

# INTEGRATED RESOURCE PLAN

**PROJECT UPDATE**

**TACOMA PUBLIC UTILITY BOARD**

**MARCH 14, 2018**



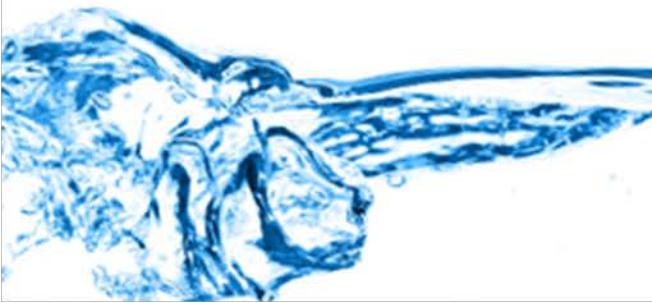
# AGENDA

- **INTEGRATED RESOURCE PLANNING (IRP)**

- OBJECTIVES / PUBLIC ADVISORY COMMITTEE / SCHEDULE
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- **ELEMENTS OF WORK**

- DEVELOPMENT OF WATER SUPPLY YIELD MODEL, BOTH SHORT TERM AND LONG TERM
- INCORPORATING CLIMATE CHANGE
- DEVELOPING A RESOURCE ADEQUACY STANDARD
- FUTURE SCENARIO DEVELOPMENT
- SOURCES
  - GROUNDWATER EVALUATION
  - CONSERVATION PROGRAM UPDATE
  - INVESTIGATING REUSE AS A SOURCE



# WYSDM

## “WATER YIELD, SUPPLY & DEMAND MODEL”

### Hydrologic Database

Including 101 years of historic data, up to 1,000 years of statistically generated historic data, and three scenarios of selected climate change data



### System Data

Capacities, constraints, operating rules, switchable for scenario evaluation



### Water Demands Module

Selectable sets of variable, daily demands for existing and future – including Second Diversion Partners and wholesale users



### Simulation Results: Tables & Graphics, Key Metrics:

Summarize the scenario results based on how Tacoma Water decisions are made



### Groundwater Module

Availability summary/ extraction limitations

Interactive summary of key availability/limitation characteristics, include selectable utilization options for scenario evaluation



### Surface Water Model

Use available DHSVM Model\*

An accurate, detailed ability to simulate the hydrologic response of the Green River watershed under variable climate assumptions

\*(available, but not currently implemented)



