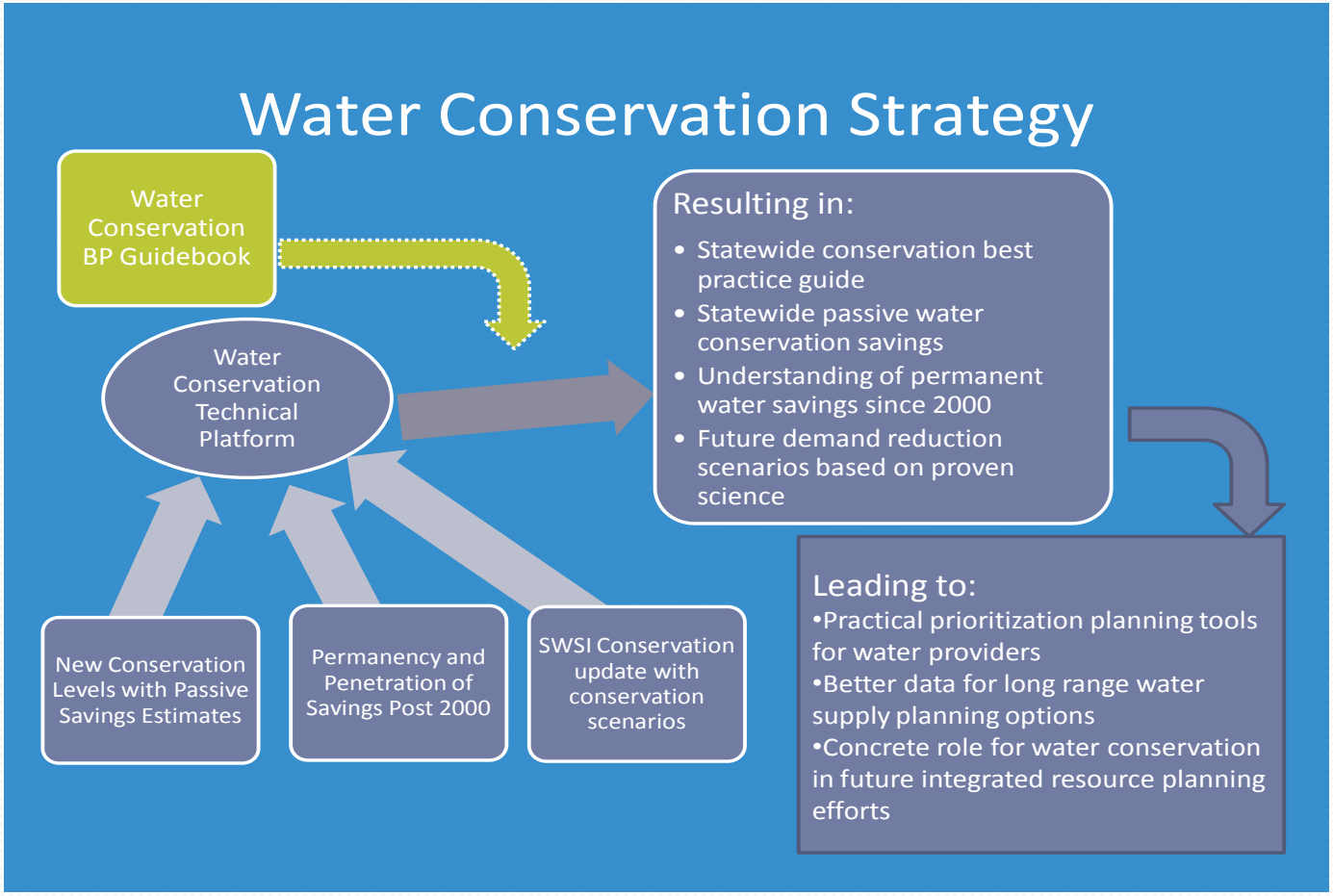
CWCB Water Conservation Strategy

Office of Water Conservation and Drought Planning

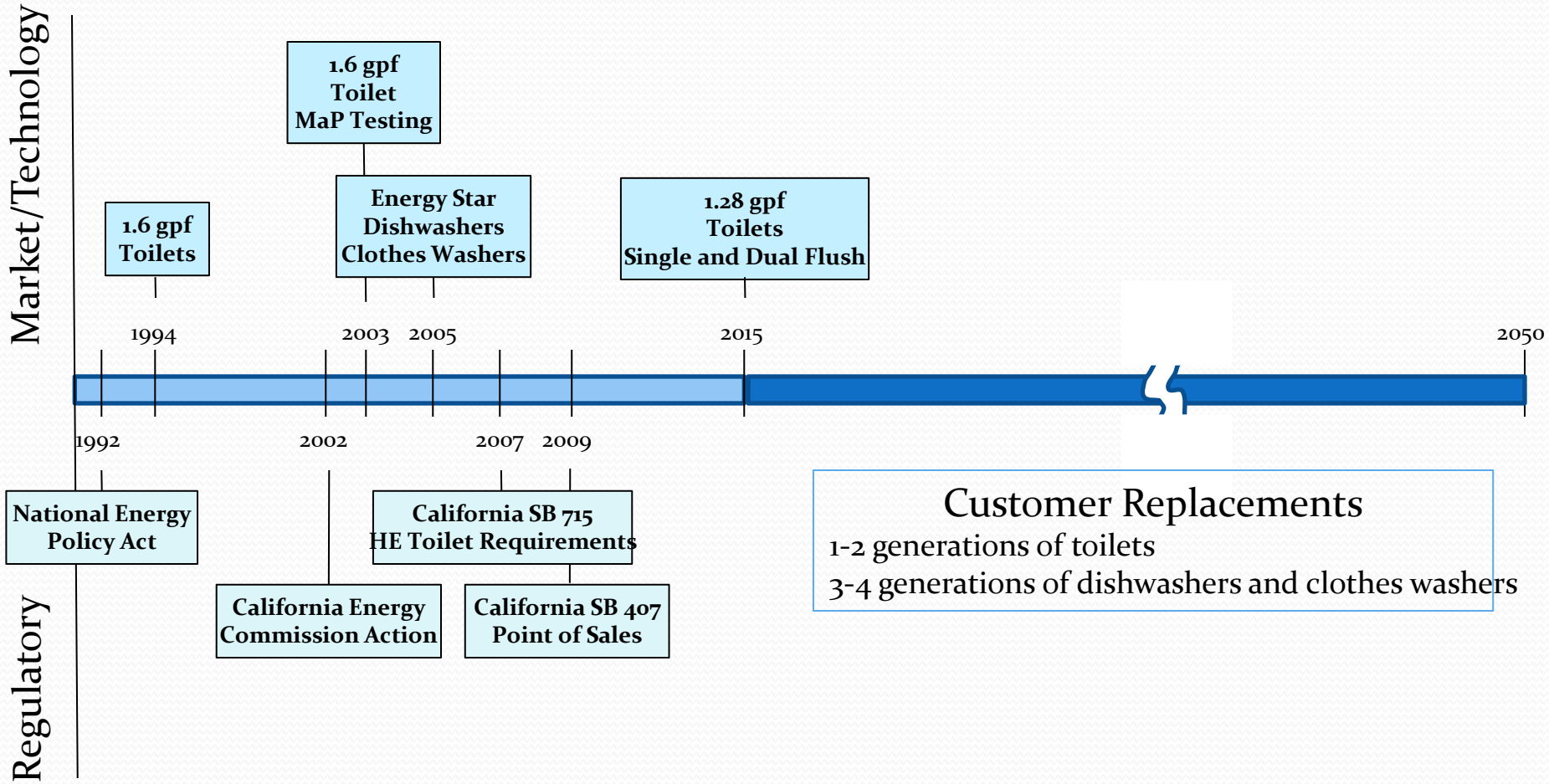
Initial Questions

- What amounts of water can M&I conservation provide to meet our 2050 water needs?
  - How much water savings can be expected?
  - How much can be counted on as permanent?
  - When will these savings occur during the planning period?
  - How does water conservation integrate into overall water resource planning?
- What is the best array of conservation measures to achieve these demand reductions?

