

SWSI WATER CONSERVATION LEVELS ANALYSIS

EVALUATION OF PASSIVE SAVINGS

JULY 2010



Discussion Points

Definitions

Drivers and Considerations

Assumptions

Calculation Results

Definitions

Passive Savings

- Customer Driven
 - ▣ Retrofits
 - ▣ Replacements
 - ▣ Behavioral Changes
 - ▣ Changes to
 - Market
 - Technology

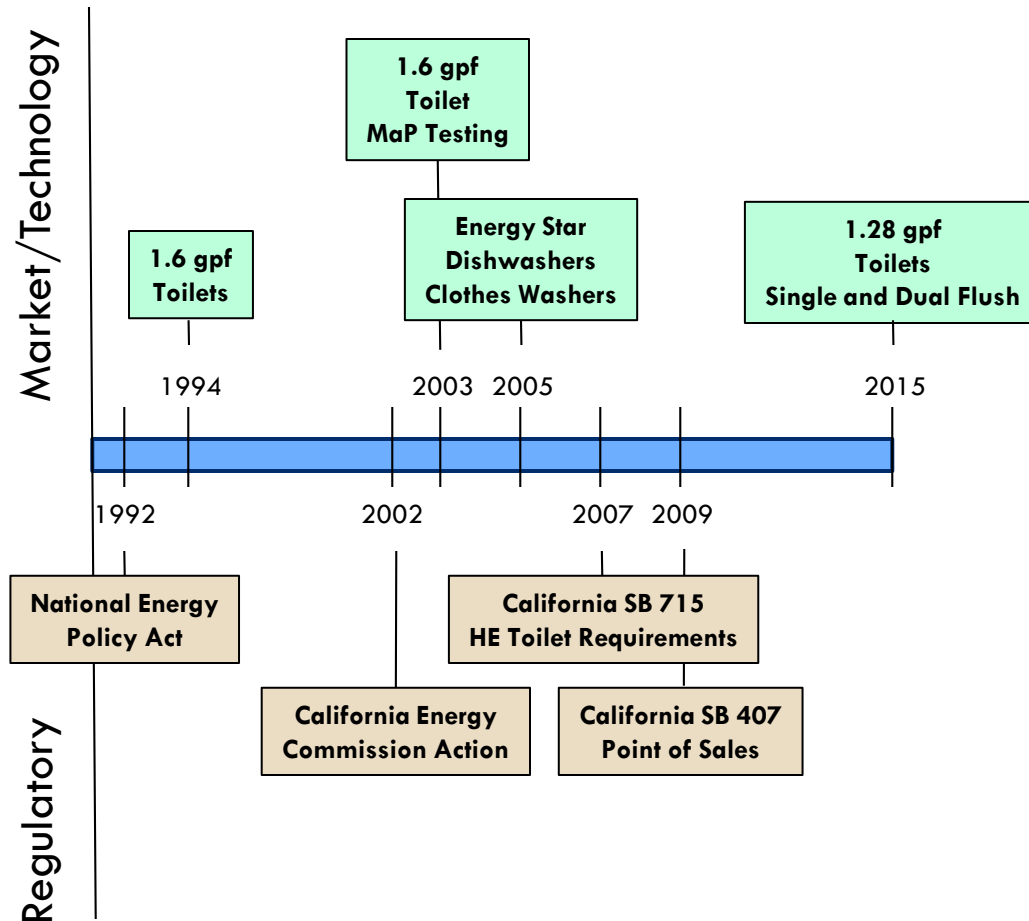
Active Savings

- Utilities Driven
 - ▣ Metering/Billing
 - ▣ Incentives
 - ▣ Technical Support
 - ▣ Education
 - ▣ Ordinances
 - ▣ Data Collection