### Graphical User Input:

Assumptions, data, simulation type



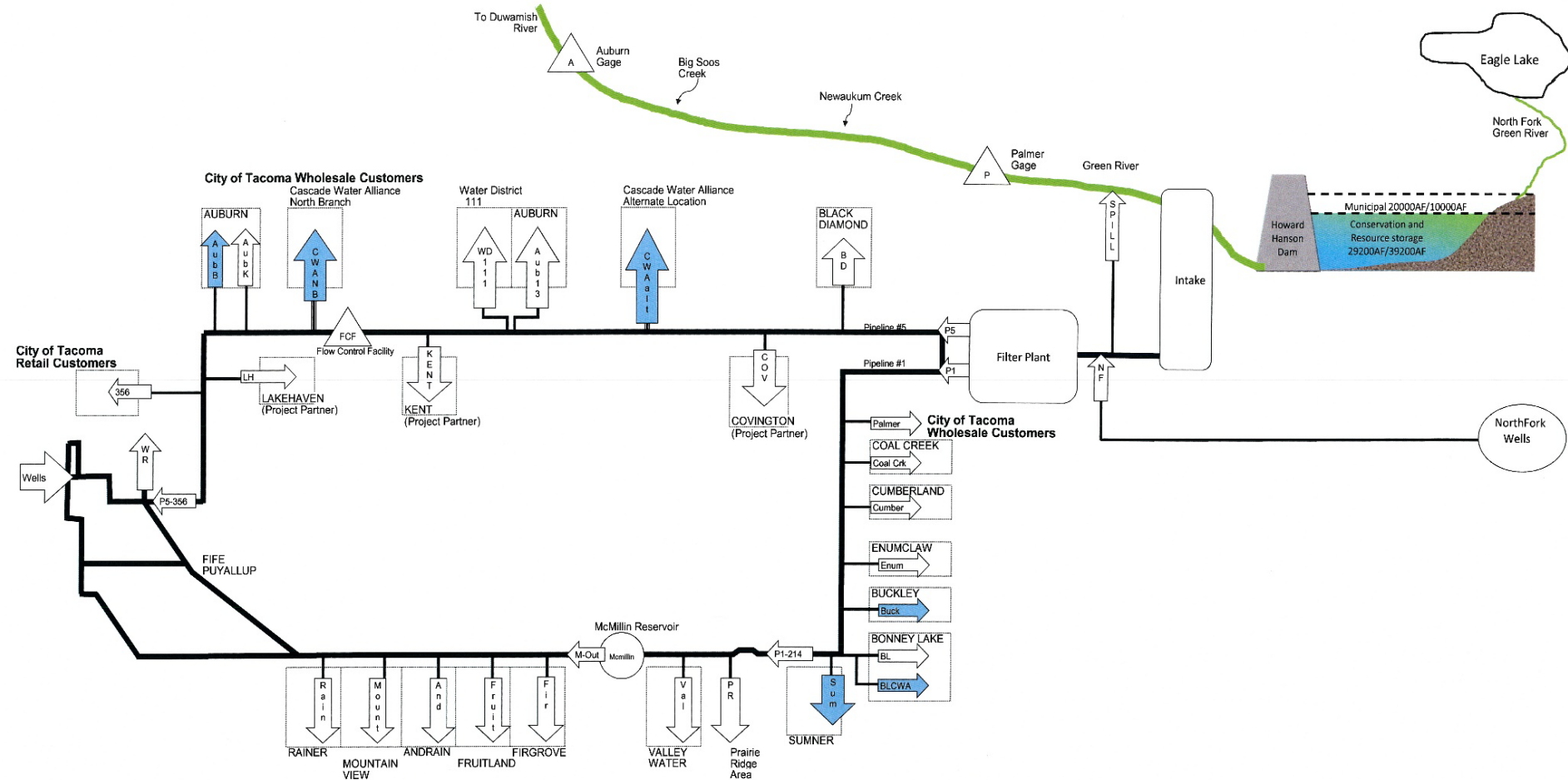
### Real-time Data and Forecasts

Developed from:

Real-time reservoir storage data and selectable and adjustable historic, or projected hydrology and meteorological data