Water Conservation Strategy



Passive Savings Timeline



Customer Replacements

1-2 generations of toilets

3-4 generations of dishwashers and clothes washers

[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

Best Practices Guidebook for Municipal Water Conservation in Colorado

Four Categories of BPs

- Water System and Utility Best Practices
- Outdoor Landscape and Irrigation Best Practices
- Indoor Residential (single-family and multi-family) Best Practices
- Indoor Non-Residential Best Practices

2010 SWSI Update

Water Conservation Section

Project Goal

To update the conservation section of the Statewide Water Supply Initiative (SWSI) report for 2010.

Project Focus

1. Update info on current state of water conservation in Colorado
2. Determine conservation savings estimates and penetration rate analysis
3. Develop alternative water conservation strategies using savings estimates from Best Practice guide and passive savings analysis

Inputs

- Recent “conservation levels” and passive savings analysis by Great Western Institute
- Approved and pending conservation plans
- Current demand levels from *2050 Demands Report*
- WaterSense specification
- 2010 Colorado Legislation
- National plumbing codes

Update Conservation Savings Estimates and Penetration Rate Analysis from SWSI 2.

- Review, update, and improve SWSI 2 conservation analysis
- Prepare revised conservation savings potential
- Use CWW Best Practices Guidebook as framework

Three 2050 Demand Strategies

- Low, Medium, and High level of conservation
- Clear explanation of conservation measures that reduce demands from 2008 to 2050
- Discussion of inherent uncertainty in demand forecasting
- Methodological transparency (enabling quick updates when new information becomes available such as penetration rate data)

Statewide forecast water savings (passive and active) from SWSI Phases 1 and 3 DRAFT

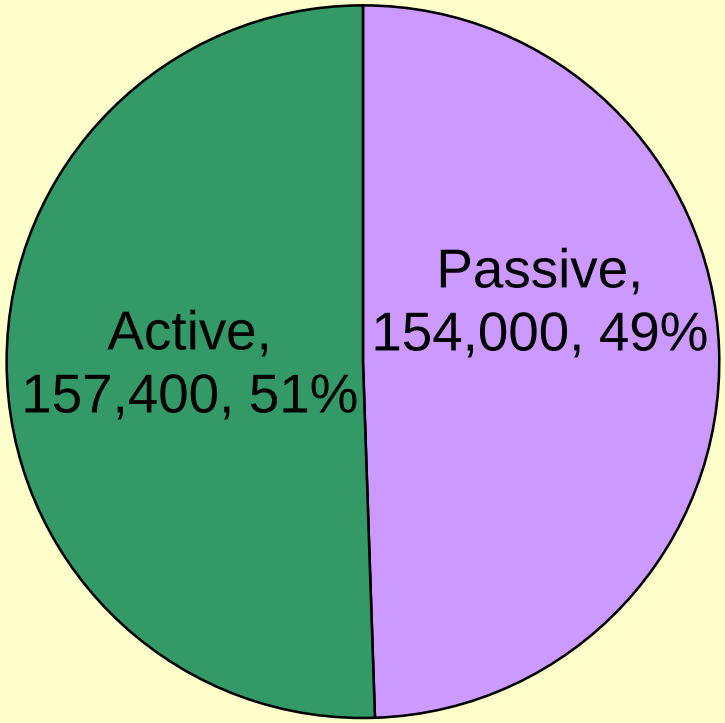
Project	Level	2030 Projections			2050 Projections		
		Baseline Demand * (AF)	Volume Savings (AF)	% Savings	Baseline Demand * (AF)	Volume Savings (AF)	% Savings
SWSI 1	Level 1 (Passive)	1,926,798	101,900	5%	NA		
	Level 2 (active only)		68,633	9%	NA		
	Level 3 (active only)		170,952	14%	NA		
	Level 4 (active only)		341,485	23%	NA		
	Level 5 (active only)		597,283	36%	NA		
	Passive+		131,000	9%		154,000	9%
2010 SWSI	Low (active only)	1,405,795	47,000	3%	1,761,128	157, 400	9%
	Medium (active only)		138,000	10%		340,100	19%
	High (active only		229,000	16%		521,500	30%

*Baseline demands are without any conservation and do not include passive or active conservation savings

+From SWSI Levels analysis (CWCB 2010b)