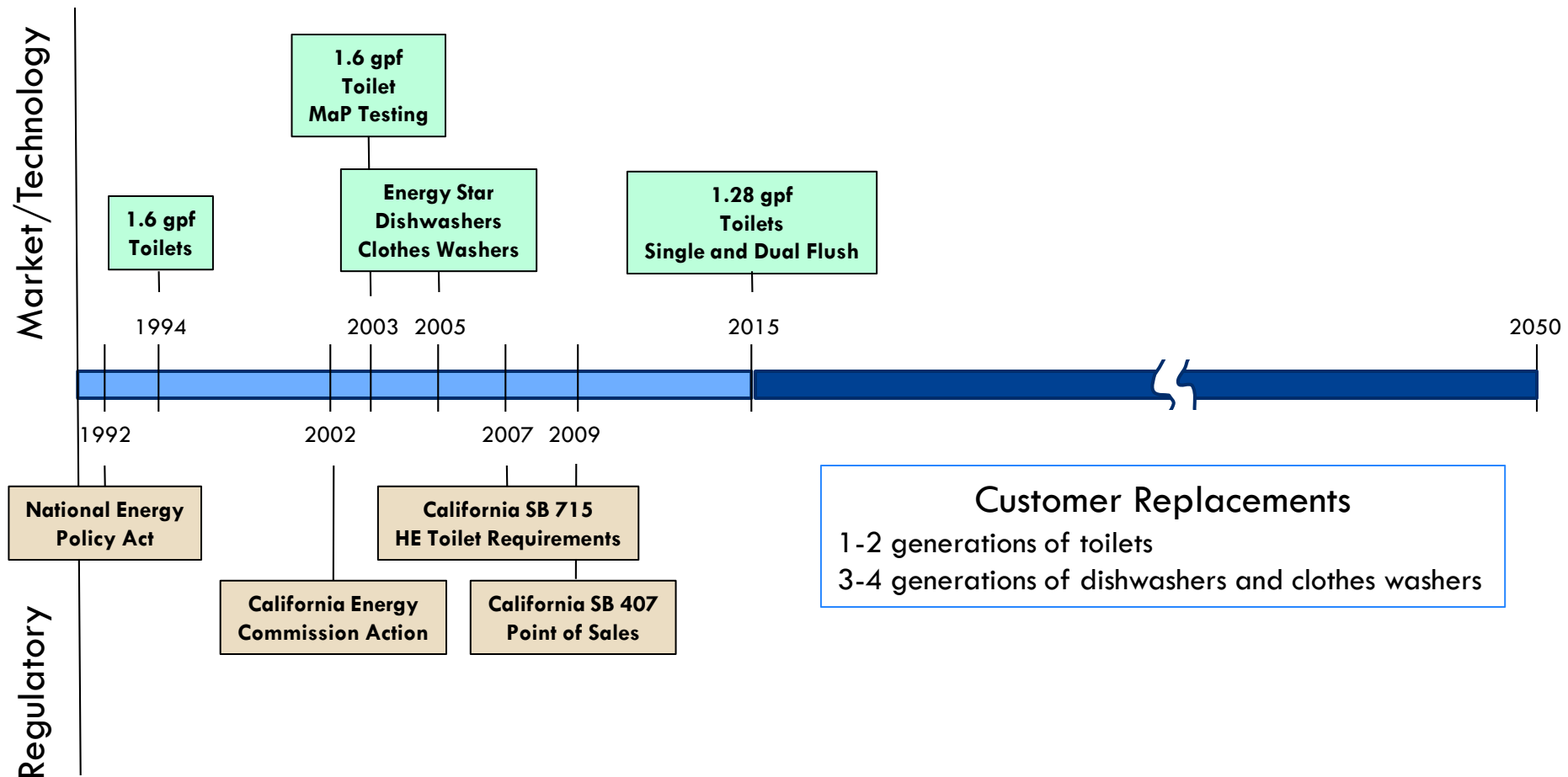
Other

- Density Changes
- Statewide Regulation

Passive Savings Timeline



Passive Savings Timeline



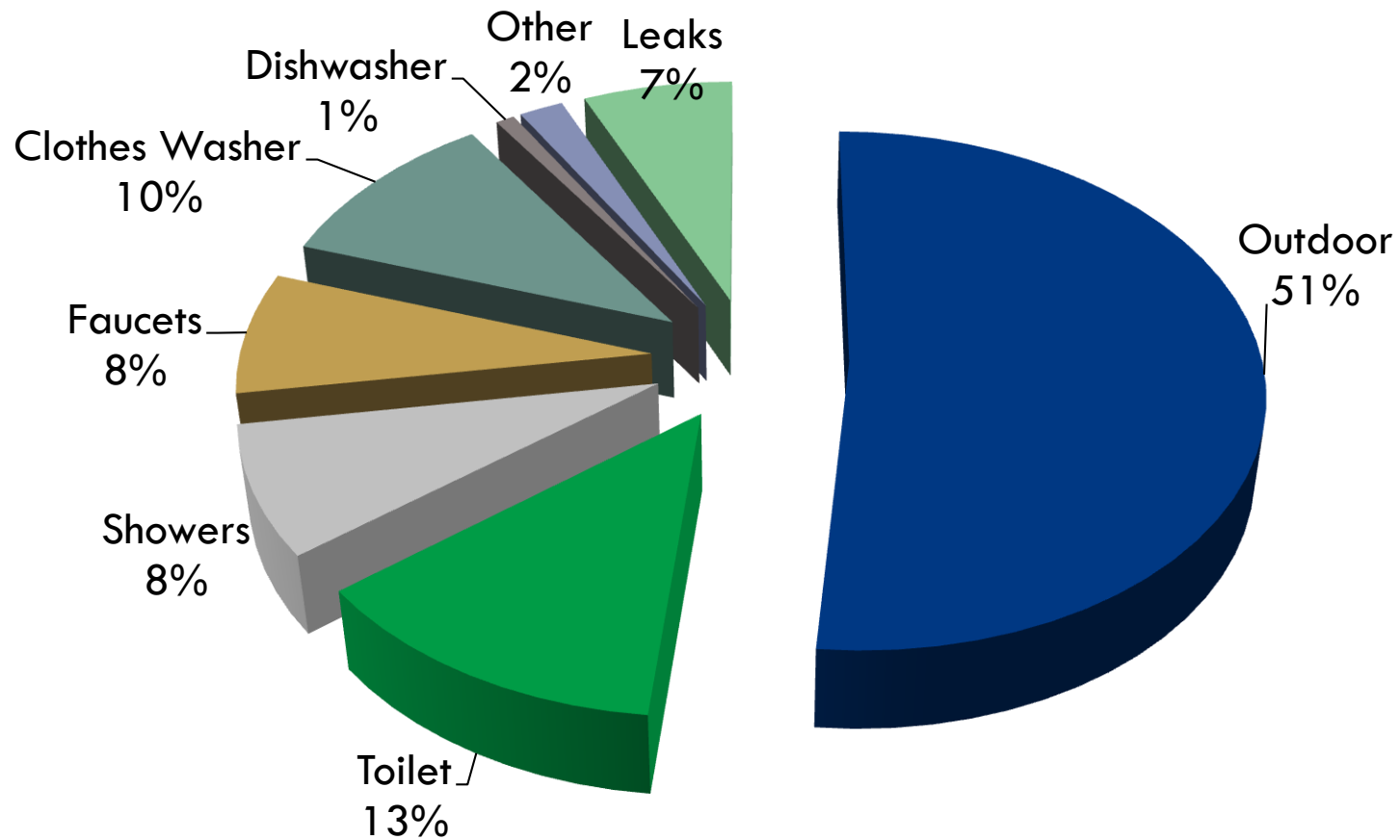


Assumptions

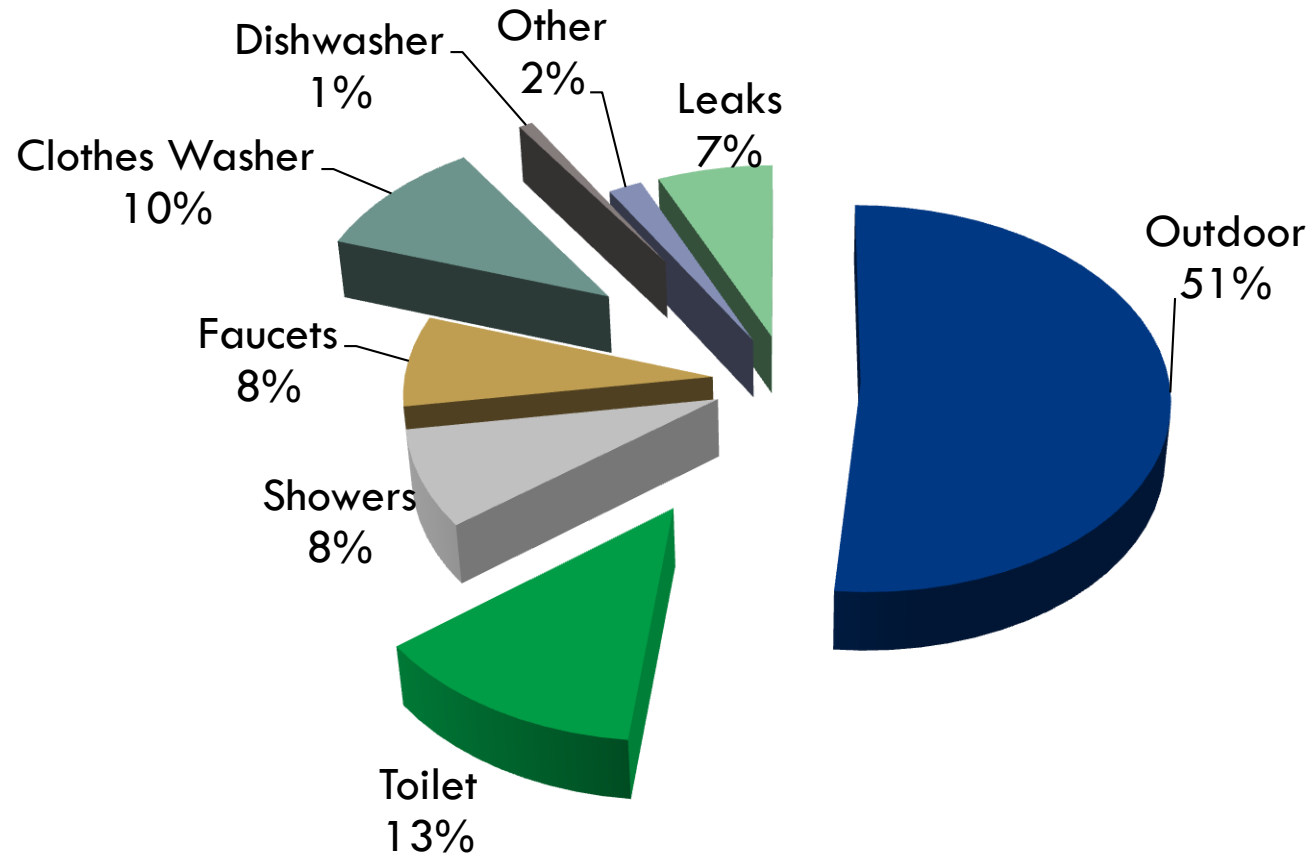
Revised Passive Savings Analyses

- Update Passive Savings Using
 - ▣ New Regulations that Will Impact Market
 - ▣ New Data on Fixture/Appliance Replacement Rates
 - ▣ New Technologies
 - Toilets
 - Clothes Washers
 - Dishwashers
 - ▣ Calculate Reduced GPCD

Typical Residential Water Use in Colorado



Passive Water Saving Opportunities



SWSI I

- 2000 GPCD by County
- 2003 Population Estimates
- M&I Water Demand in SWSI I
 - ▣ Each Year 2000-2030
 - ▣ Every County

GPCD



X

Population



Passive Savings Analysis

- 2000 GPCD by County Adjusted for Impact of Retrofits
- 2008 SWSI III Population Predictions
- M&I Conservation
 - ▣ Each Year (2000-2050)
 - ▣ Every County