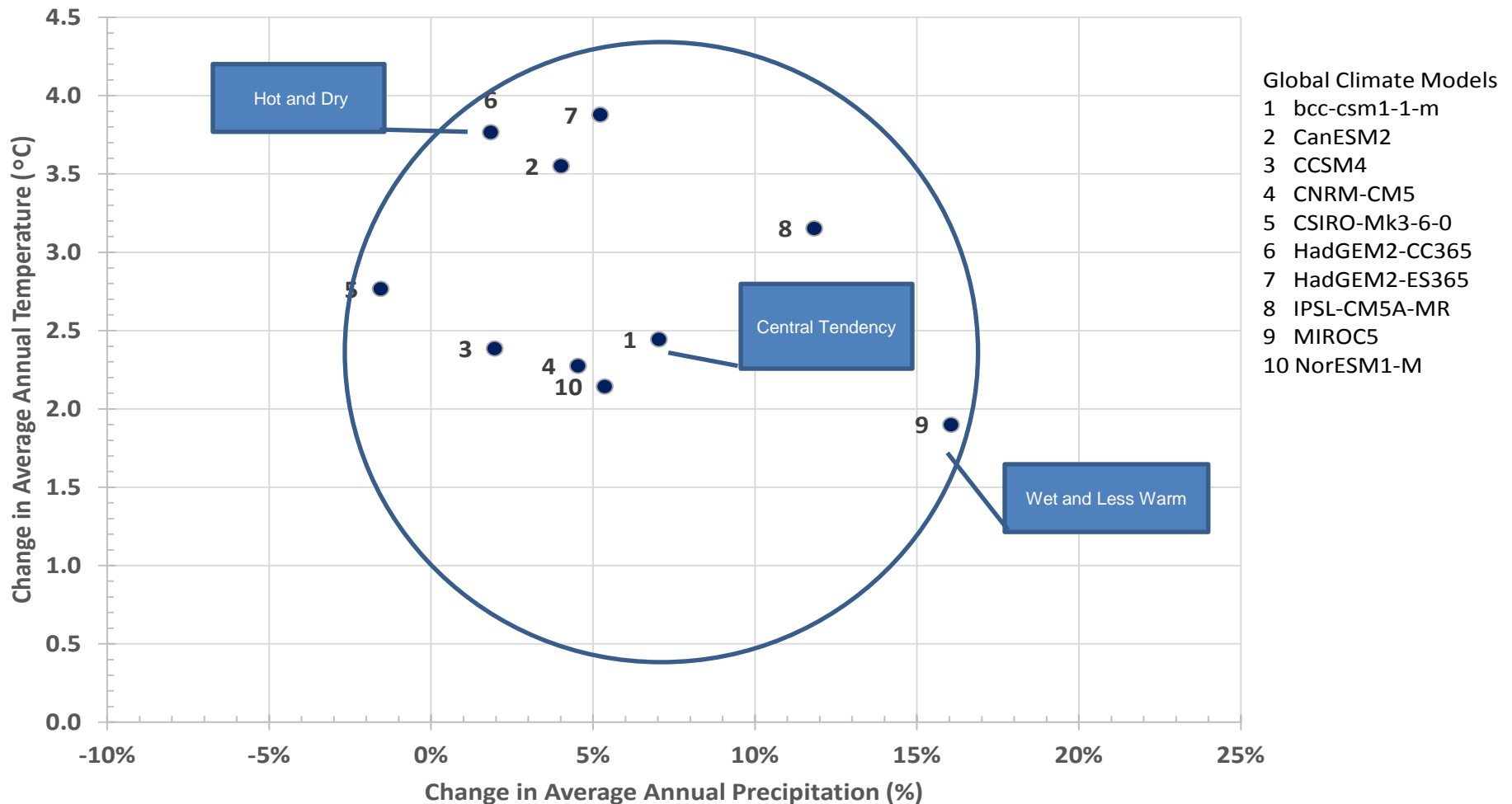


# A CHALLENGE TO MODEL



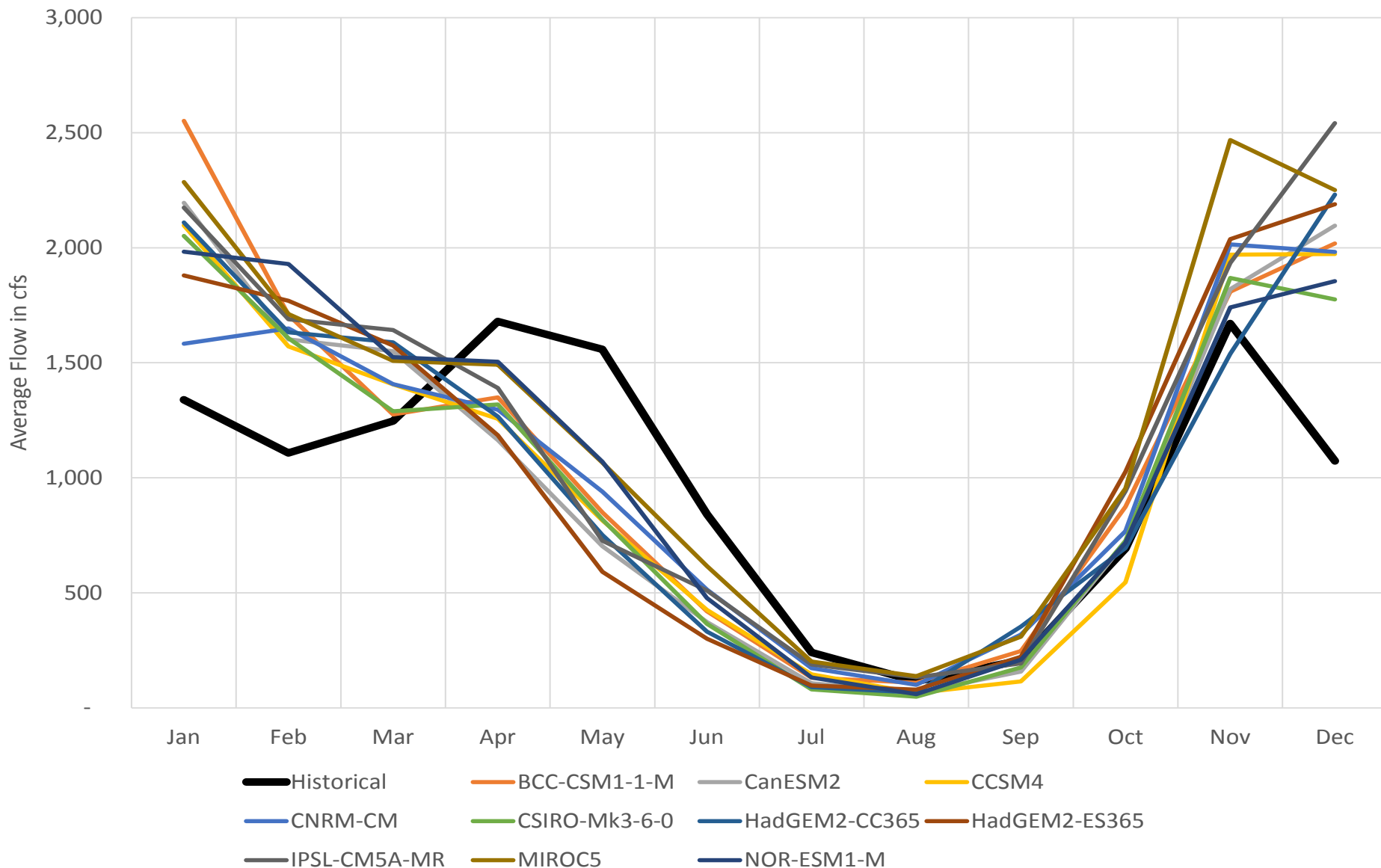
# GLOBAL CLIMATE MODEL SELECTION

Change in Precipitation and Temperature near Puyallup  
for 10 Global Climate Models  
(RCP 8.5, MACA 2050s)  
Compared to Historical (1984 to 2013)



# CHANGE IN INFLOW DUE TO CLIMATE CHANGE

Average Monthly Simulated Natural Howard Hanson Dam Inflow





# RESOURCE ADEQUACY STANDARD

WE ARE WORKING ON A RESOURCE ADEQUACY STANDARD FOR YOUR CONSIDERATION.

THIS NEW STANDARD WILL HELP US MAKE FUTURE BUSINESS DECISIONS AROUND OUR SOURCES AND SYSTEM.

THROUGH THE WORK DONE IN THE IRP AND THIS RESOURCE ADEQUACY STANDARD, WE WILL HAVE A BETTER UNDERSTANDING OF NEEDED FUTURE INVESTMENTS.



# DRAFT RESOURCE ADEQUACY STANDARD

WATER SOURCES AND SYSTEM WILL BE SUFFICIENT TO MEET DEMANDS SUCH THAT MANDATORY CURTAILMENTS WILL OCCUR NOT MORE THAN ONCE IN 25 YEARS.





# SCENARIO DEVELOPMENT

AS WE HAVE DISCUSSED, TACOMA WATER'S PORTFOLIO OF WATER RESOURCES MUST BE RESILIENT PROVIDING RELIABLE, COST-EFFECTIVE, AND ENVIRONMENTALLY RESPONSIBLE SERVICE ACROSS A BROAD RANGE OF POTENTIAL FUTURE CONDITIONS AND CIRCUMSTANCES.

