2020 Tri-Valley Municipal and Industrial Water Demand Study

Water Resources Committee Meeting
January 11, 2021

Study Objectives and Intended Use

- The main objective of the study:
  - develop well-supported and updated regional forecasts of M&I or treated water demand for planning purposes
- The study's findings will be used to:
  - Inform the 2020 Urban Water Management Plan under preparation
  - Inform other planning efforts, including future water supply evaluation, investment decisions in supplies and reliability infrastructure, connection fee projections, conservation program development and others

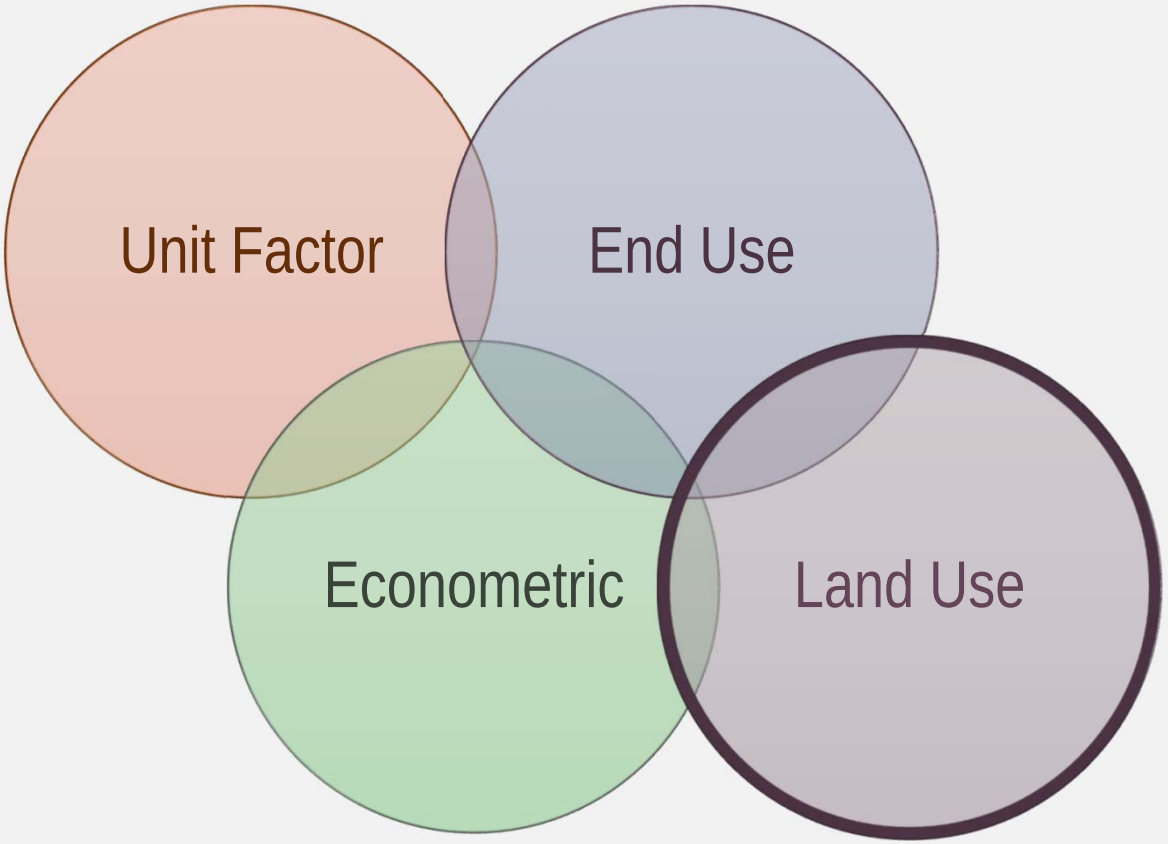
Meeting Agenda

- Work to date
- General overview of approach/methodology
- Descriptions/results of scenarios
- Comparison vs. 2015 UWMP and 2019 WSE Update
- Conservation regulation context
- Conclusions

