This presentation premiered at WaterSmart Innovations

watersmartinnovations.com

Using the AWE Rate Model
to Examine Drought Rates:
The Benefit of Analyzing Scenarios

Ken Jenkins
Interim Director of Drought Management & Conservation
California Water Service

Mary Ann Dickinson
President/CEO
Alliance for Water Efficiency

AWE's Financing Sustainable Water

- **Building Better Rates in an Uncertain World:** A Handbook to explain key concepts, provide case studies and implementation advice

- **AWE Sales Forecasting and Rate Model:** An innovative, user-friendly tool to model scenarios, solve for flaws, and incorporate uncertainty into rate making

- **FinancingSustainableWater.org:** Web-based resources to convene the latest research and information in one location
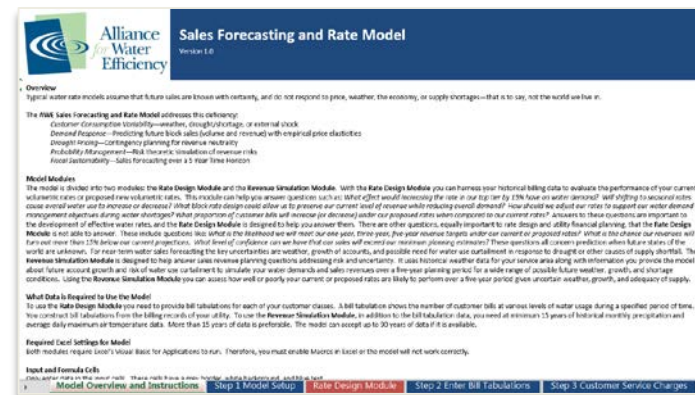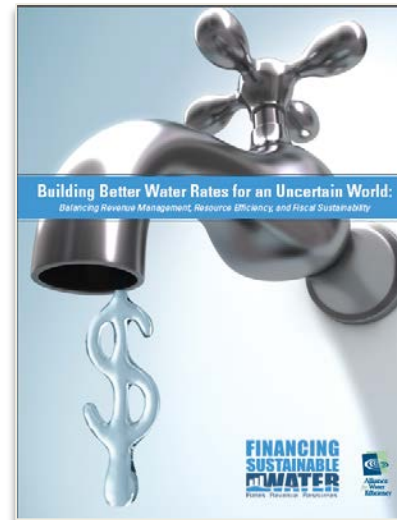
AWE Sales Forecasting and Rate Model

- Models Water Demand Variability

- Models Water Revenue Variability

- Analyzes Customer Bills

- Assesses Affordability

- Assesses Fiscal Sustainability

- Analyzes Uncertainty

- Allows Scenario Planning

The Model in the Rate Setting Process

Capital Planning → Cost of Service/Revenue Requirements → Cost Allocation → Rate Design

Model Does Not Do These Things

Model Useful Here
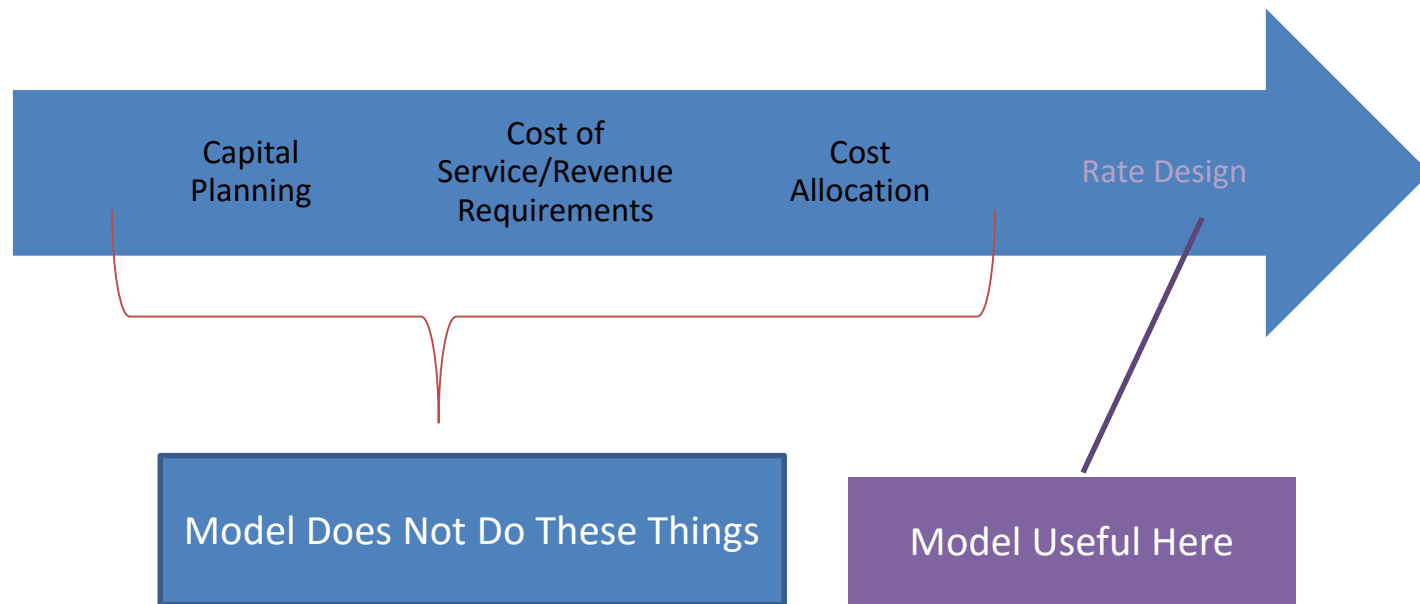
Designing Drought Rates