Low Water Saving Strategy
Passive and Active Savings at 2050

DRAFT



Medium Water Saving Strategy
Passive and Active Savings at 2050

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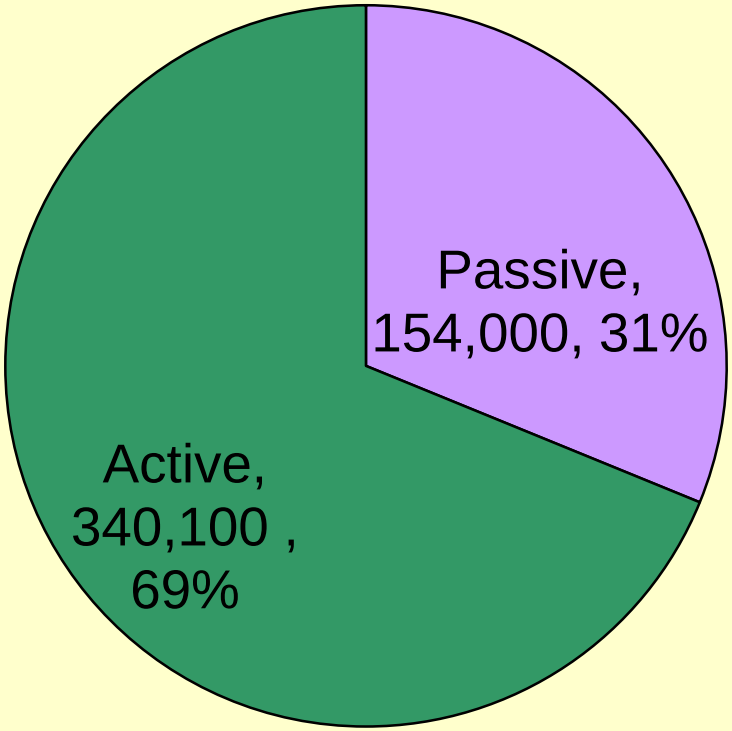
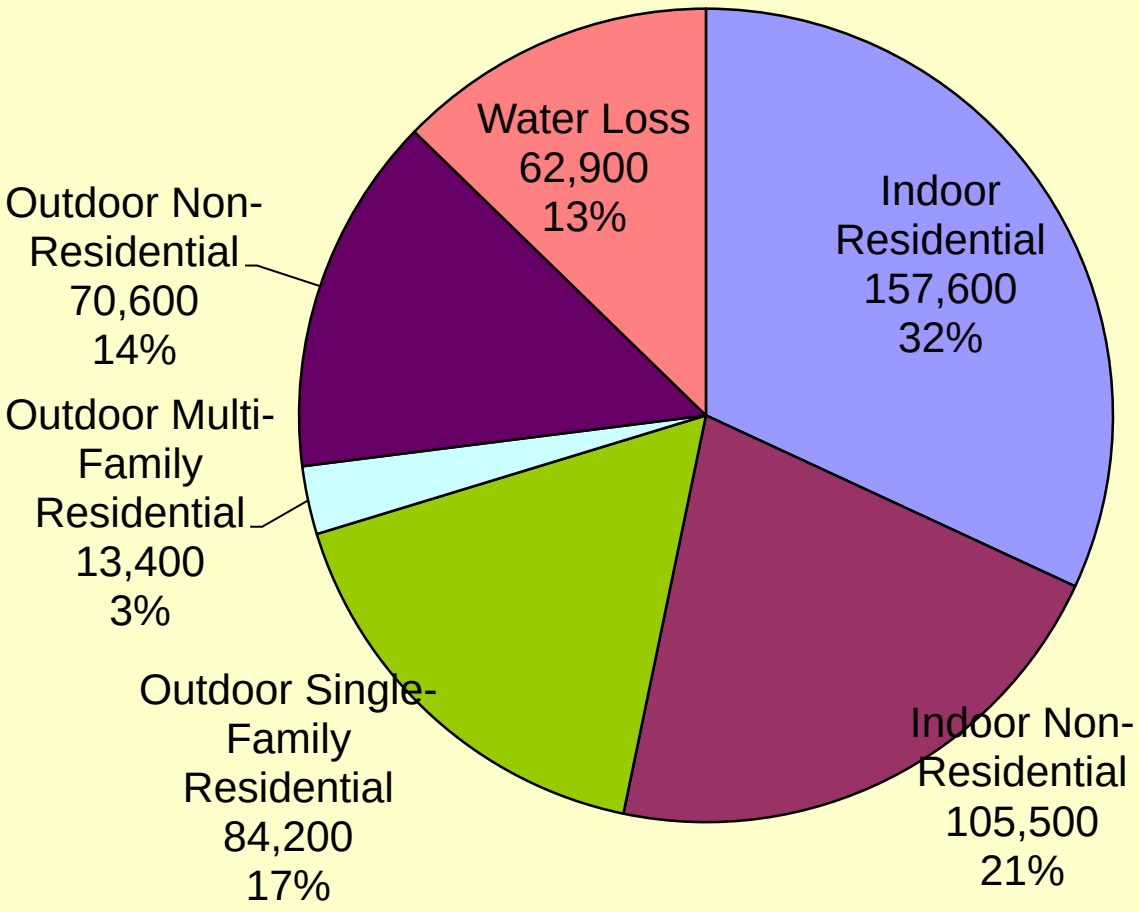