PUBLIC ADVISORY COMMITTEE WAS INSTRUMENTAL IN HELPING US DESCRIBE THESE POTENTIAL FUTURES.

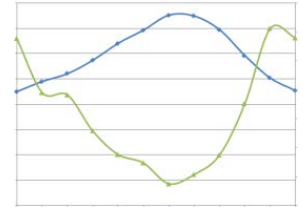
SEVERAL SCENARIOS REPRESENTING POSSIBLE DIFFERENT FUTURES WERE ENVISIONED TO BE MODELED IN THE IRP:



# SCENARIO DESCRIPTIONS

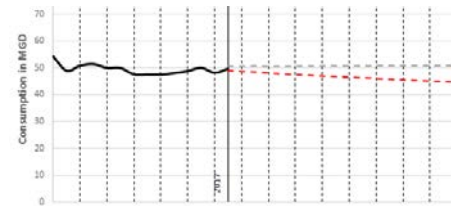
## MOST STRESSED

DESCRIBES A YEAR IN THE FUTURE WHERE THE SPRING AND SUMMER ARE WARMER AND DRIER, CAUSING WATER DEMANDS TO BE ELEVATED FOR A LONGER PERIOD OF TIME, DURING PERIODS OF THE YEAR WHEN **WATER RESOURCES MAY BE MOST STRESSED**.



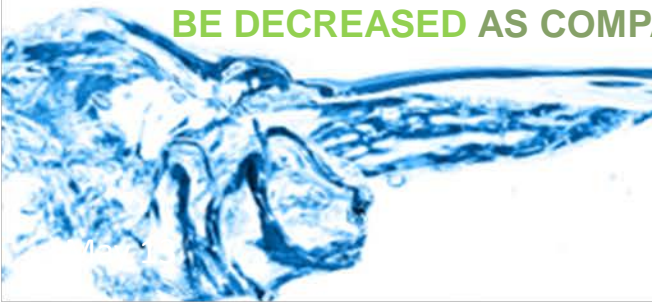
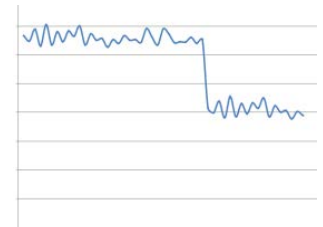
## MOST LIKELY

PORTENDS A YEAR IN THE FUTURE WHERE THE EXISTING CONDITIONS OF TODAY CONTINUE THEIR TRENDS ONWARD WITH ONLY MINOR CHANGES (IN THE NEAR-TERM). **THIS IS THE MOST LIKELY SCENARIO.**