Rate Design Tables

Rate Performance Indicators

Drought Stage Selector

2. Rate Performance by Drought/Shortage Stage

The tables in this section hold two sets of rates. Your proposed rates are carried over from Step 3. These c... ...ned on this worksheet. They ... for calculating the revenue impacts of drought stages. The Stage rates are the rates that would apply for a g... shortage stage. To see how y... a drought stage, click the Reset Drought Stage Rates to Proposed Rates. This will copy your Proposed rates ... ...tes for the Stage Rates. You can then use the Select Drought Stage drop-down list to cycle through the drought stages and see how your sales revenue would be impacted by e... impacts to annual sales volume and revenue for each Customer Class are summarized to the right of the rate tables. You can adjust the Stage Rates to see how your annual sales v... ...d revenue would respond. You can adjust the size or number of blocks as well as the rates for each block. You can use trial and error to find rates appropriate to each drought/short... ...age, or you can use Excel's goal-seek or solver functionality to do this. Section 3 provides a calculator that can quickly identify rates for a given drought/shortage stage that are reve... ...eutral.
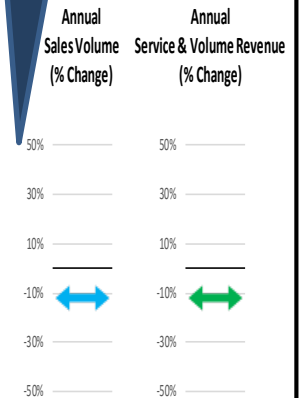
Select Drought Stage: **Stage 2** ▼

Impact of Drought Stage Rates Relative to Proposed Rates

	Annual Sales Volume (% Change)	Annual Service & Volume Revenue (% Change)

Single Family

	Off Peak Season				Peak Season			
	Proposed Rates		Stage 2 Rates		Proposed Rates		Stage 2 Rates	
	Block (CCF)	Rate ($/CCF)	Block (CCF)	Rate ($/CCF)	Block (CCF)	Rate ($/CCF)	Block (CCF)	Rate ($/CCF)
Block 1	5	$2.50	5	$2.50	5	$3.75	5	$3.75
Block 2	10	$2.50	10	$2.50	10	$3.75	10	$3.75
Block 3	15	$2.50	15	$2.50	15	$3.75	15	$3.75
Block 4	15	$2.50	15	$2.50	15	$3.75	15	$3.75
Block 5	15	$2.50	15	$2.50	15	$3.75	15	$3.75

Rate Performance by Customer Class

Annual Sales Volume

	Proposed	Stage 2	% Change
CCF	8,913,705	7,844,060	-12.0%

Annual Sales Revenue (Thou. $)

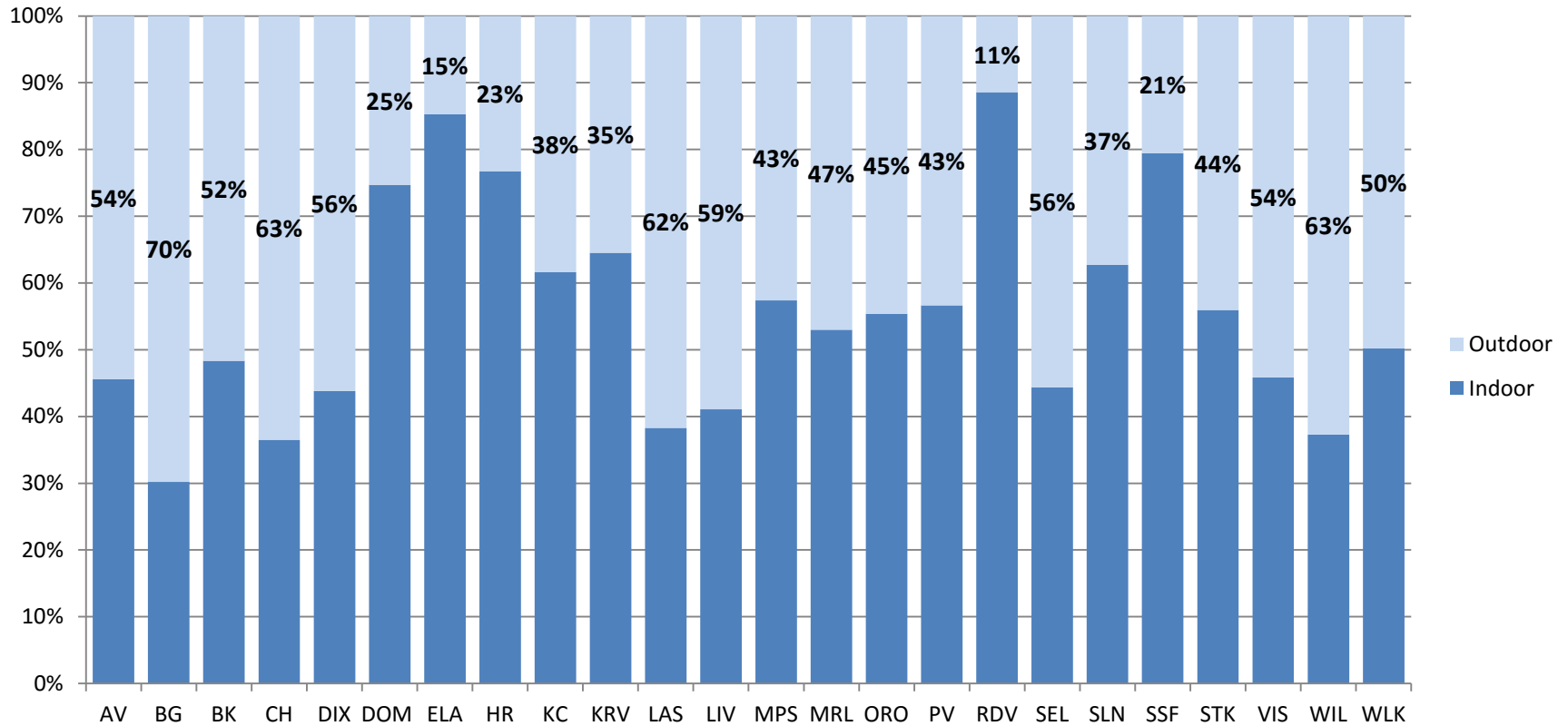|	Proposed	Stage 2	% Change
Service	$12,263	$12,263	0.0%
Volume	$27,744	$24,415	-12.0%
Total	$40,007	$36,678	-8.3%