Reduced GPCD

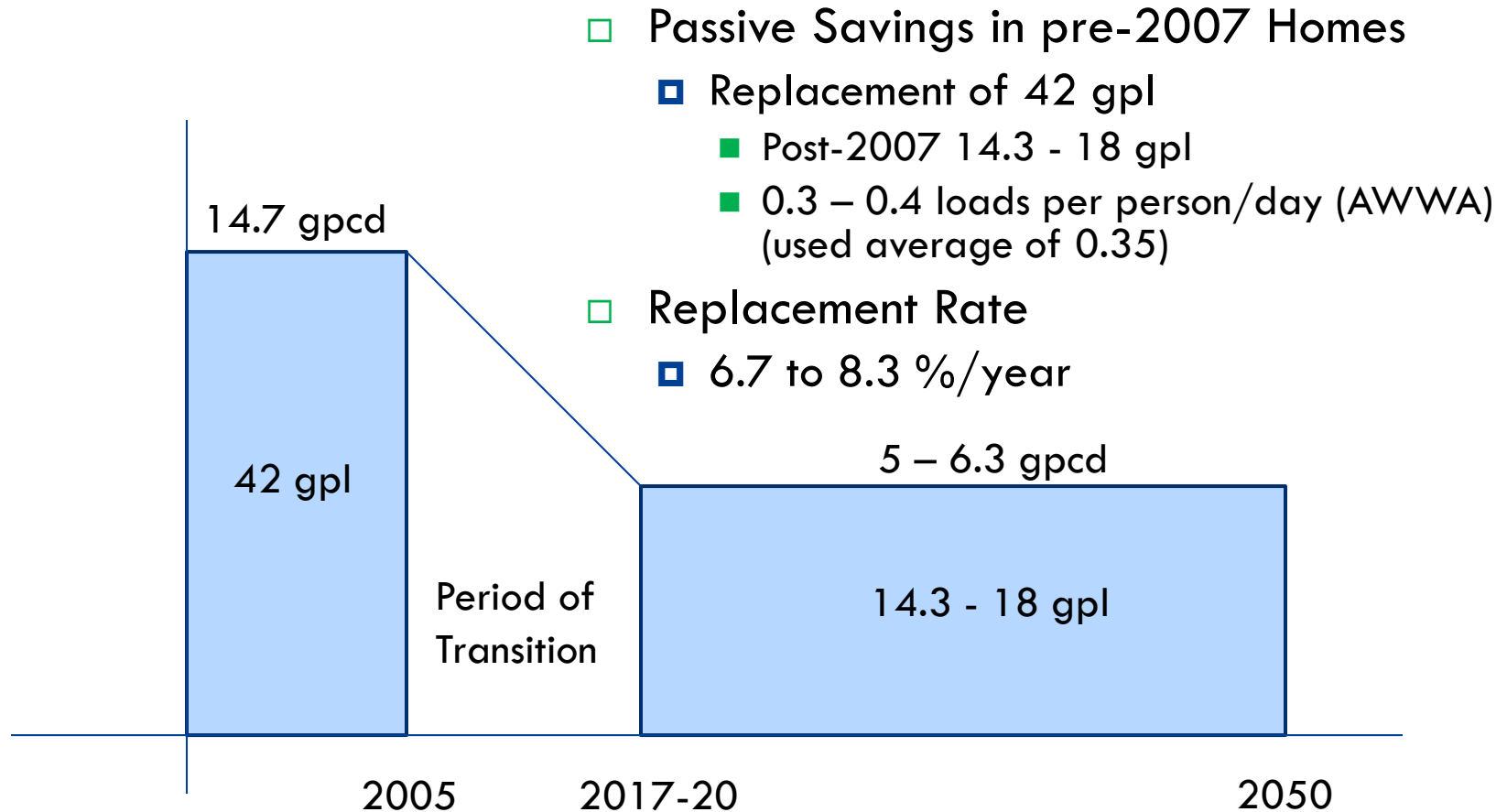


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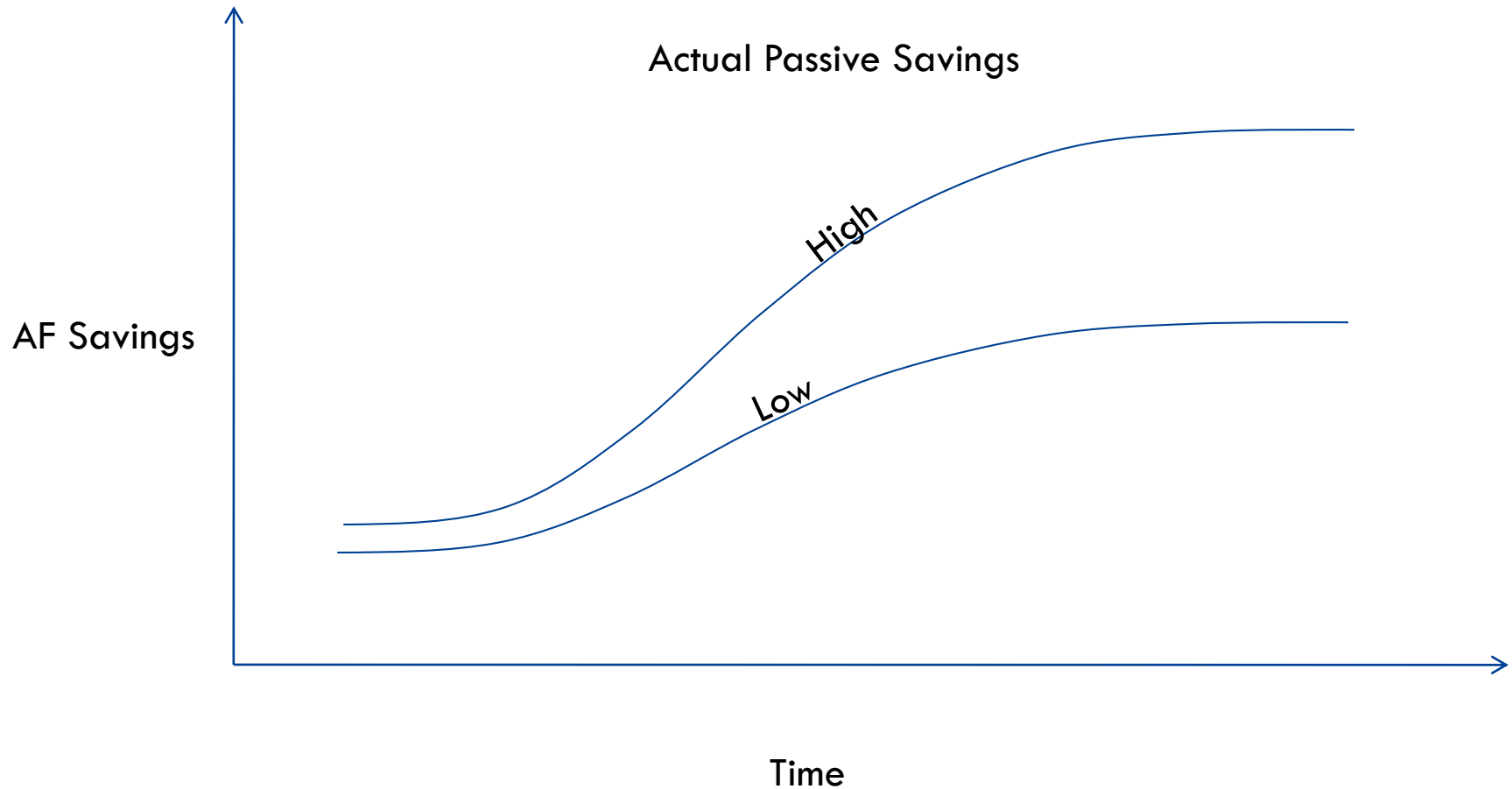
Population



