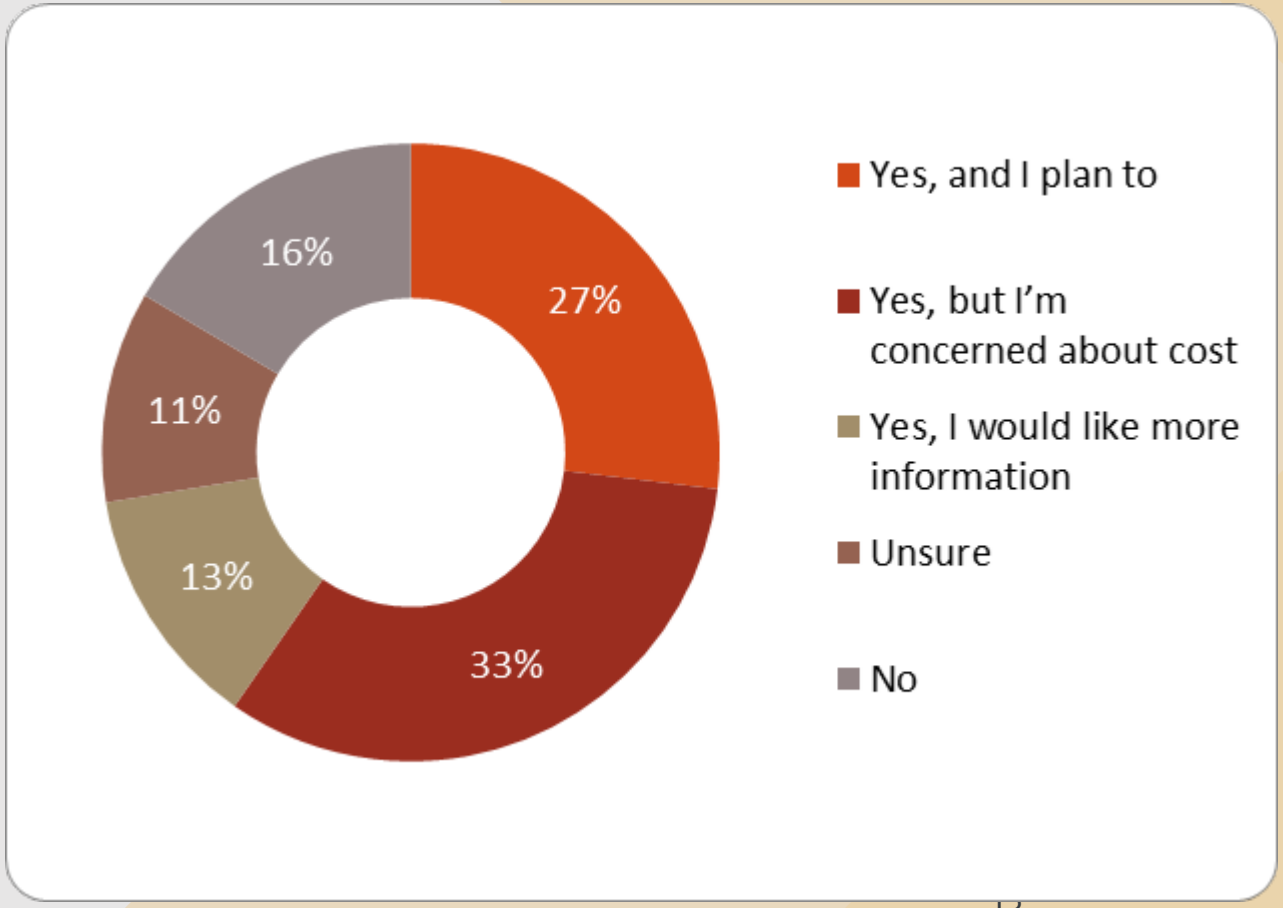
Would you like to change your landscaping to reduce water use?