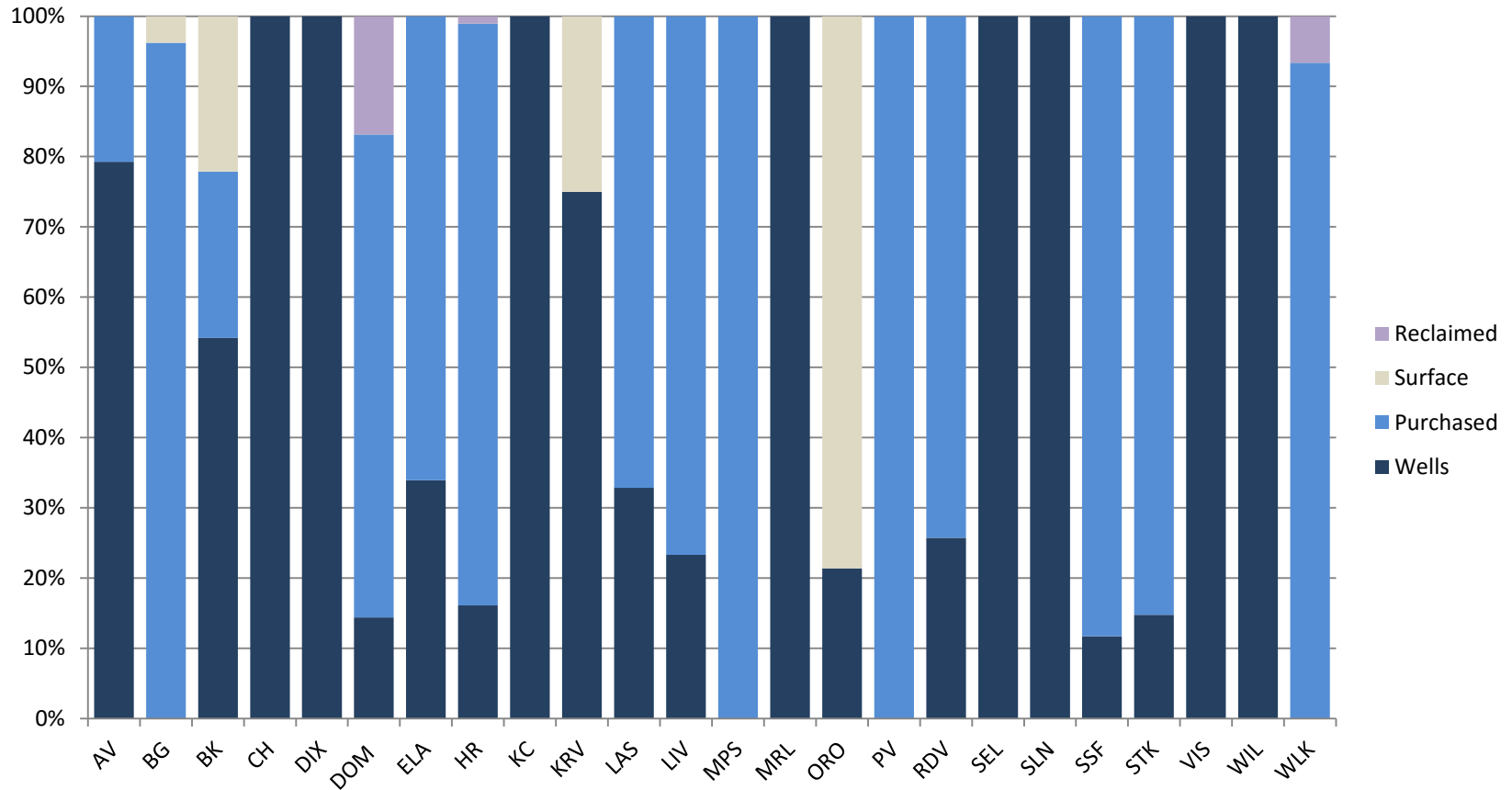# California Water Service

California Water Service

- 24 service areas
- 80 communities
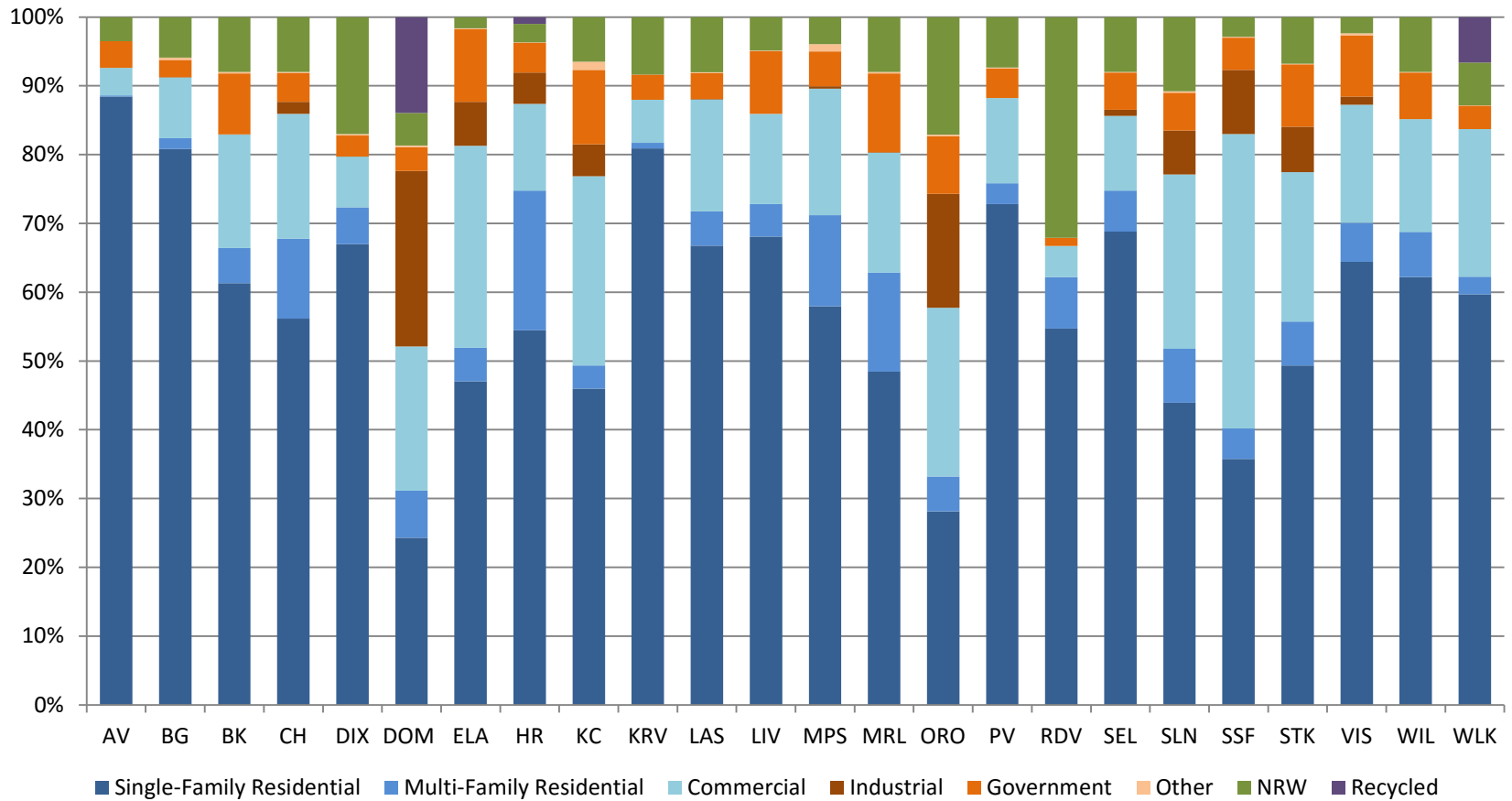- 500,000 service connections
- 2,000,000 population