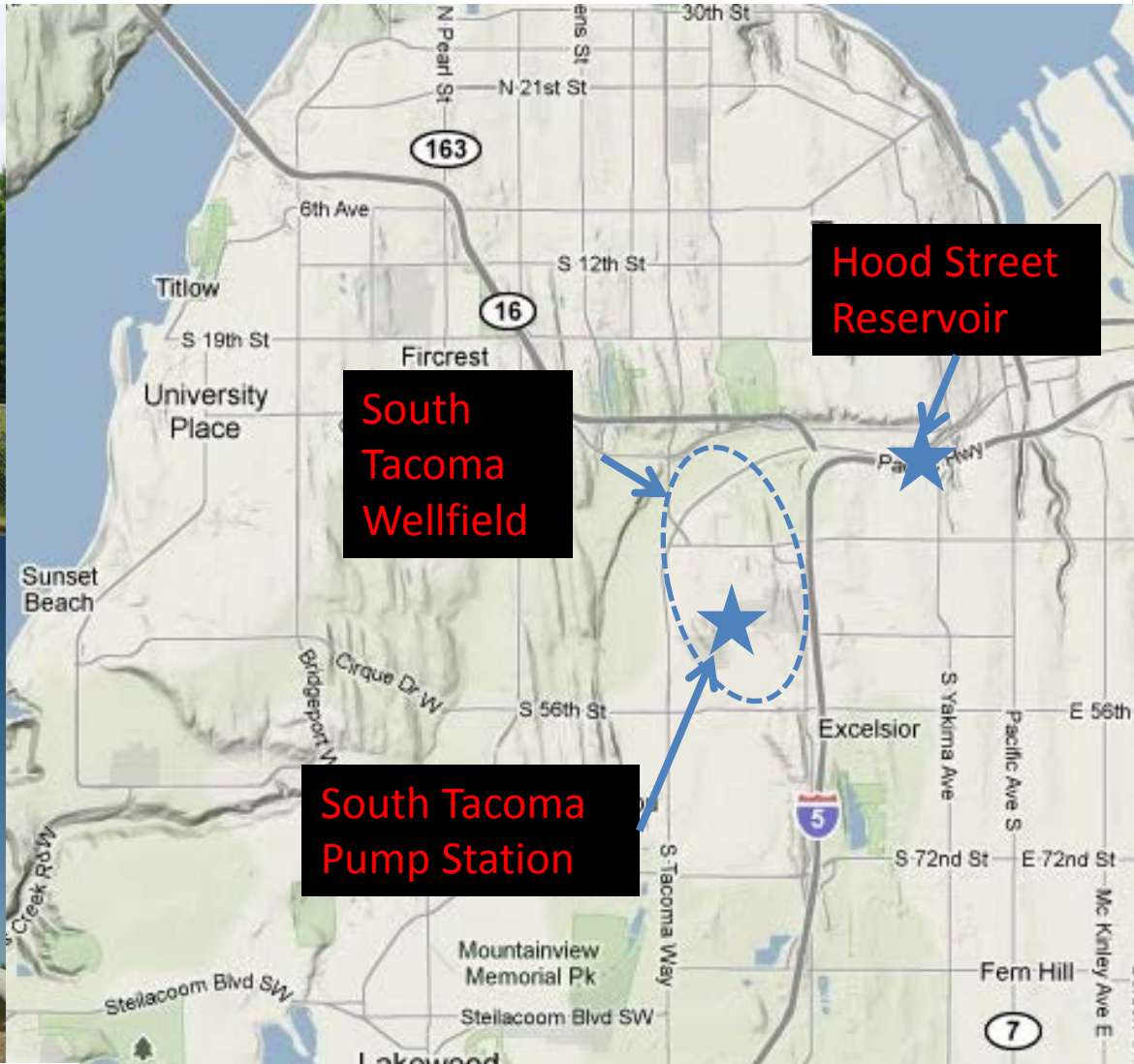


## LEAST STRESSED

ENVISIONS ADVANCES IN WATER SAVING TECHNOLOGIES, OR STRUCTURAL SHIFTS, THAT CAUSE THE **DEMAND FOR WATER TO BE DECREASED** AS COMPARED TO ANTICIPATED PATTERNS.