Work to Date: 2020

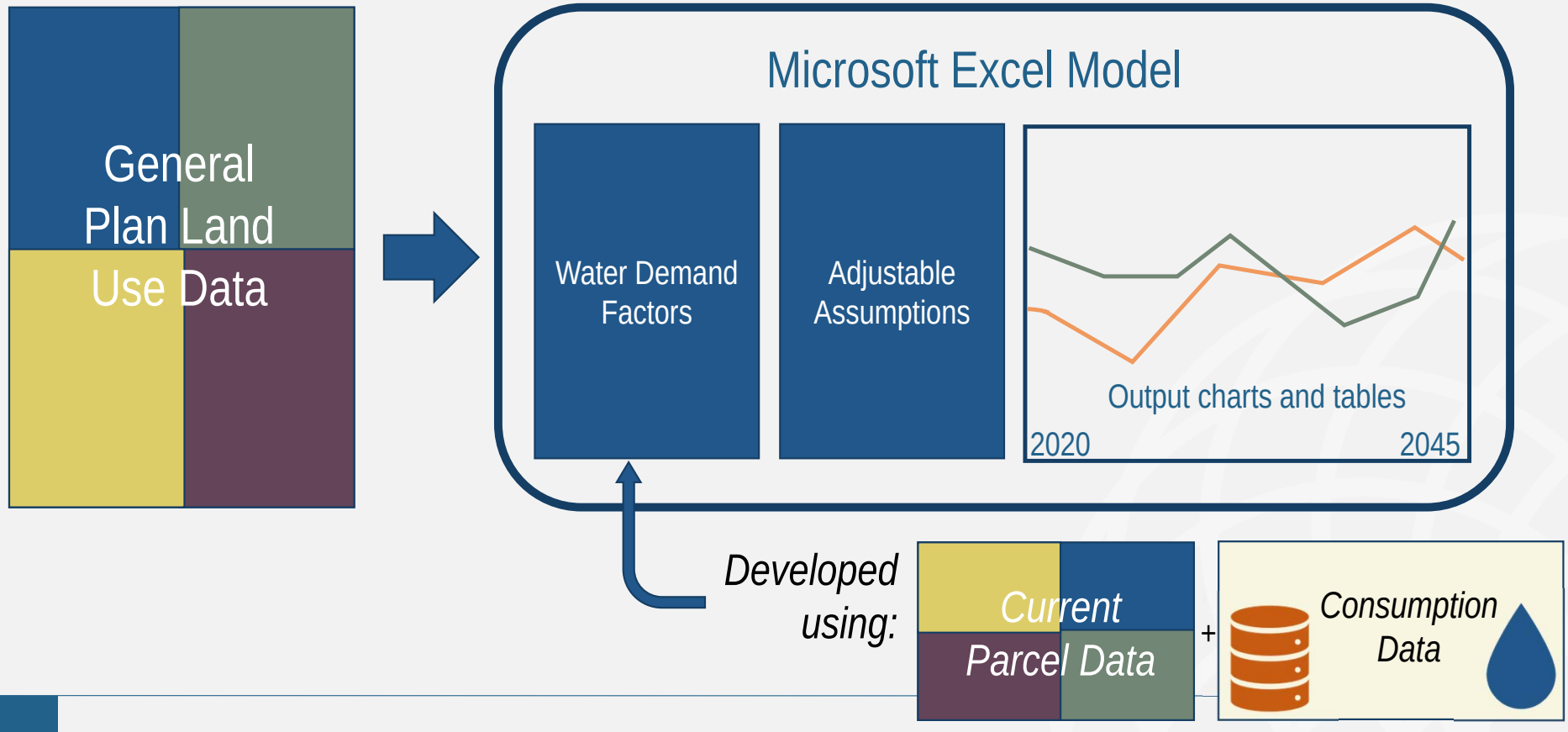
January	• Kick-off meeting with retailers
February	• Individual data review meetings with retailers
March-August	• Ongoing email communication with retailers about model inputs
September	• Individual meetings with retailers to review draft results • 9/30 Workshop with all retailers to review results
October-November	• Individual meetings with retailers to review methodology and tweaks to inputs or other assumptions
December	• Circulated final results and reached consensus on scenarios with retailers