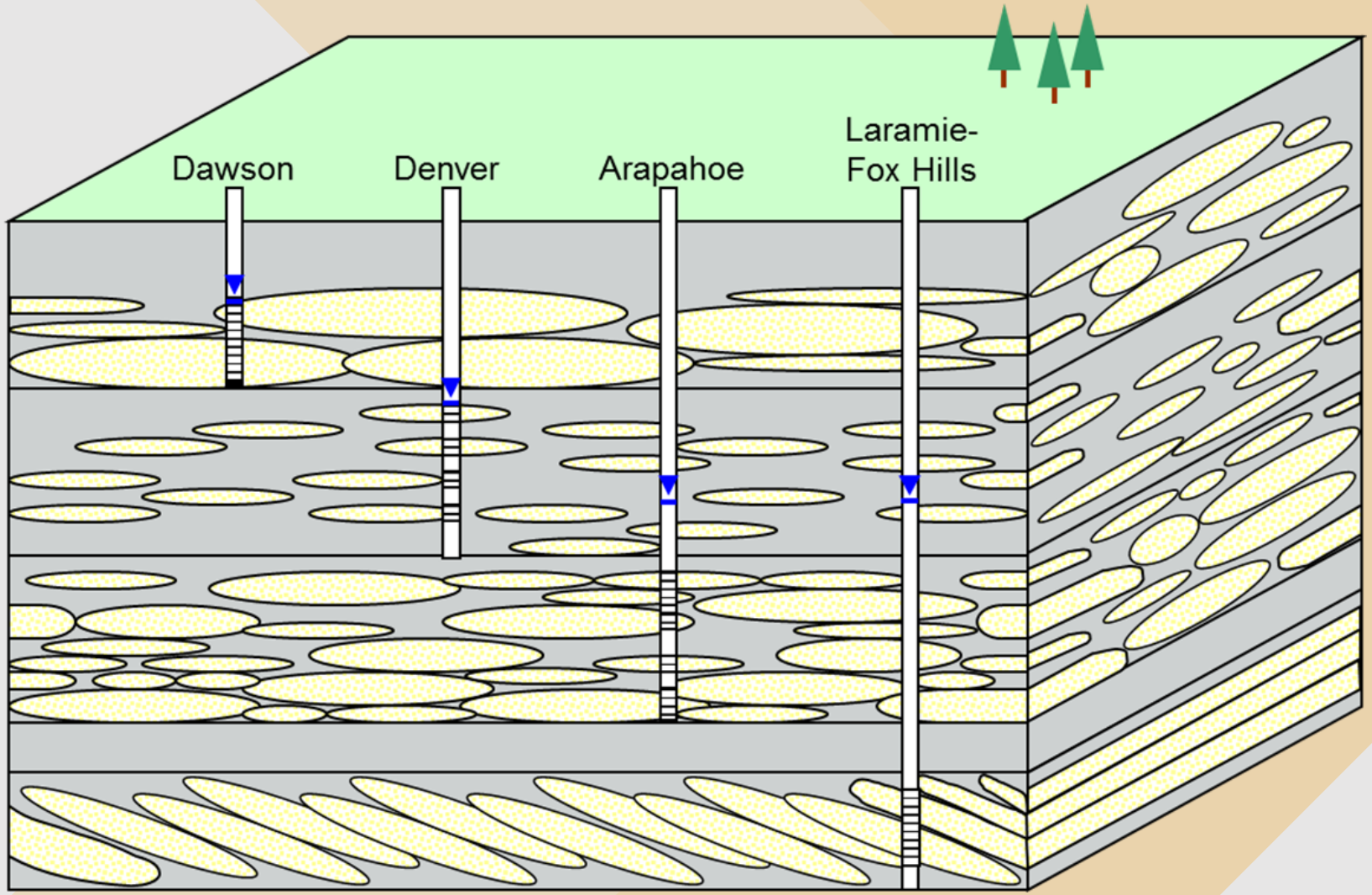
Study Findings

Key Findings

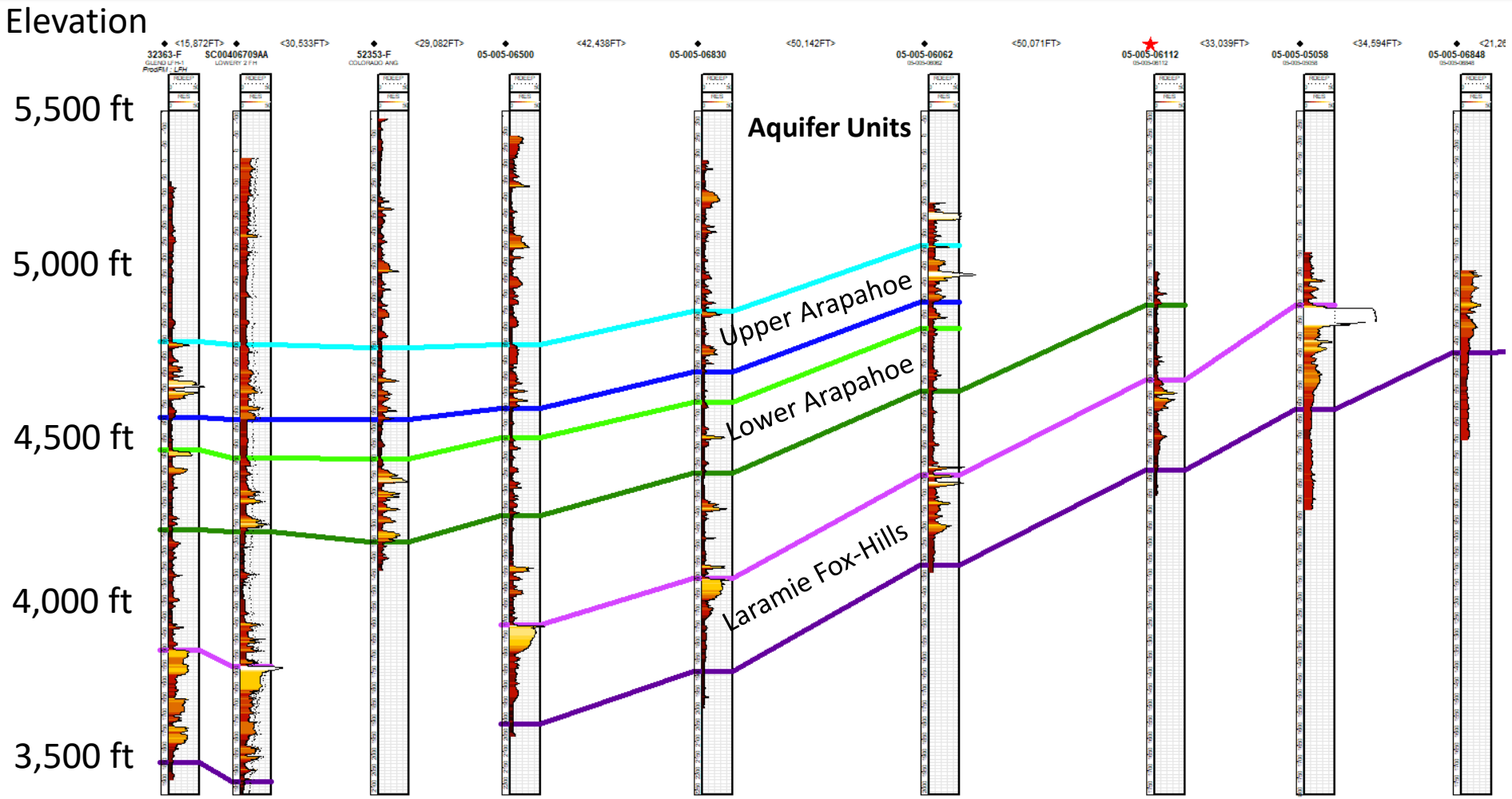
Growth, Supply and Demand

- Current population: 656,000
- 2020 Demand: 83,400 AFY
- 2020 Supply: 108, 200 AFY (not including "no district" groundwater supplies).
- 2050 Projections
  - *Population: 900,000 to 960,000.*
  - *Employment: 532,000 to 595,000 jobs.*
  - ***Demand: 108,900 – 116, 800 AFY***
  - ***Supply: 141,650 AFY***
  - ***Continued conservation—Demand: 97,200 – 103,700 AFY***