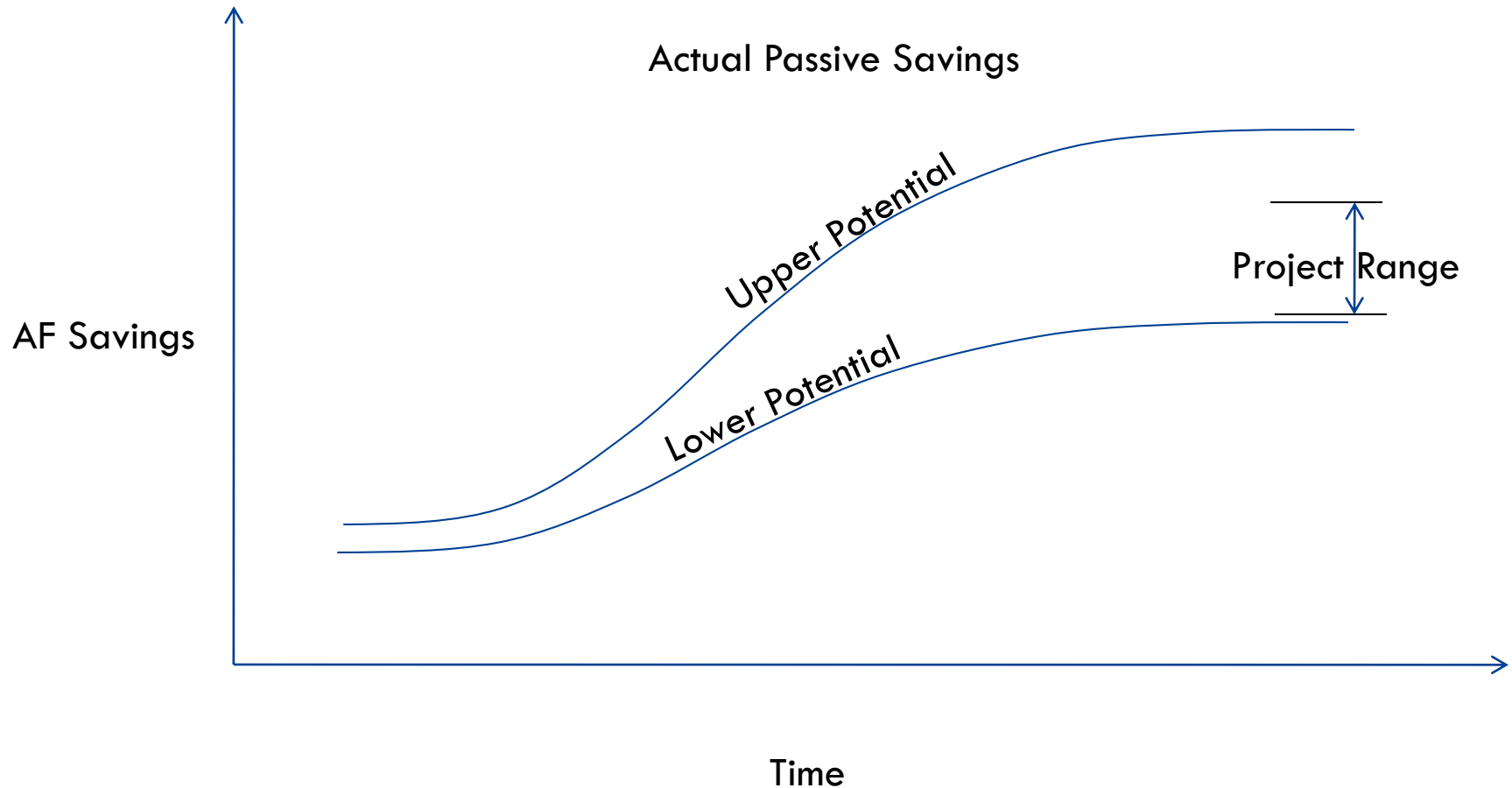
Passive Savings for Clothes Washers



Accuracy of Passive Savings Estimate



Context of Passive Savings Estimate





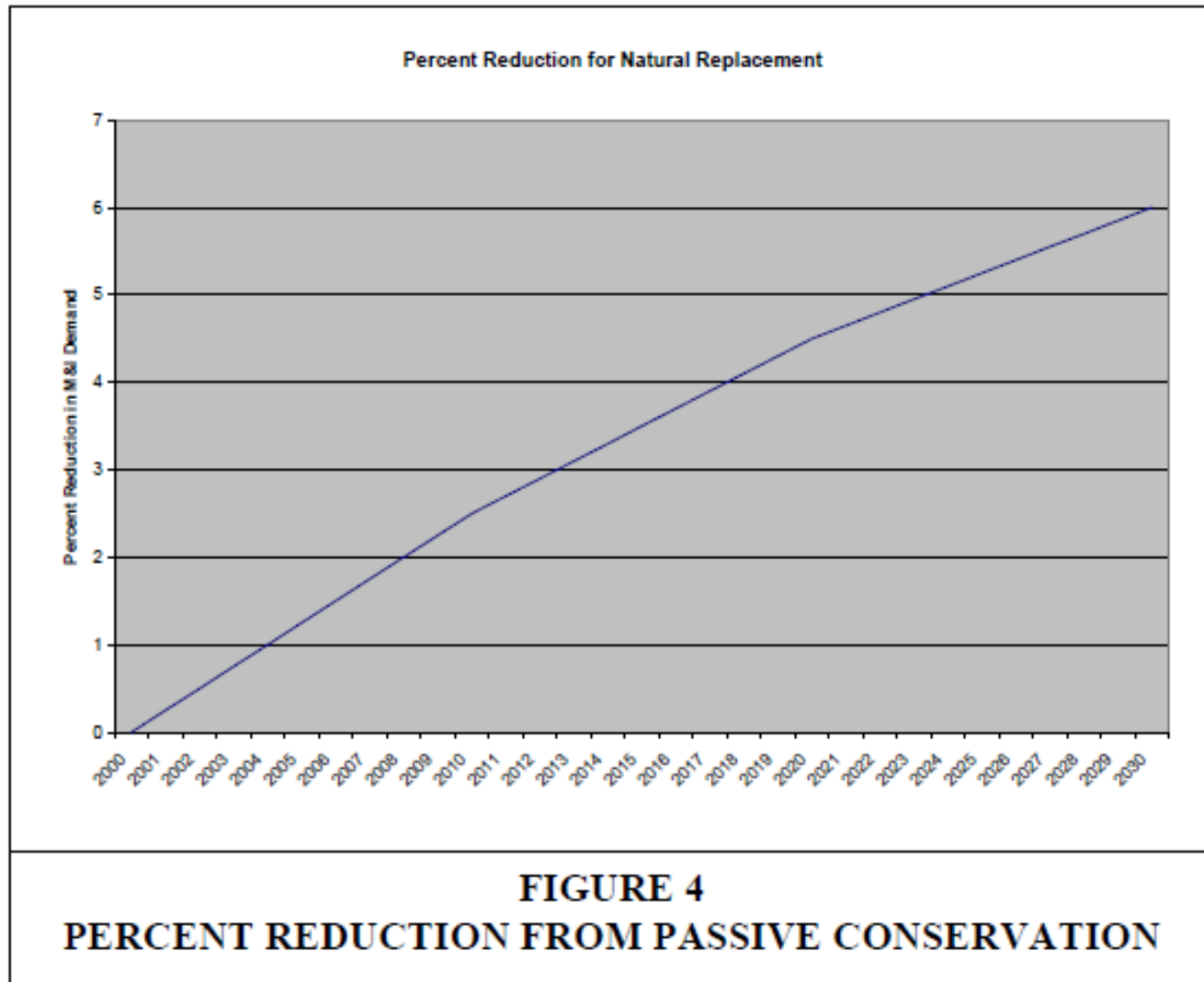
Results of Calculations

SWSI I Results

Comparison to SWSI Levels Analysis