Medium Water Saving Strategy



High Water Saving Strategy
Passive and Active Savings at 2050

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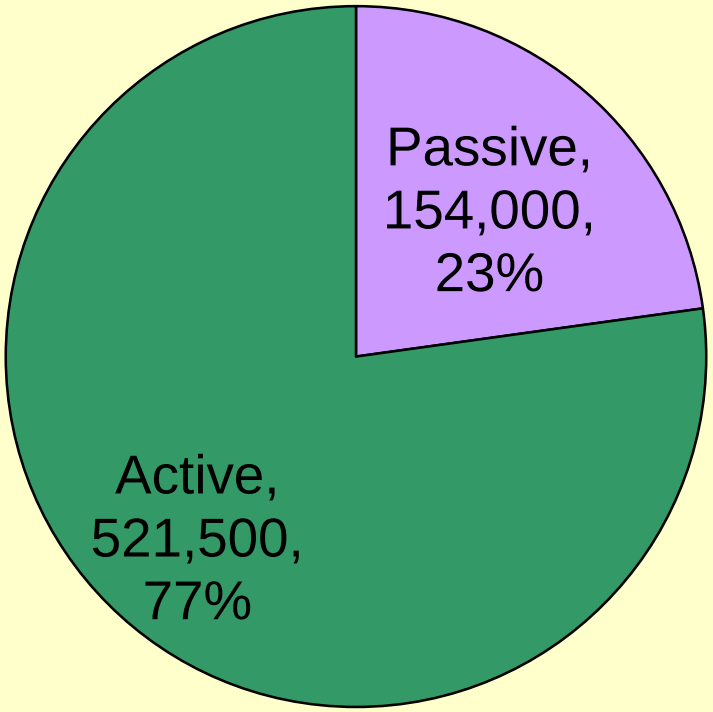
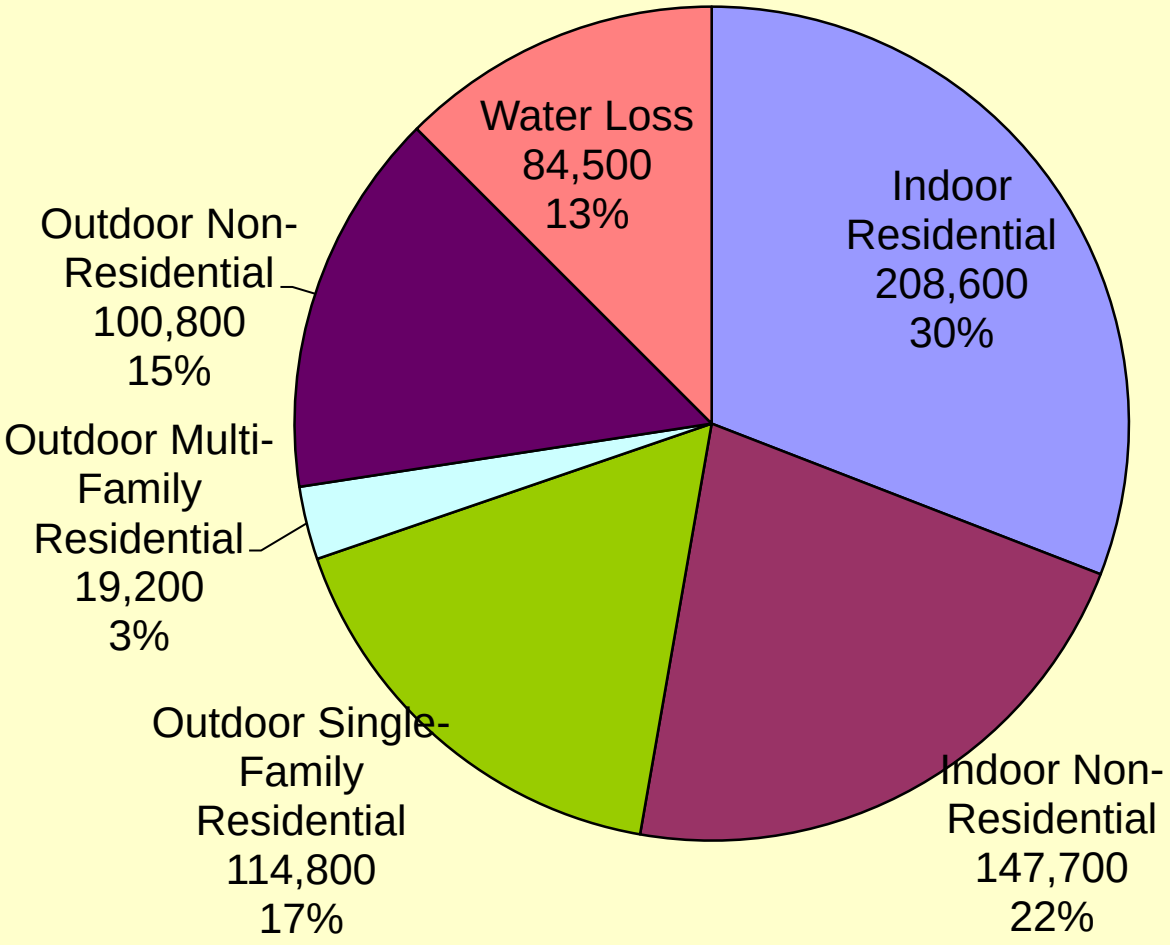