Water Demand Forecasting Methods



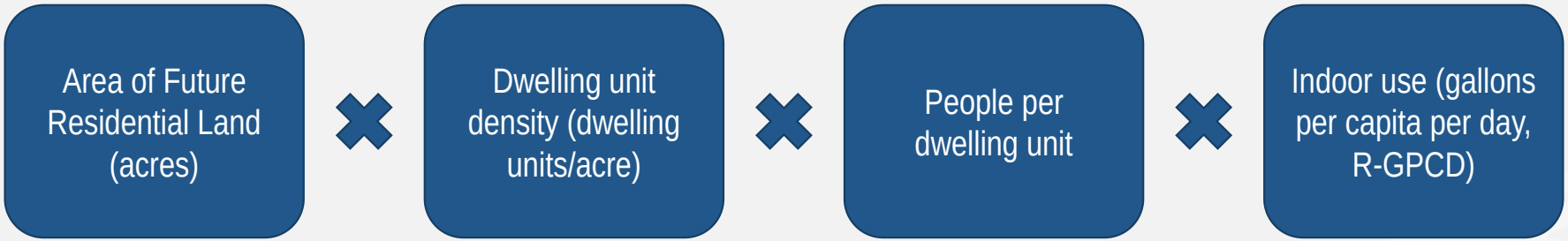
Zone 7 chose land use based approach to be able to apply a consistent regional method that most closely aligns with development-specific approach capturing known developments in the Tri-Valley. Provides flexibility in making adjustments to specific developments (land use type or timing of online date), plus interactions with recycled water on a parcel-by-parcel basis.