Denver Basin



STRUCTURAL MAPPING METHODOLOGY



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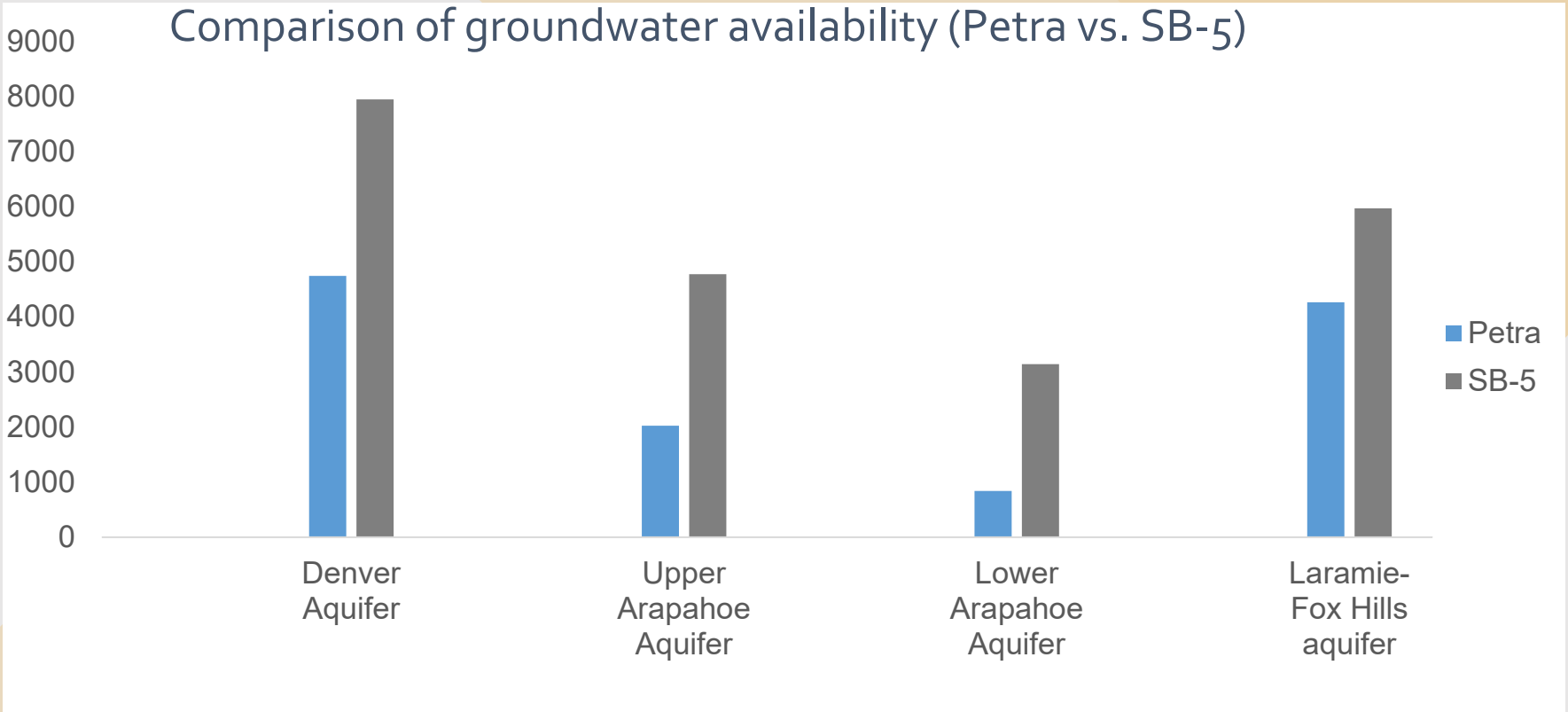
Key Findings – Groundwater Analysis

- **Purpose** – to estimate amount of Denver Basin groundwater physically available.
- Estimated at approx. 60 percent (on weighted average) of the Denver Basin Rule allocations for the Denver Basin aquifers.