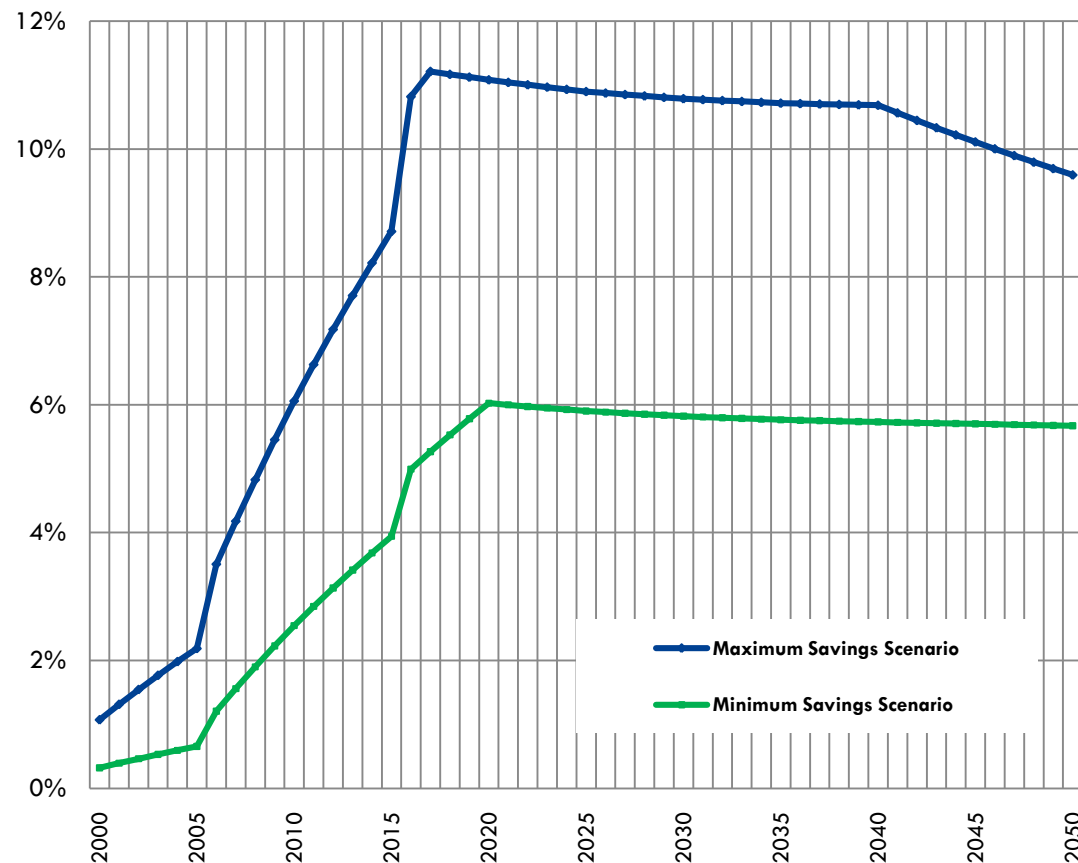
Discussion

SWSI I % Reduction Curve 2000 - 2030



Passive Savings % Reduction Curve 2000 - 2050

Figure 7 - Percent Statewide Demand Reduction From Passive Savings

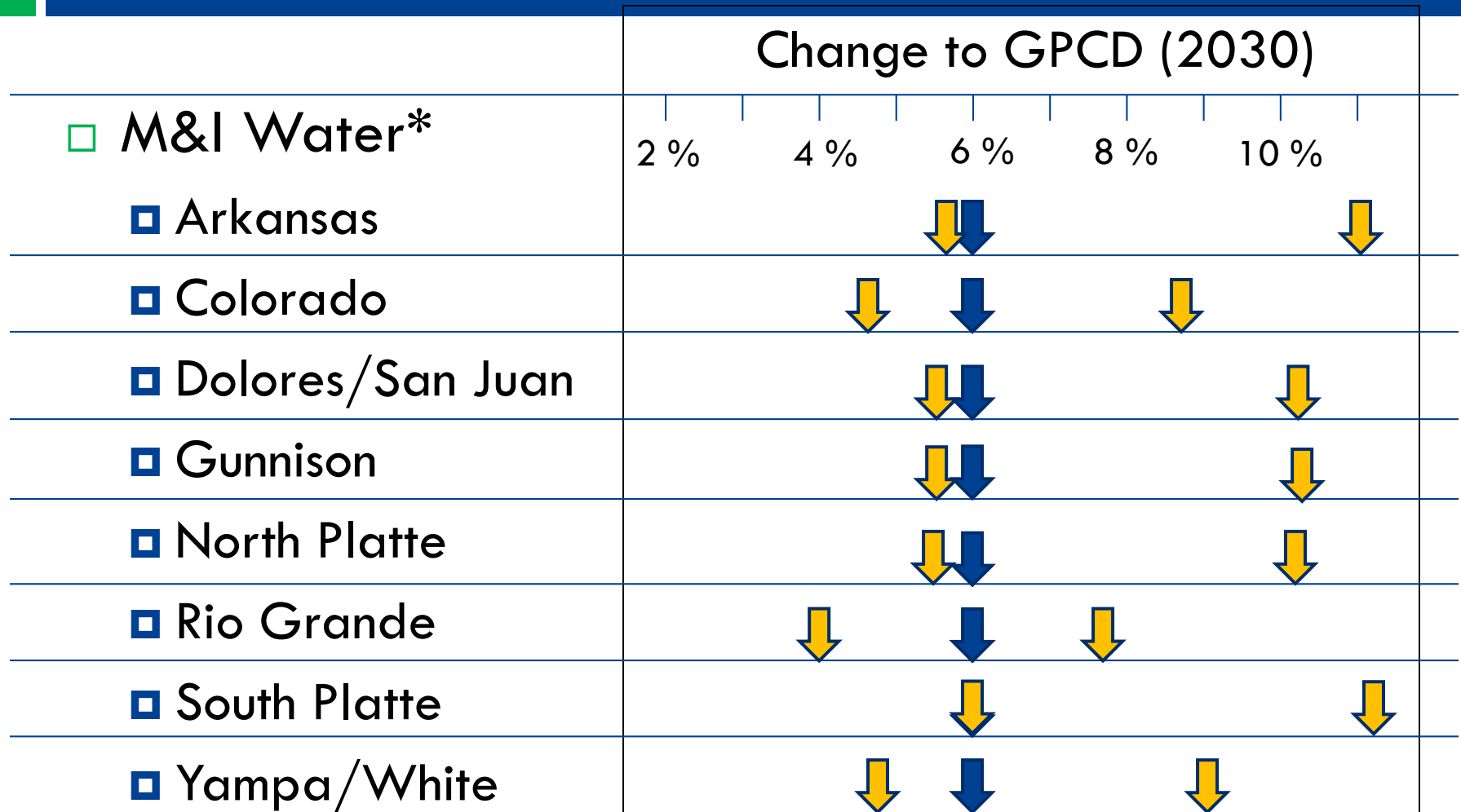


Comparison of SWSI I to Passive Savings Analysis

	Change to GPCD (2030)				
	2 %	4 %	6 %	8 %	10 %
□ M&I Water*					
▣ Arkansas			↓		
▣ Colorado			↓		
▣ Dolores/San Juan			↓		
▣ Gunnison			↓		
▣ North Platte			↓		
▣ Rio Grande			↓		
▣ South Platte			↓		
▣ Yampa/White			↓		