Model – Big Picture

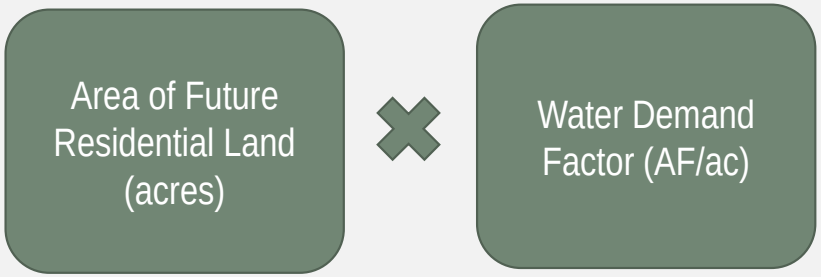


Demand Factors: Residential

Indoor

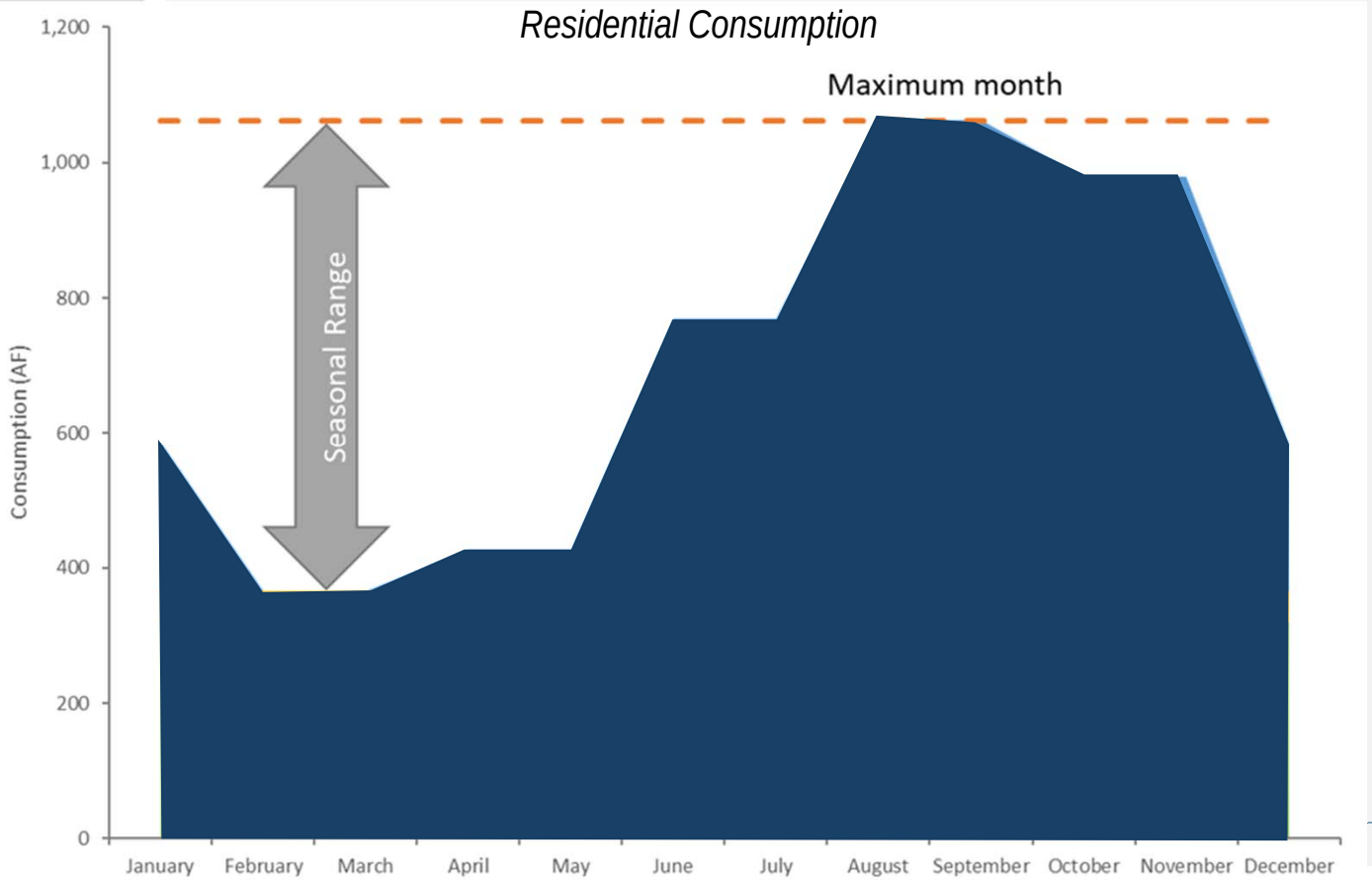


Outdoor



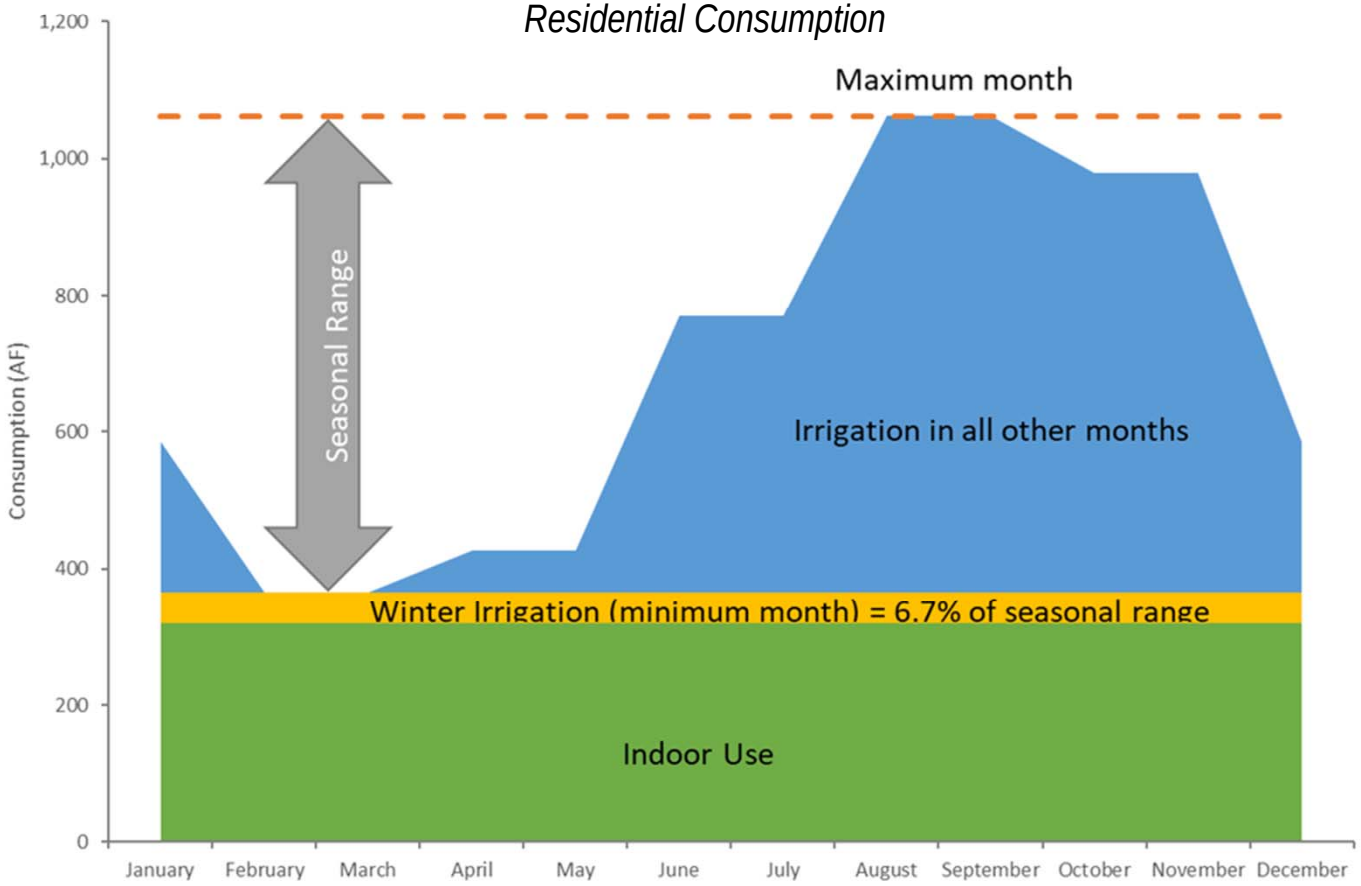
Based on retailer-specific data

Indoor/Outdoor Disaggregation

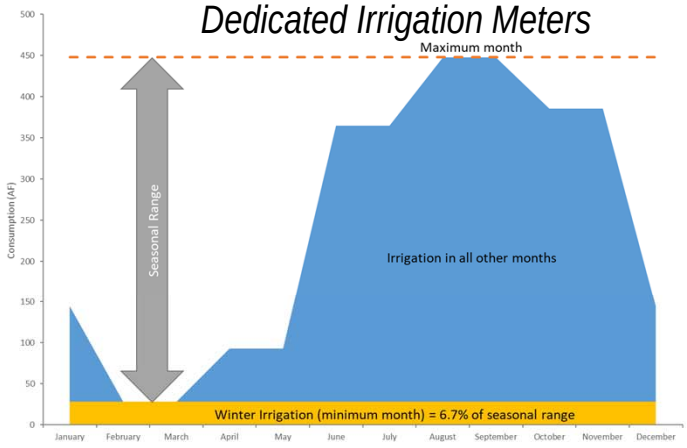


Indoor/Outdoor Disaggregation

Residential Consumption



Dedicated Irrigation Meters



Non-Residential Demand Factors

Commercial, Industrial, Institutional

Area of Future CII Land (acres) × Water Demand Factor (AF/ac)

← *Based on retailer-specific data, broken down by land use categories*

Water Loss

service connections × % growth in potable demands × Volume of Losses per connection per day