# WELL SYSTEM EVALUATION



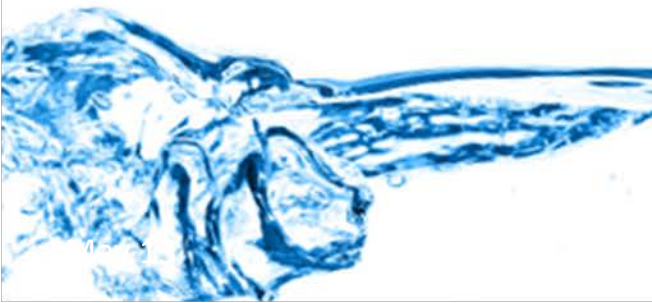
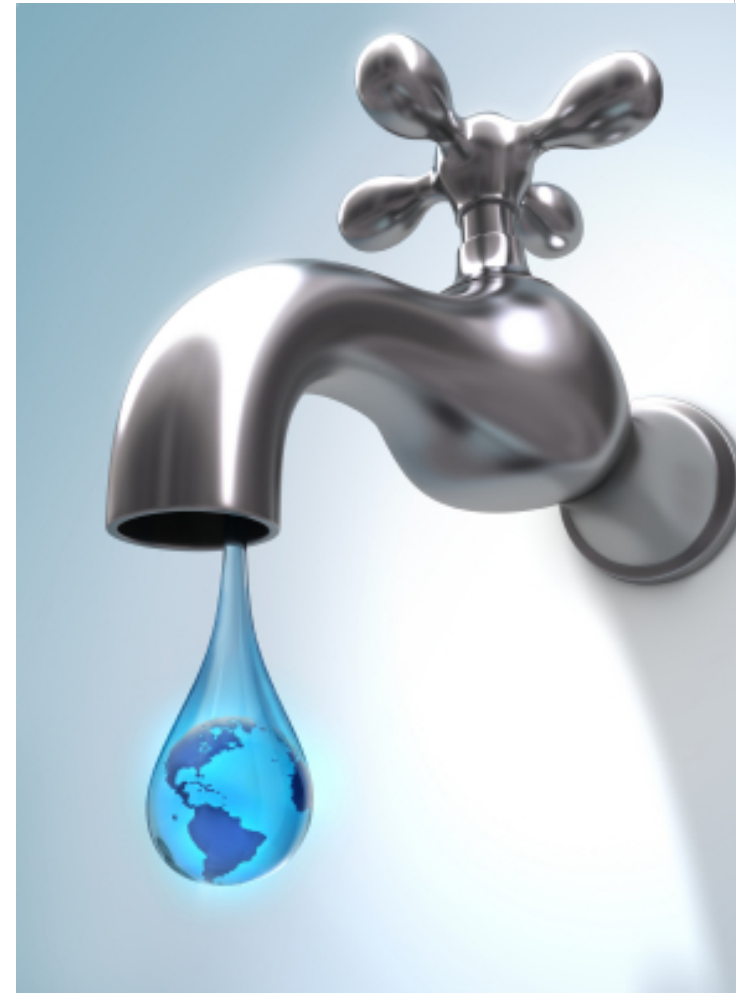
# CONSERVATION PROGRAM UPDATE

BASED ON FEEDBACK FROM THE PUBLIC ADVISORY GROUP AND OTHERS, THE FOLLOWING WILL BE THE PROPOSAL:

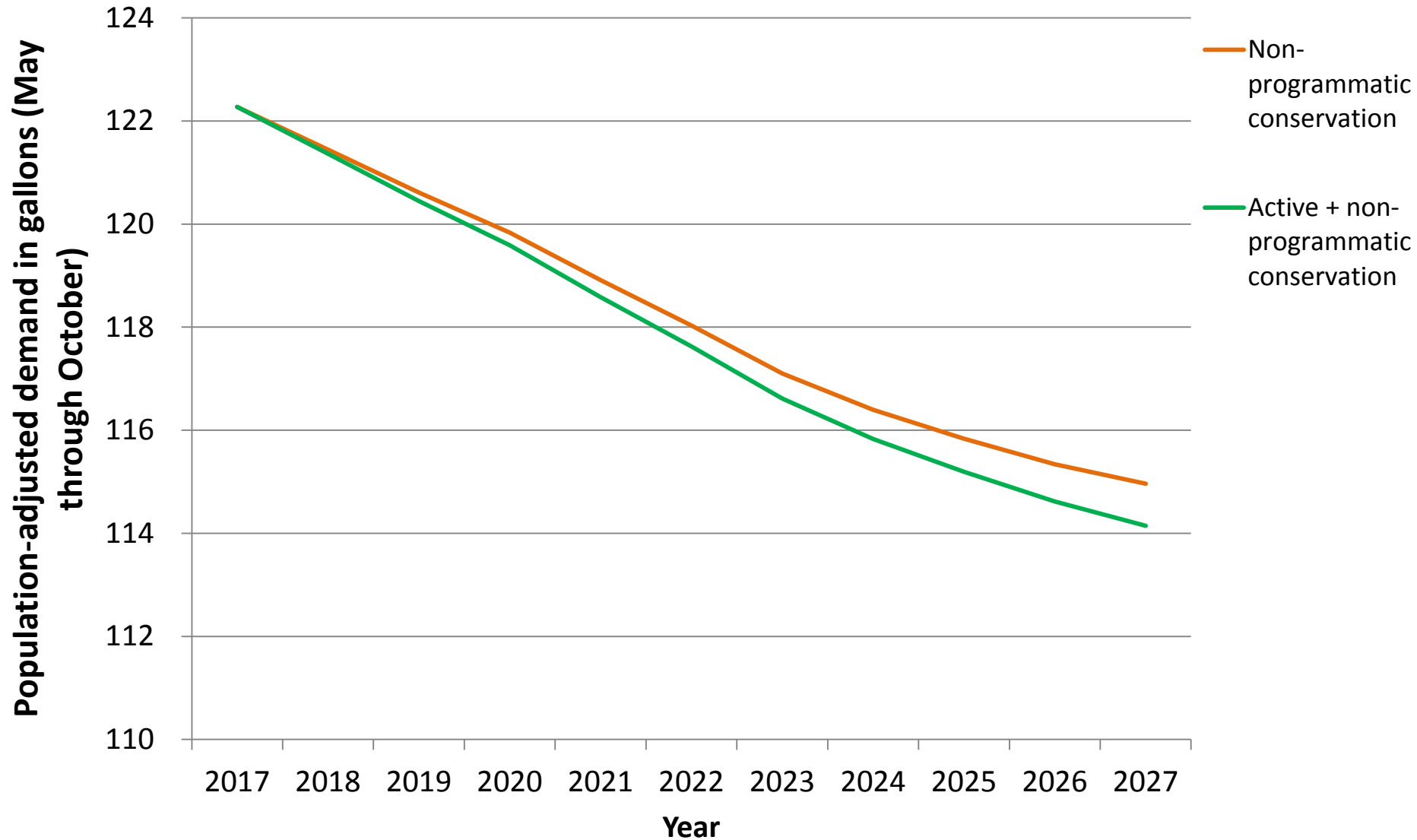
PROPOSED NEW GOAL: 6.65% PEAK  
(MAY-OCT) REDUCTION FROM 2018  
TO 2027

## PROPOSED NEW PROGRAMMING:

- Smart irrigation controller rebates
- Outdoor water efficiency kit giveaways
- Irrigation audits
- Increased multifamily programming



# CONSERVATION PROGRAM UPDATE





# RECLAIMED WATER (REUSE)

- **CITY OF TACOMA**

- Met with Environmental Services in 2017.
- Indicated that reclaimed water is not currently cost competitive.
- No current plans to market or sell reclaimed water.
- Plant currently produces Class C water; large per gallon increase in cost to produce Class A water.
- Tacoma Water will continue to monitor.

- **PIERCE COUNTY**

- Tehaleh (master planned community near Bonney Lake) will produce Class A water.
- Will be used for irrigation, infiltration, and limited commercial businesses.
- Piping for distribution of the reclaimed water (“purple pipe”) is being installed in the development in preparation .



# IN SUMMARY, THE INTEGRATED RESOURCE PLAN IS:

A THOROUGH WATER SUPPLY YIELD MODEL, BOTH SHORT TERM AND LONG TERM, THAT IS SYNCHRONIZED WITH DEMAND MODEL AND INCORPORATES CLIMATE CHANGE

AN UPDATED CONSERVATION PROGRAM THAT WILL BE USED OVER THE NEXT DECADE (AND IS MOST IMPACTFUL WHEN NEEDED THE MOST)

A MAJOR RESOURCE THAT WILL BE USED IN ITS ENTIRETY IN THE 2018 VERSION OF TACOMA WATER'S WATER SYSTEM PLAN

A COMMUNICATION TOOL THAT WILL ALLOW TRANSPARENCY OF TACOMA WATER'S DECISION MAKING AROUND WATER SUPPLY AND DEMAND

A DOCUMENT THAT ARTICULATES RESOURCE ADEQUACY STANDARD THAT WILL GUIDE WATER RESOURCE INVESTMENTS IN THE YEARS TO COME