* As percent of M&I demand without inclusion of self-supplied water supplies

Comparison of SWSI I to Passive Savings Analysis

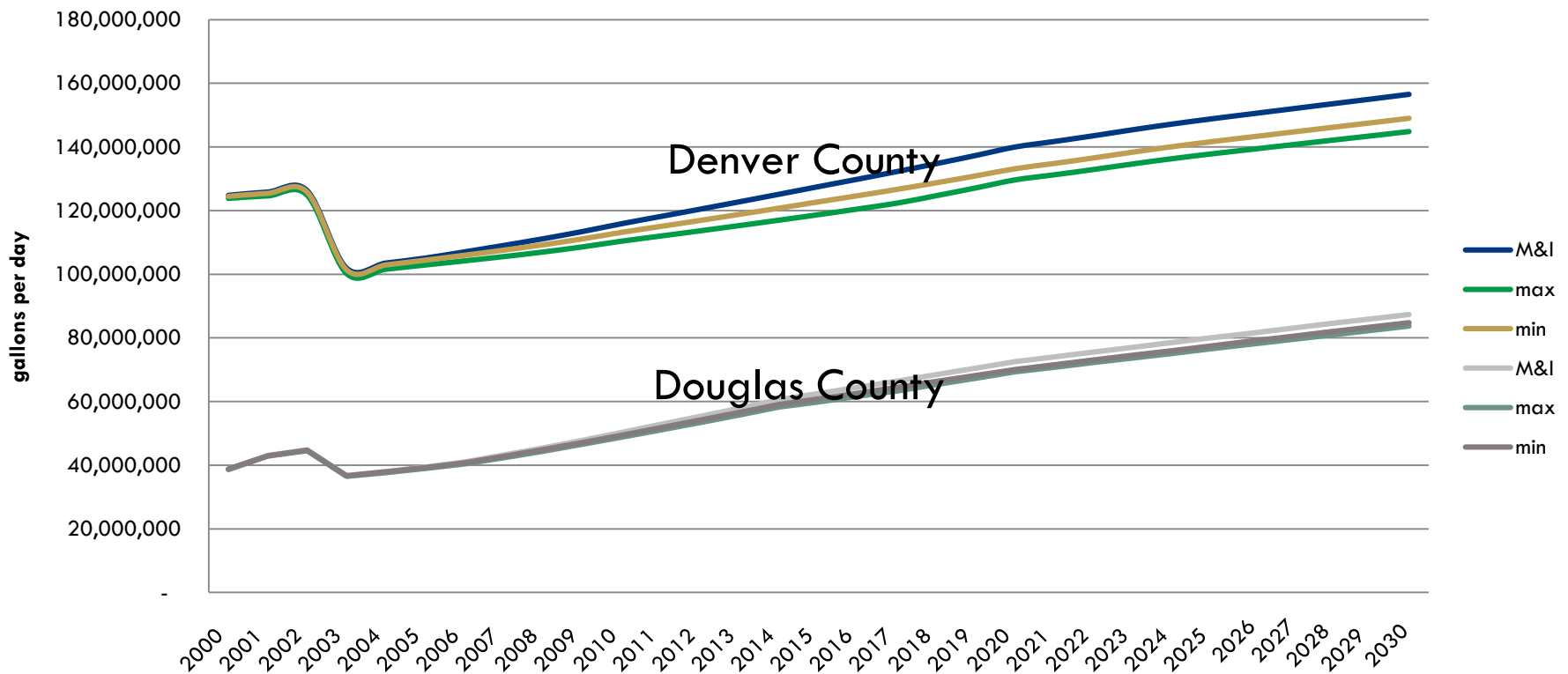


* As percent of M&I demand without inclusion of self-supplied water supplies

Variation in Passive Savings Due to Age of Housing Stock

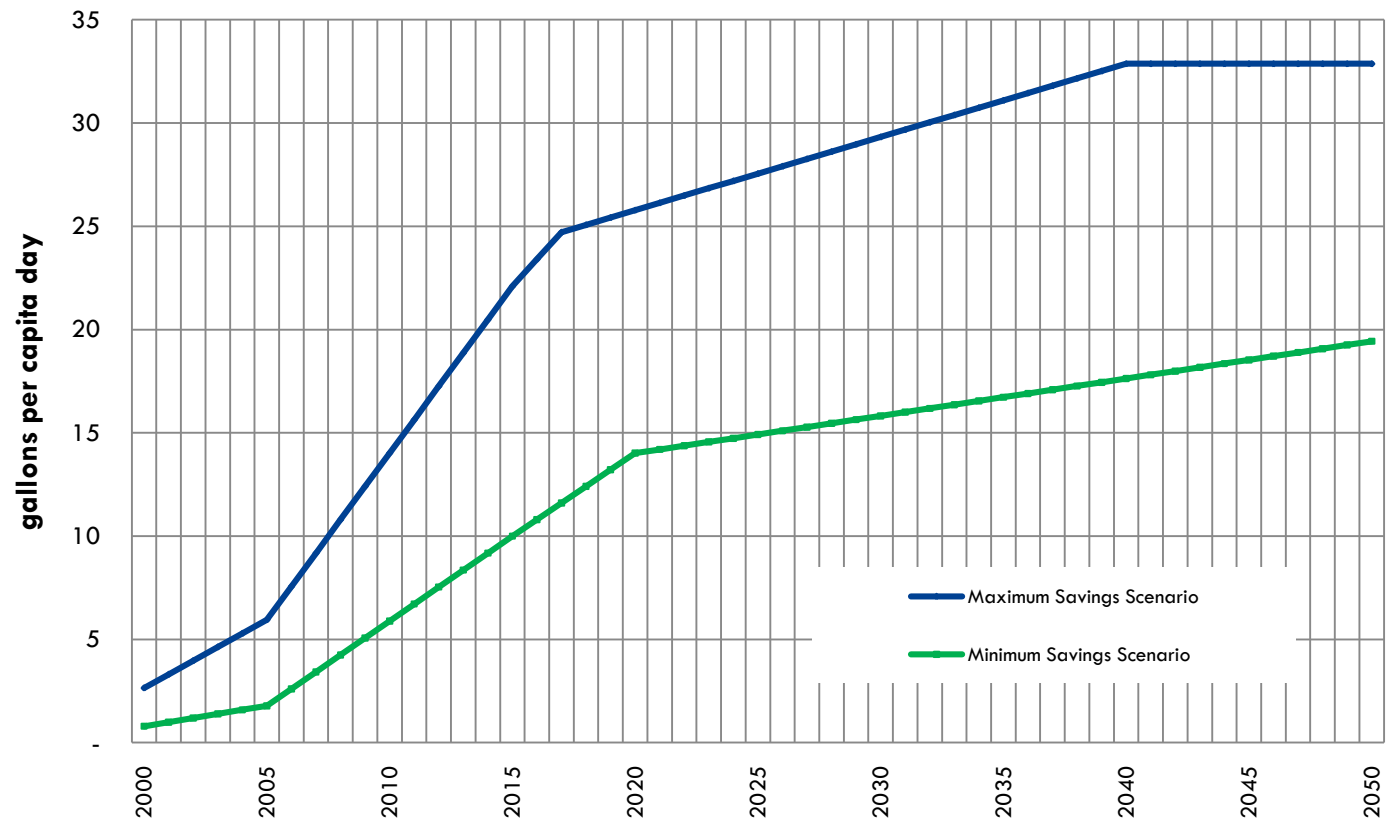
Denver County
Substantial pre-1994 Stock

Douglas County
Limited pre-1994 stock



GPCD Reduction versus Time

Figure 8 - Reduction of GPCD Due to Passive Savings



¹ Statewide totals have been rounded to three significant digits.

Summary of AF Passive Savings

Acre Feet Savings for Period 2008 to 2050		
	Minimum	Maximum
Arkansas	19,000	28,400
Colorado	6,600	10,000
Dolores/San Juan	2,200	3,300
Gunnison	2,250	3,400
North Platte	30	40
Rio Grande	950	1,400
South Platte	76,000	106,000
Yampa/White	950	1,450
Statewide	102,500	154,000

Discussion

□ Passive Savings

- ▣ Vary over time and by geography

- ▣ GPCD reductions fixed based on:

 - Population in 2015

 - Rate of Replacement

 - Current understanding of technology

- ▣ Limitations

 - No cultural or behavioral changes

 - No outdoor efficiencies included

 - No allowance for increased population density

 - No current State of CO ordinances or regulation