← *From water loss audits* →

Unmetered Authorized Consumption

% unmetered volume × Potable consumption

Scenarios Overview

- Baseline
  - Based on recent consumption patterns and expected growth
- New Normal
  - Low bound with conservation effects across sectors
- Drought & Economic Rebound
  - High bound assuming some level of rebound post-drought
- Economic Slowdown
  - Several sources of water reductions with slower pace of development
- Growth Cycling
  - Different growth rate pattern (same endpoint)
- Recycled Water Expansion
  - Recycled water served to all “potential” properties to offset potable demands

Scenarios Relative to Baseline

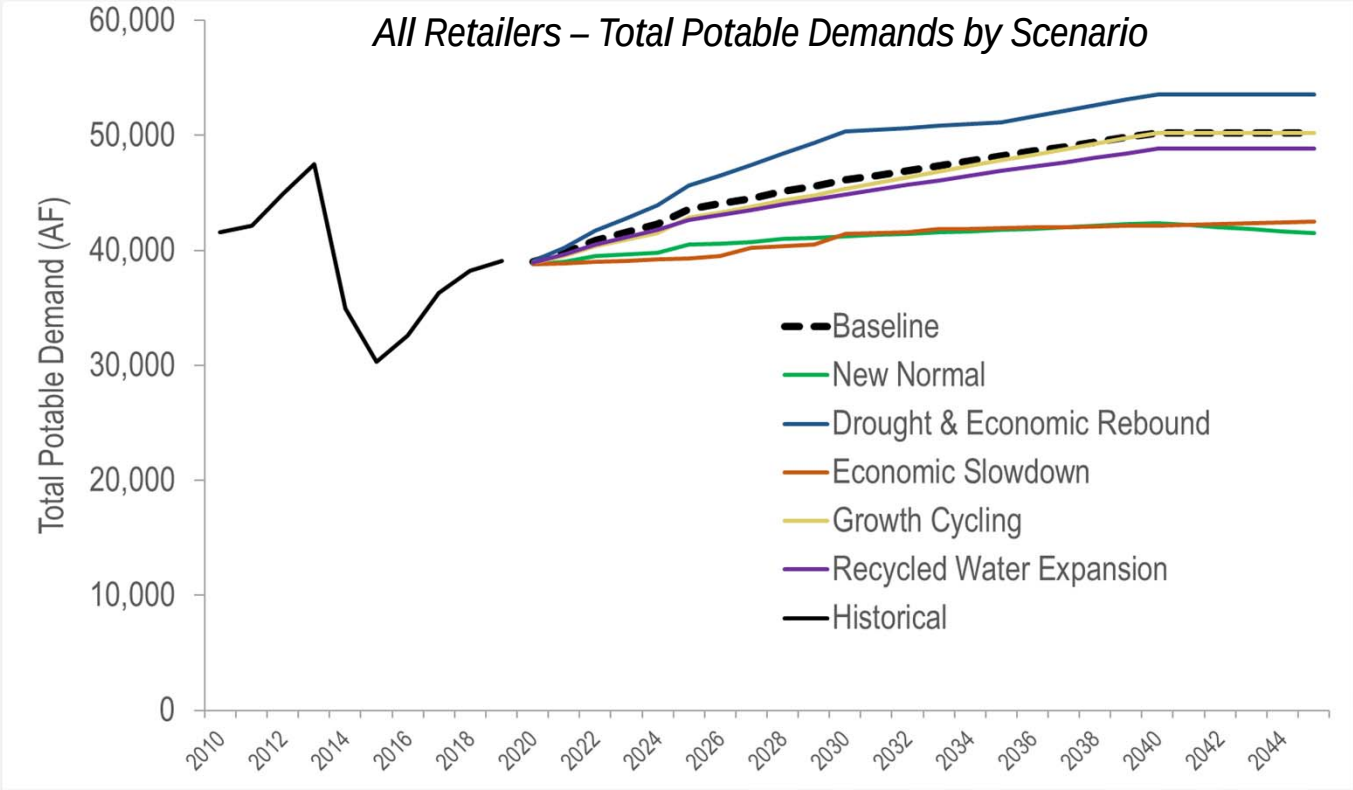
= means Consistent with Baseline

Parameter	Baseline	Scenario				
		New Normal	Drought & Economic Rebound	Economic Slowdown	Growth Cycling	Recycled Water Expansion
Residential Indoor	Projections based on recent avg OR drought rebound (CWS) (41.7-52.3 gpcd)	Hold 2019 R-GPCD (39.5 – 47.5 gpcd)	⇧ to 55 gpcd by 2030 ⇩ to 50 gpcd by 2035	Hold 2019 R-GPCD (39.5 – 47.5 gpcd)	=	=