Single-Family Residential Indoor/Outdoor Water Use

Water Supply Source Overview

Water Demand Overview

Process

- Preliminary analysis of 14 scenarios
  - Bakersfield, Livermore, Los Altos, Stockton
- Narrowed to 3 scenarios
- Analysis of 3 scenarios
  - 21 service areas
- Reviewed and refined
- Determined feasibility

Scenario Planning – 14

- No change to Tier 1
- Tier 2 changes (25-50%)
- Tier 3 changes (25-100%)
- New Tier 4 (25-200%)
- New Tier 5 (25%-400%)
- Non-residential (25-50%)

Scenario Planning - 3

Tier	Scenario 1	Scenario 2	Scenario 3
Tier 1	No Change	No Change	No Change
Tier 2	25%	50%	25%
Tier 3	50%	100%	50%
Tier 4*	N/A	N/A	100%
Non-Residential	25%	50%	25%

Price Elasticity

Price Response Scenario	Low		Medium		High	
	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak
Single-Family	-0.050	-0.150	-0.100	-0.300	-0.150	-0.450
Multi-Family	-0.025	-0.075	-0.050	-0.150	-0.075	-0.225
Non-Residential	-0.100	-0.100	-0.200	-0.200	-0.300	-0.300

AWE Model - Inputs

% of SFR Demand Facing Higher Drought Rate

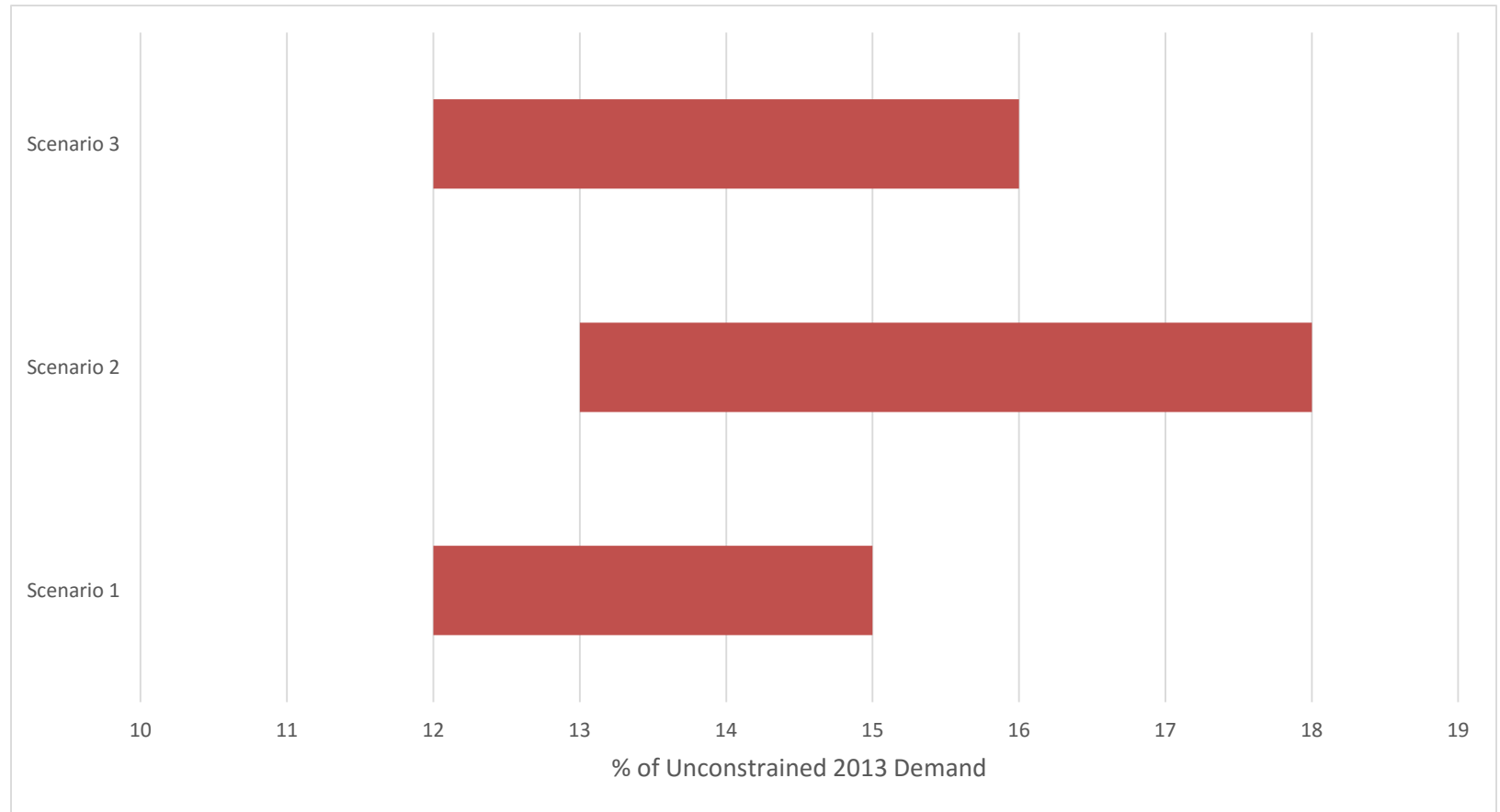# Dominguez

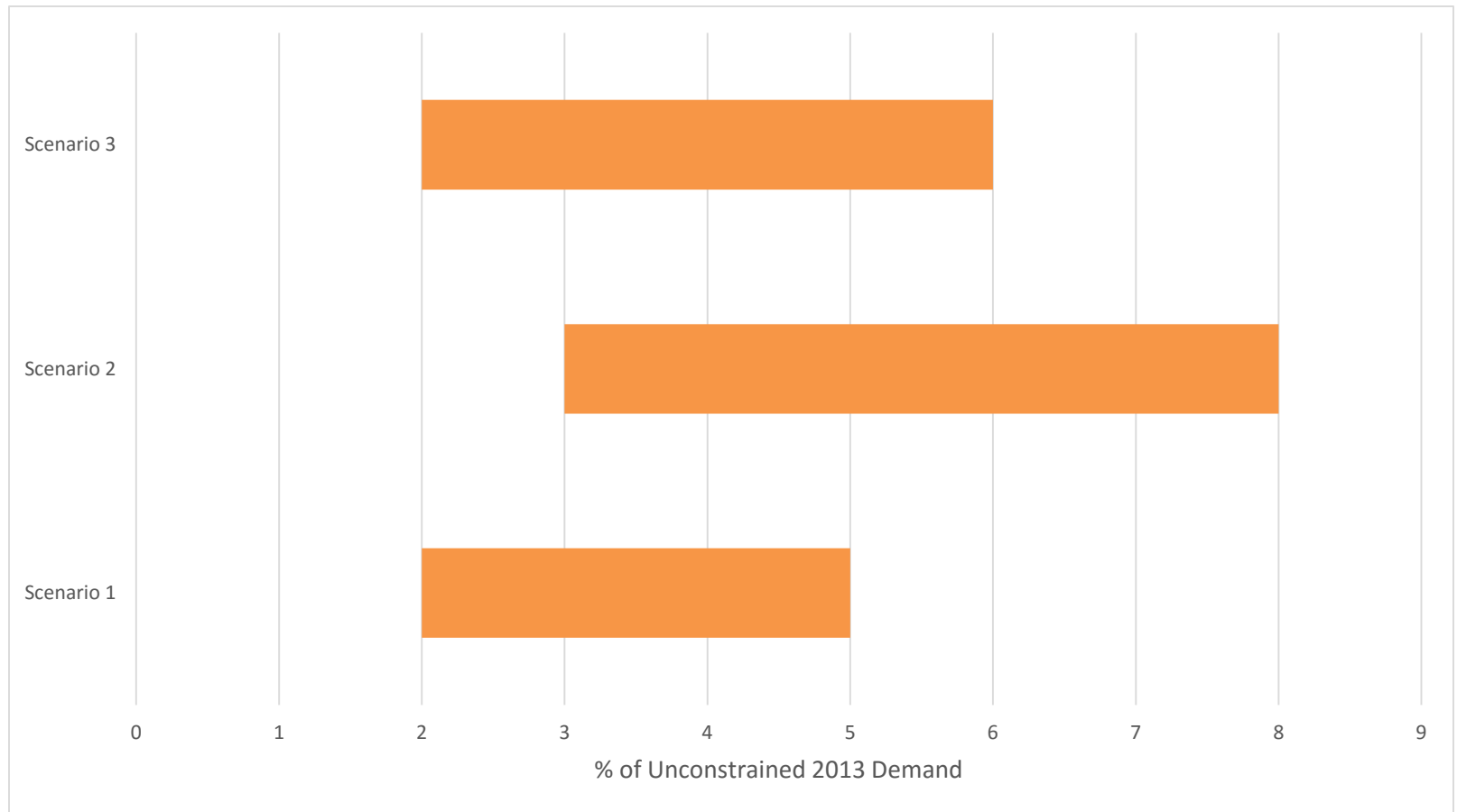Single Family Use - Cumulative Distribution
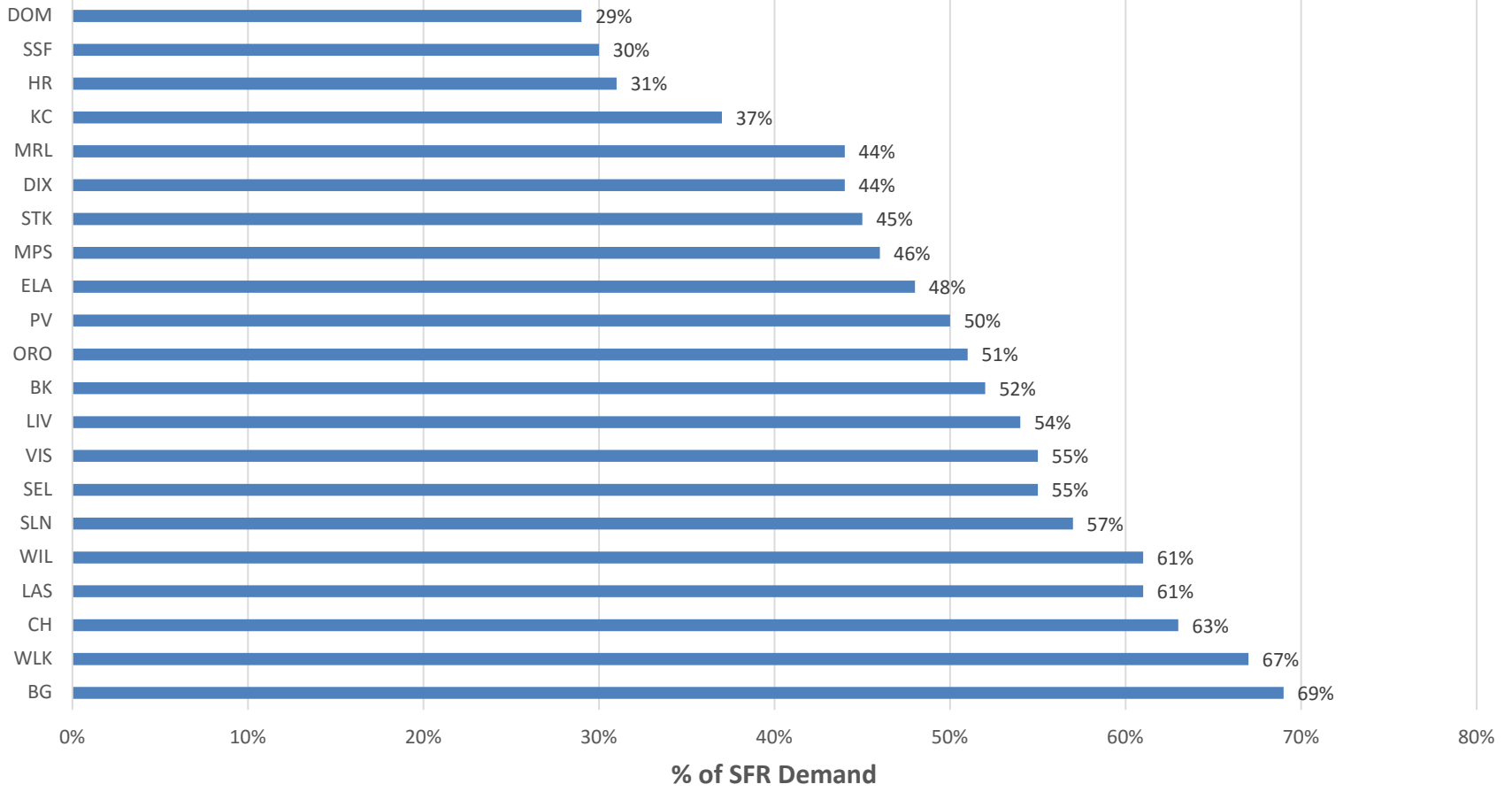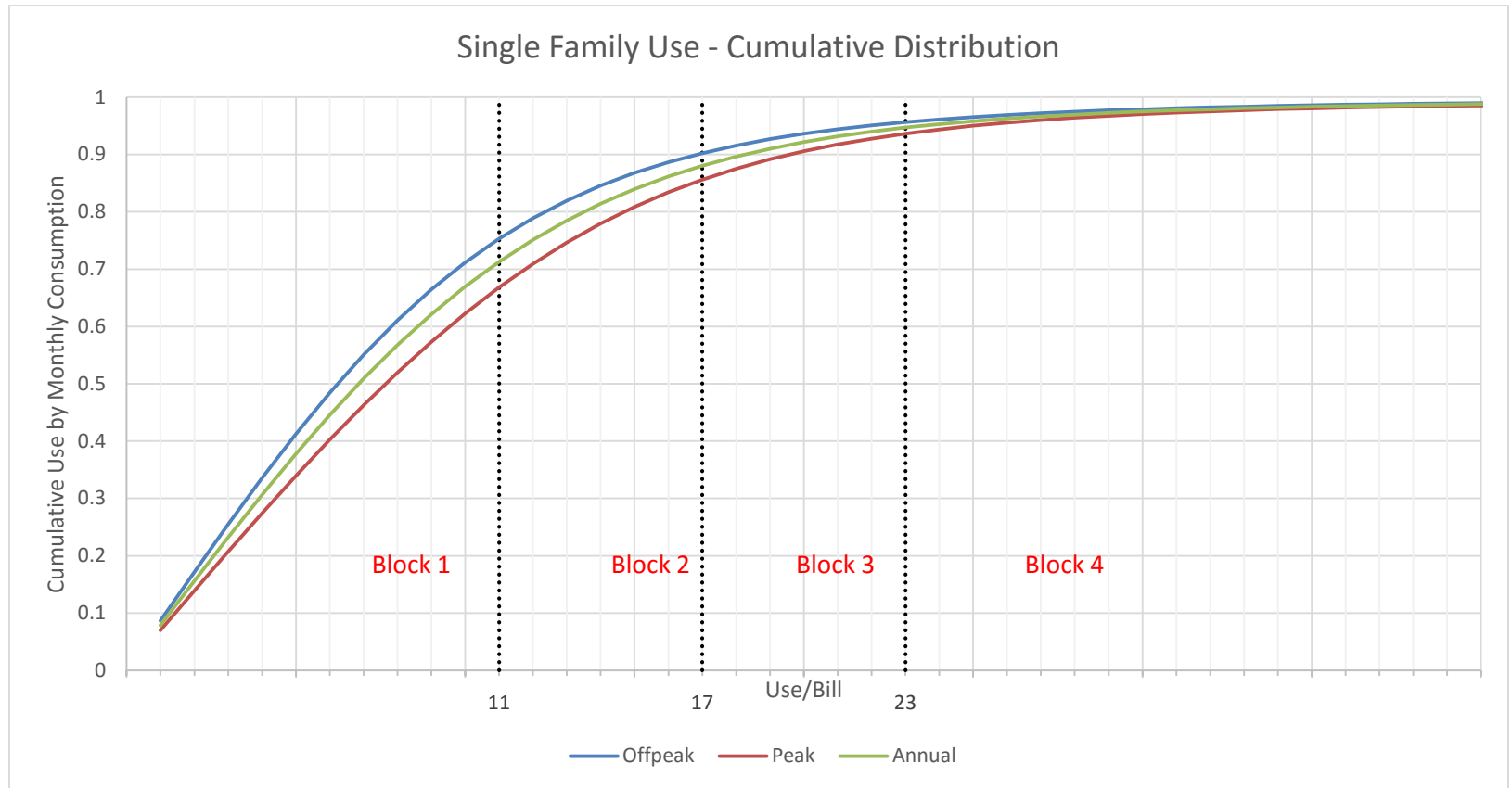
Average Reduction in SFR Demand
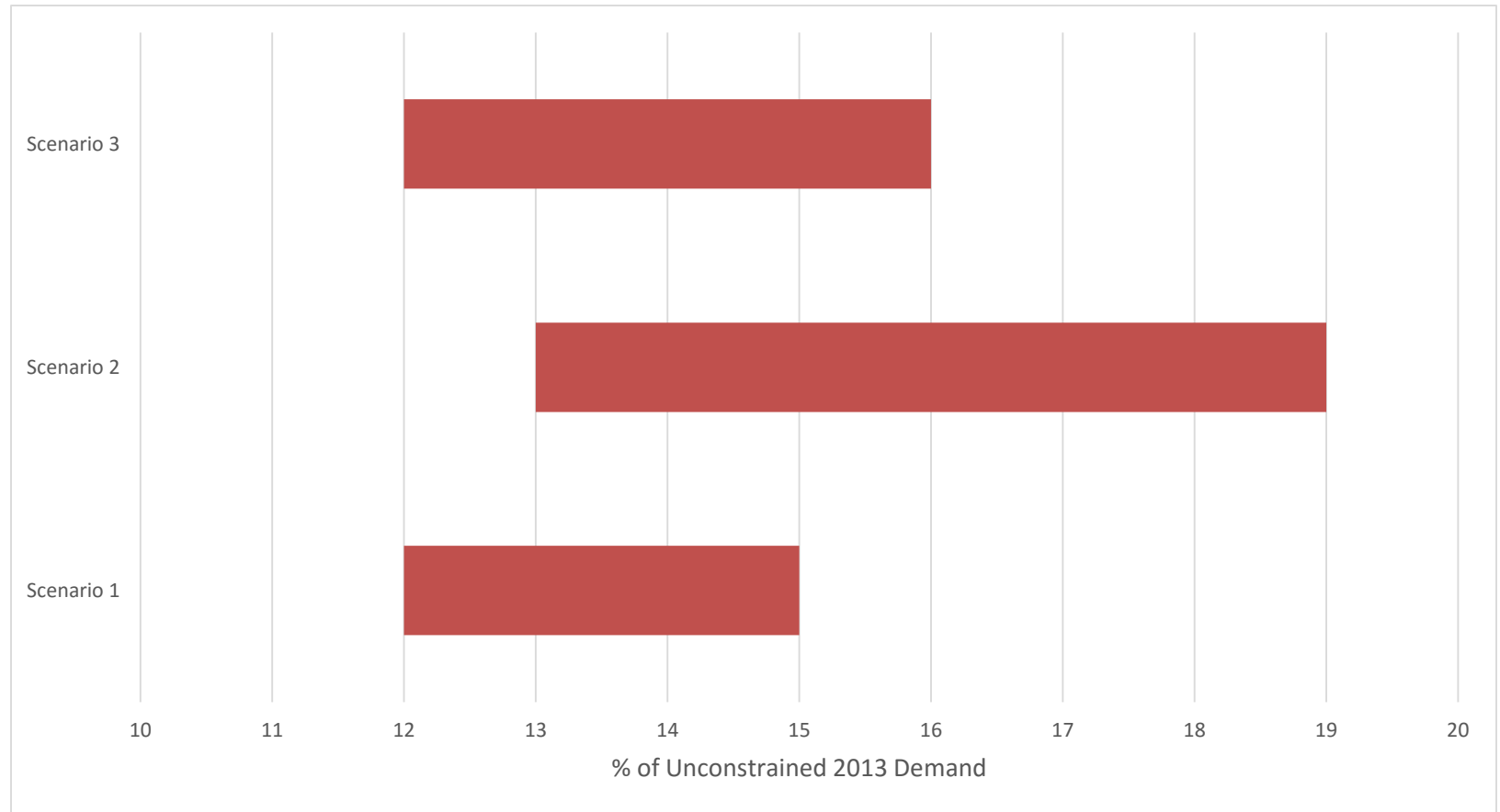## Price + Non-Price Conservation