High Water Saving Strategy

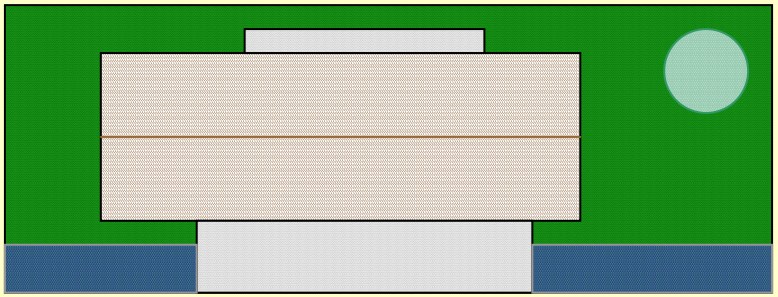


Landscape Demand Reduction Examples

- Residential reductions:
  - 15% - low
  - 22% - medium
  - 30% - high
- Non-Residential reductions:
  - 15% - low
  - 30% - medium
  - 40% - high
- Many ways to accomplish savings (increased efficiency, alternative plantings, hardscape)

Residential Property – Traditional Landscape

Baseline



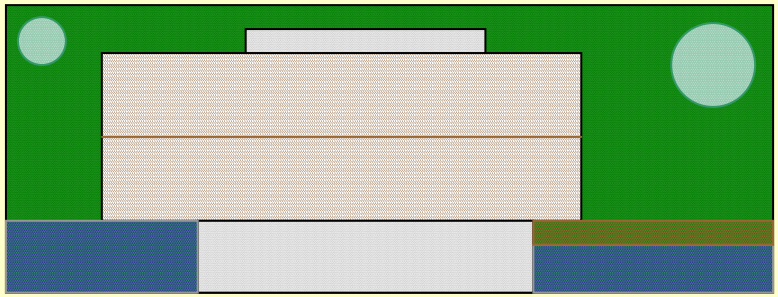
	Area	Gal/SF	Gal/Yr
Non-irrigated	5,000	0	0
Turf	3,500	24	84,068
Trees and Shrubs	500	8.1	4,033
Traditional Planting	1,000	12.2	12,228
WaterWise	0	3.9	0
Total	10,000	20.1	100,330