Residential Outdoor	AF/ac based on recent avg OR drought rebound (CWS, DSRSD)	⇩5%	⇧5%	=	=	=
CII	AF/ac based on recent avg	⇩5%	⇧5%	⇩5%	=	=
Water Loss	gal/connection/day based on water loss audits	=	=	=	=	=
Passive Conservation	☒	☑	☒	☑	☒	☒
Price Elasticity	☒	☑	☒	☑	☒	☒
Active Conservation	(none included - retailers could provide in future)	=	=	=	=	=
Recycled Water	Based on RW data from retailers	=	=	=	=	⇧ all “Potential” deliveries
Economic Development	Based on General Plan build-out year and development-specific info	=	=	🕐 delay 5 yrs	🕐 growth cycling	=

Scenarios Comparison

Scenario	Total Potable Demands (AF)		Retailer Demands on Zone 7 (AF)
	2020	2045	2045
Baseline	39,039	50,225	43,656
New Normal	38,825	41,489	34,920
Drought & Economic Rebound	39,119	53,593	47,024
Economic Slowdown	38,778	42,481	35,912
Growth Cycling	38,927	50,225	43,656
Recycled Water Expansion	38,961	48,820	42,251

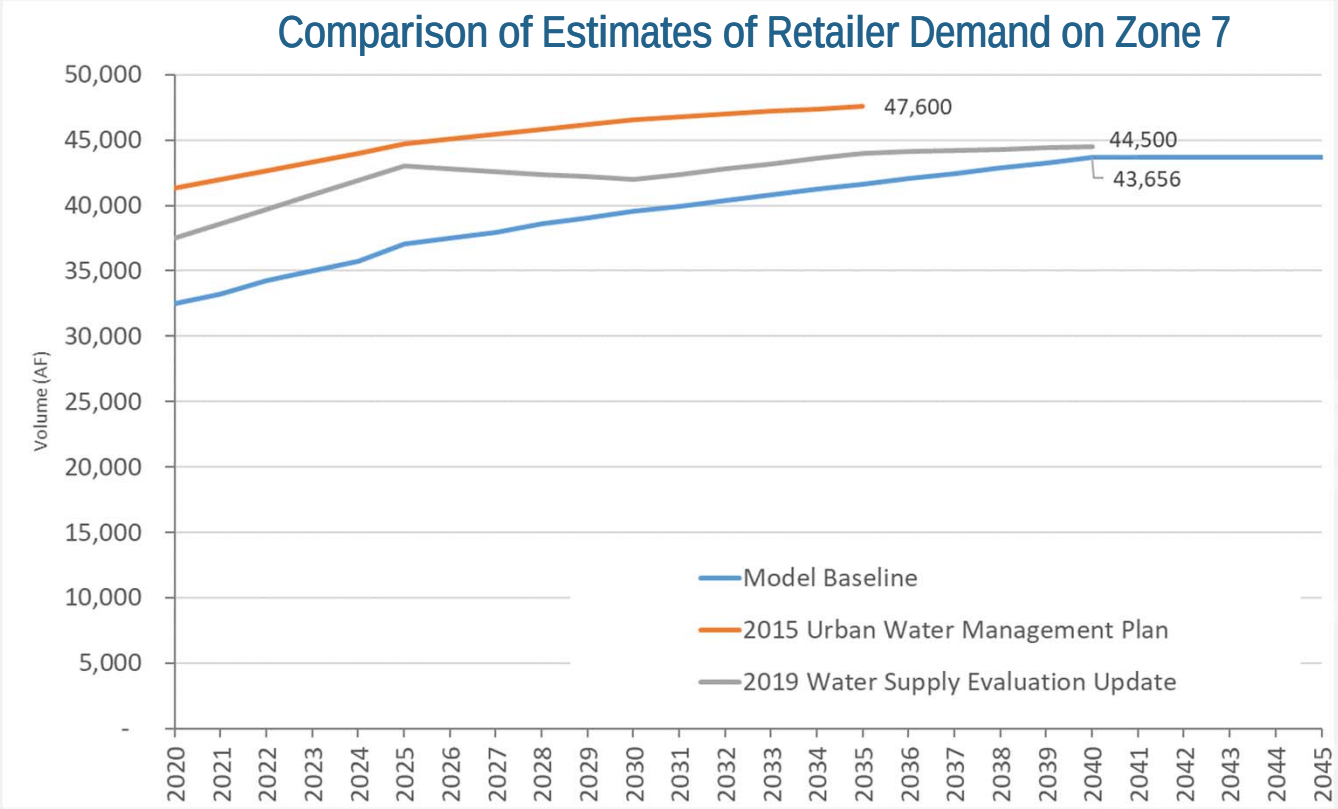
Retailer demand on Zone 7 from 2019 WSE Update: 44,500