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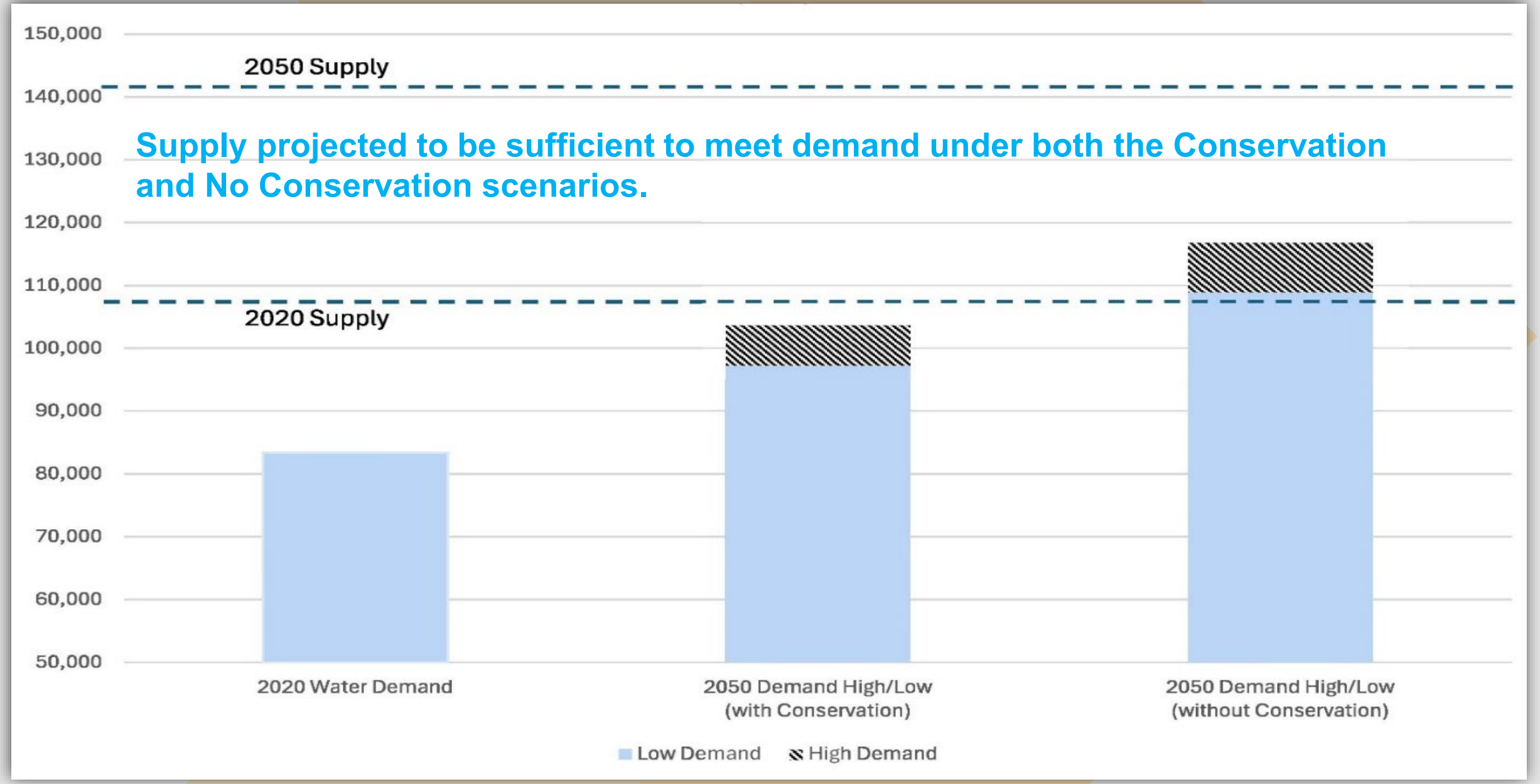
Physically Available Water

Name	PETRA Groundwater Calculations	Denver Basin Rule Computations	Percent Physically Available vs Denver Basin
	AFY	AFY	%
Denver Aquifer	4,746	7,954	60%
Upper Arapahoe Aquifer	2,022	4,779	42%
Lower Arapahoe Aquifer	839	3,145	27%
Laramie Fox-Hills Aquifer	4,267	5,975	71%
Total	**11,873**	**21,853**	**Weighted Average – 59%**

Key Findings – Future Supply

- **Three of 12 water providers addressed in analysis have potential shortages in 2050**.
- Water providers working to increase supplies to meet growing demands within the county.
- Conservation, sharing agreements, regional (supply development) partnerships can close gaps.
- Substantial supplies in Denver Basin, however 65 % in Laramie-Fox Hills aquifer (more costly to develop).


150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
2050 Supply
2020 Supply
Supply projected to be sufficient to meet demand under both the Conservation and No Conservation scenarios.
2020 Water Demand
2050 Demand High/Low (with Conservation)
2050 Demand High/Low (without Conservation)
Low Demand
High Demand

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No District / Demand Findings

- "No district" demand based in unincorporated areas.
- 2020 demand: 2,300 AFY
- 2050 demand: 4,800- 5,600 AFY **(more than double)**

The Look Ahead

- Increased costs (of water) expected to drive more efficient use.
- Providers engaged in conservation strategies (reuse, "conjunctive use") - coordinated management of surface water and groundwater supplies to maximize yields.
- Water conservation to reduce 2050 demand by 12% or more.
- Water-wise landscaping a primary source of potential savings.
- County updates to landscaping standards to take effect in 2025.