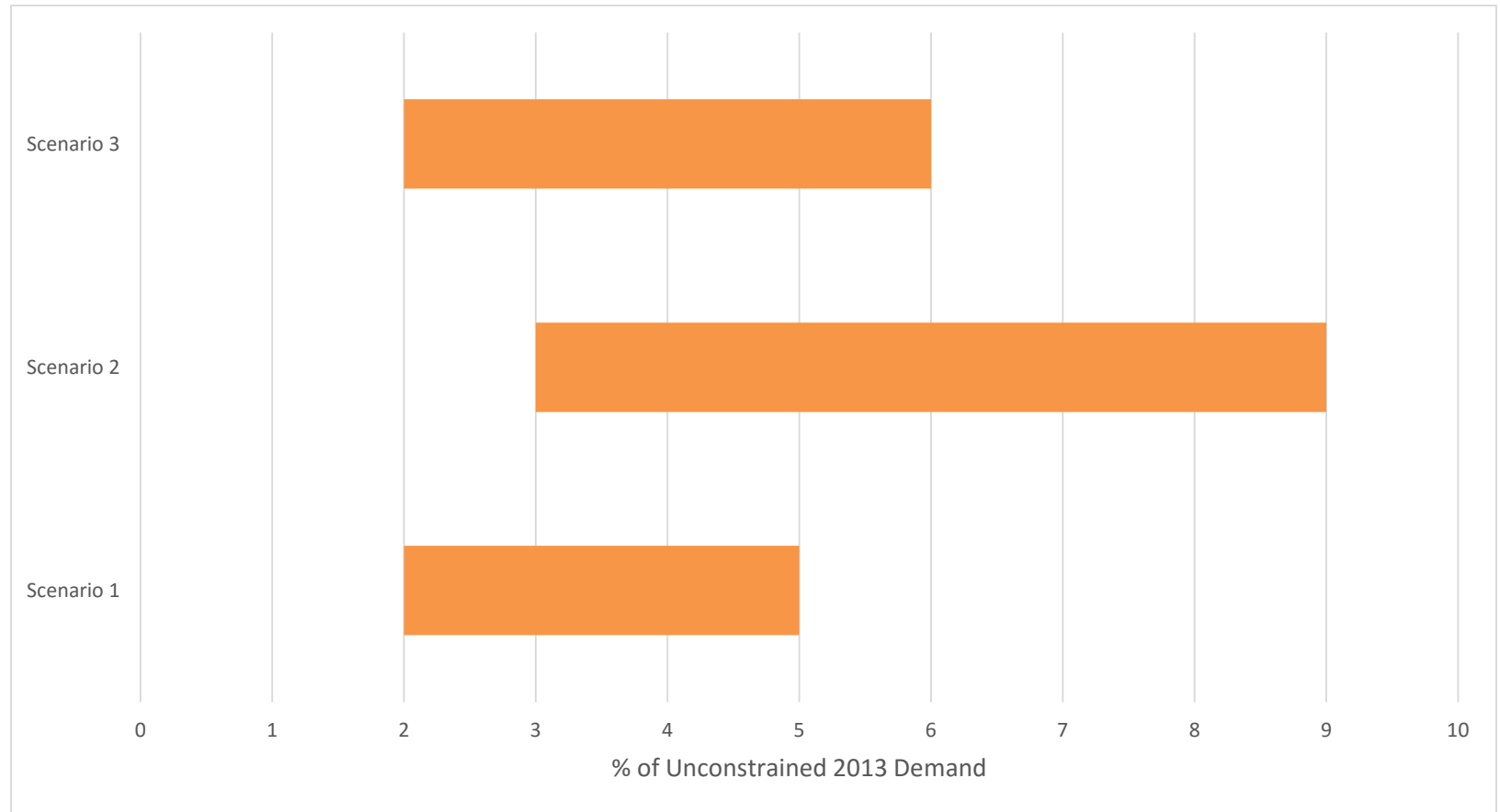# Average Reduction in SFR Demand
Price Only