Scenarios Overview

- Baseline - 43,656 AF
- New Normal - 34,920 AF
  - Strong effect of passive conservation and price elasticity
- Drought & Economic Rebound - 47,024 AF
  - Large increases across sectors, especially in residential indoor
- Economic Slowdown - 35,912 AF
  - Strong effect of passive conservation and price elasticity plus delayed development
- Growth Cycling - 43,656 AF
  - Changes the timing of demands by delaying them, with same endpoint
- Recycled Water Expansion - 42,251 AF
  - Decreases potable demands by about 1,400 AF

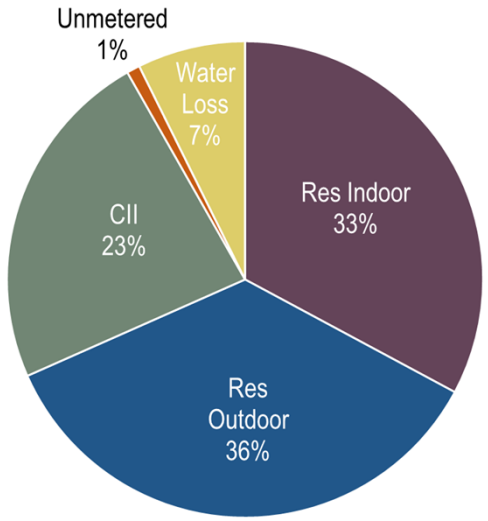
2015 UWMP and 2019 WSE Comparison



Conservation Mandates Context

- Much is still unknown → Model sectors align with expected objectives
- Residential Indoor
  - State draft objective of 50 gpcd. All retailers already below that value.
- Residential Outdoor
  - Latest: Model Water Efficient Landscape Ordinance (MWELO) may be used to calculate ETo and outdoor landscape area water use. DWR continuing to develop methodology.
  - Model has some flexibility to accept adjustments based on % non-irrigable.
- Water Loss
  - Each retailer will have unique real loss target (gal/connection/day).

2045 Demands by Sector



Conclusions

- Zone 7 and Retailer staff agree that the Baseline Scenario is a reasonable basis for water supply planning, and will be used in the 2020 Urban Water Management Plan.
  - The Tri-Valley has achieved significant levels of conservation over the last five years, which is reflected in the Baseline.
  - The New Normal and Economic Slowdown assume even deeper levels of conservation and demand reduction that may not be realistic.
  - Recycled Water Expansion does not have a big impact (about 1,400 AF reduction); currently there's a moratorium on recycled water expansion in DSRSD.
  - Growth Cycling simply changes the timing; buildout demand is the same as Baseline
  - Staff will monitor demand rebound due to changes in conservation behavior and economic development, which may place demands closer to the Drought & Economic Rebound scenario.