Policy Recommendations

- Align with the study findings for water supply and demand conditions.
- **Recommendations related to land use and regulatory oversight that would be led and implemented by the County (County Policies). Would require amendments to County's Land Development Code.**
- Others are **collaborative efforts** to be led by water providers and other interested parties and supported by the County (Collaborative Policies).

Recommended Policies
AP1: Denver Basin Aquifer-specific Annual Withdrawal Production Factor
AP2: Connected Systems
AP3: Early Water Evaluation for Development
AP4: Increase Water Efficiency Regulations in New Development
AP5: Programs, Education and Resources for Water-wise Landscaping
AP6: Encouraging Water Reuse
AP7: Water Management Policy Audit
AP8: Groundwater Systems Best Practices
AP9: Reducing Development Barriers
AP10: Graywater Systems

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County Policy Recommendations

AP1: Apply Denver Basin aquifer-specific annual withdrawal reduction factor (based on groundwater modeling results) to more accurately reflect what Denver Basin aquifers can sustainably produce in Arapahoe County.

AP1: Denver Basin Annual Production Factors

Apply an aquifer-specific annual production factor to the groundwater supply standards (based on modeling results) to more accurately reflect the economic productivity of Denver Basin wells in Arapahoe County using current technology. Table 9-2 identifies the production factors.

Table 9-2. Production Factors

Available Water Calculations Watkins/Bennett Study			
Name	Petra Calculation AFY (Physical)	SB 5 Calculation AFY (Legal)	Production Factors
Denver Netpay	4,746	7,954	0.60
Undifferentiated/Upper Arapahoe, Arapahoe Netpay	2,022	4,779	0.42
Lower Arapahoe Netpay	839	3,145	0.27
Laramie-Fox Hills Netpay	4,267	5,975	0.71

County Policy Recommendations

AP1: Apply Denver Basin aquifer-specific annual withdrawal reduction factor (based on groundwater modeling results) to more accurately reflect what Denver Basin aquifers can sustainably produce in Arapahoe County.

Denver Basin Use Comparison		
	Years	Example Number of Units on Property
State Allocation	100	100
200-year rule	200	50
300-year rule	300	33
Recommended Production Factors (all aquifers)	170	59

County Policy Recommendations

AP2: Connected Systems

Require developers to coordinate with water providers to identify opportunities to connect to a public water system or consolidate individual wells into new or existing water storage, supply, and distribution systems. This would improve delivery efficiency, accuracy for metering use, and mitigate concerns among some well-owners about availability of the long-term water supply.

County Policy Recommendations

AP3: Early Water Evaluation for Development

Require a water supply plan documenting an appropriate supply to serve a proposed development at the earliest stage of the development review process as allowed under state law. The water supply plan should be prepared by the applicant in collaboration with the respective water provider. The water supply plan should prioritize the use of deeper aquifers, as described further in AP8. ”Will-serve” letters from service providers shall include a completed Office of State Engineer Form GWS-76 or equivalent. An example Will-Serve letter format is provided in Appendix H.

County Policy Recommendations

AP8: Groundwater Systems Best Practices

For groundwater systems, encourage centralized systems over decentralized systems (based on economic analysis), and require centralized systems to prioritize use from the deeper Arapahoe and Laramie-Fox Hills aquifers ahead of the shallower aquifers, leaving or deferring use of the shallower aquifers for domestic well users unless precluded by site specific aquifer conditions.

County Policy Recommendations

AP10: Graywater Systems

Graywater treatment systems should be allowed in new construction projects, pursuant to House Bill 24-1362. The County should enter into a memorandum of understanding with the local board of health and water and wastewater service providers to establish proper installation and operation of graywater treatment systems.

Next Steps

- BOCC Study Session – 9/24
- Public Comment Period—10/4 to 11/4
- Summary of public input and how accounted for in recommendations
- Public Hearings
- Adoption

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Thank You

STAFF CONTACT INFORMATION

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Will Koger, Project Manager, Forsgren Associates, Wkoger@forsgren.com / 720-279-1855

Water provider information should go to Bill Fronczak, bill.Fronczak@LREwater.com

For more information, visit the project website:

Arapahoegov.com/waterstudy

Future Graywater Systems / Use

- Colorado HB24-1362
- Authorizes installation of graywater treatment works in new construction projects and use of graywater statewide
- Takes effective January 1, 2026
- BOCC(s) encouraged to enter into MOUs with County Health Departments & Water / Wastewater Providers with provisions for:
  - Proper usage
  - Equipment installation
  - System operations