Average Reduction in Total Demand
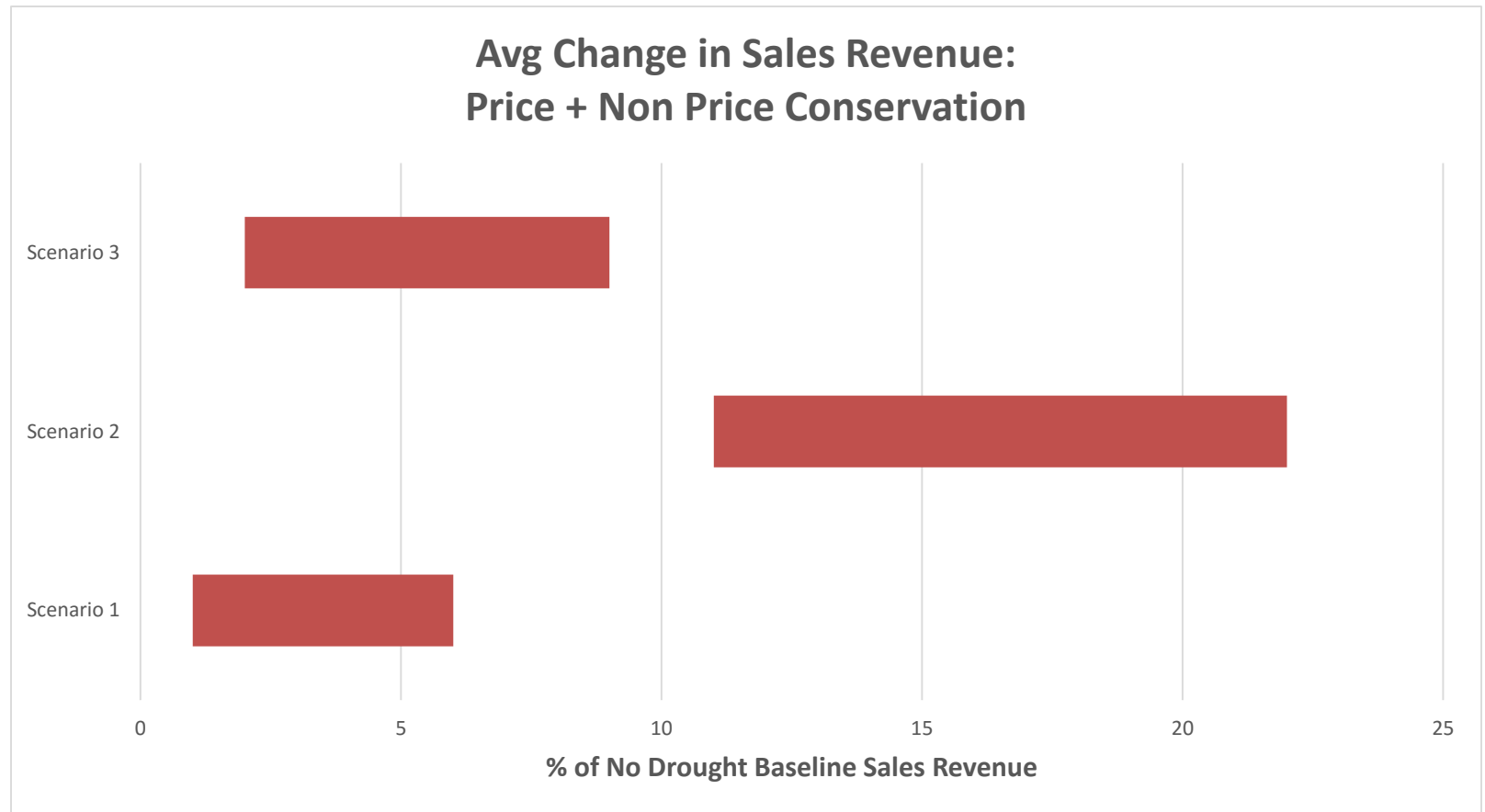## Price + Non-Price Conservation

Average Reduction in Total Demand
Price Only

Average Change in Sales Revenue
Price + Non-Price Conservation

Contact Information

Ken Jenkins
Interim Director of Drought Management & Conservation
California Water Service
kjenkins@calwater.com
www.calwater.com/conservation

Mary Ann Dickinson
President/CEO
Alliance for Water Efficiency
maryann@a4we.org
www.allianceforwaterefficiency.org