Source: EPA WaterSense Water Budget Water Calculator

Turf = Bluegrass
Planting = Traditional
Irrigation = Spray w/ good efficiency
Turf to Planting Ratio = 1.0:0.43

Residential Property – Low Savings Strategy

15% Reduction



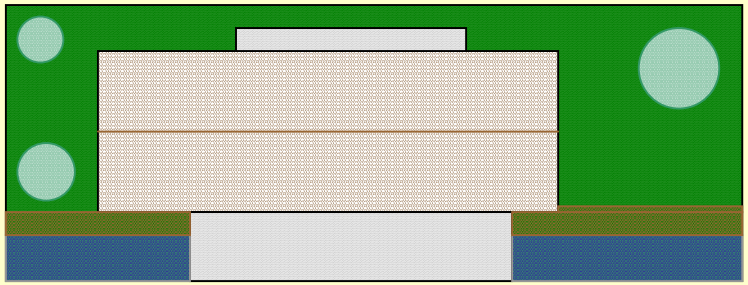
	Area	Gal/SF	Gal/Yr
Non-irrigated	5,000	0	0
Turf	2,700	24.0	64,853
Trees and Shrubs	700	8.1	8,560
Traditional Planting	1,300	12.2	10,487
WaterWise	300	3.9	1,171
Total	10,000	17.0	85,071

Source: EPA WaterSense Water Budget Water Calculator

Turf = Bluegrass
Planting = Mixed
Irrigation = Spray & micros-pray w/ good efficiency
Turf to Planting Ratio = 1.0:0.9

Residential Property – Medium Savings Strategy

22% Reduction



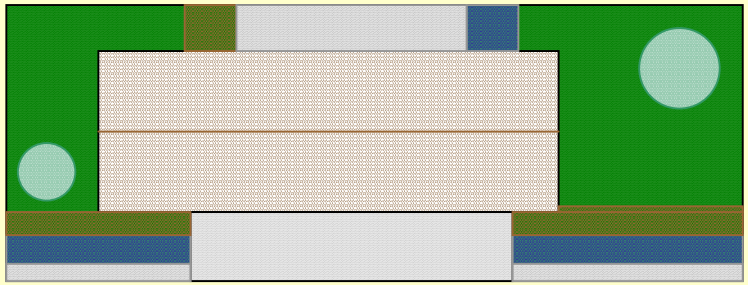
	Area	Gal/SF	Gal/Yr
Non-irrigated	5,000	0	0
Turf	2,300	24	55,245
Trees and Shrubs	1,000	12.2	12,228
Mixed Planting	1,000	8.1	8,067
WaterWise	700	3.9	2,733
Total	10,000	15.7	78,273

Source: EPA WaterSense Water Budget Water Calculator

Turf - Bluegrass
Planting - Mixed + WaterWise
Irrigation - Spray & micros-pray w/ good efficiency
Turf to Planting Ratio – 1.0:1.2

Residential Property – High Savings Strategy

30% Reduction



	Area	Gal/SF	Gal/Yr
Non-irrigated	5,500	0	0
Turf	2,150	24.0	51,642
Trees and Shrubs	750	12.2	9,171
Traditional Planting	800	8.1	6,453
WaterWise	800	3.9	3,124
Total	10,000	15.6	70,390

Source: EPA WaterSense Water Budget Water Calculator

Turf - Bluegrass
Planting - Mixed + WaterWise
Irrigation - Spray & micros-pray w/ good efficiency
Turf to Planting Ratio – 1.0:1.1

Permanency and Penetration of Water Conservation Savings

Permanency and Penetration

- Assess the **feasibility** of future research into the permanency and penetration rates of water conservation savings and measures

- To assess what barriers and opportunities exist at the provider level in order to carry out future conservation savings potential and penetration rates research

- Working with a subset of the partner utilities, this project will also include a demonstration of the statistical analysis that can be done with existing information.

Questions?

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