

### Model Overview

- Base Year Flow Factors by Sector
- Future Flow Factors affected by:
  - ✓ Projected growth in water and sewer rates
  - ✓ Projected growth in household income
  - ✓ Planned conservation program savings
  - ✓ Passive savings
- Forecasts of households and employment
- Other Adjustments
  - ✓ Non-Revenue Water
  - ✓ Other Sources of Supply

**Model Inputs →**  
**Conservation →**  
**Passive Savings**

Code savings

- ✓ 1992 code for showerheads, toilets and aerators
- ✓ 2001 code for clothes washers
- ✓ 2002 code for aerators
- ✓ 2012 code for clothes washers (effective 2016)

Beyond Code – Market Transformation

- ✓ Washing Machines      9.5 gcf ⇒ 6 gcf ⇒ 4 gcf ⇒ 3.3 gcf
- ✓ Toilets                      1.6 gpf ⇒ 1.28 gpf
- ✓ Showerheads              2.5 gpm ⇒ 2.0 gpm
- ✓ Aerators                     2.2 gpm ⇒ 2.0 gpm

Replacement, New Construction, PSE

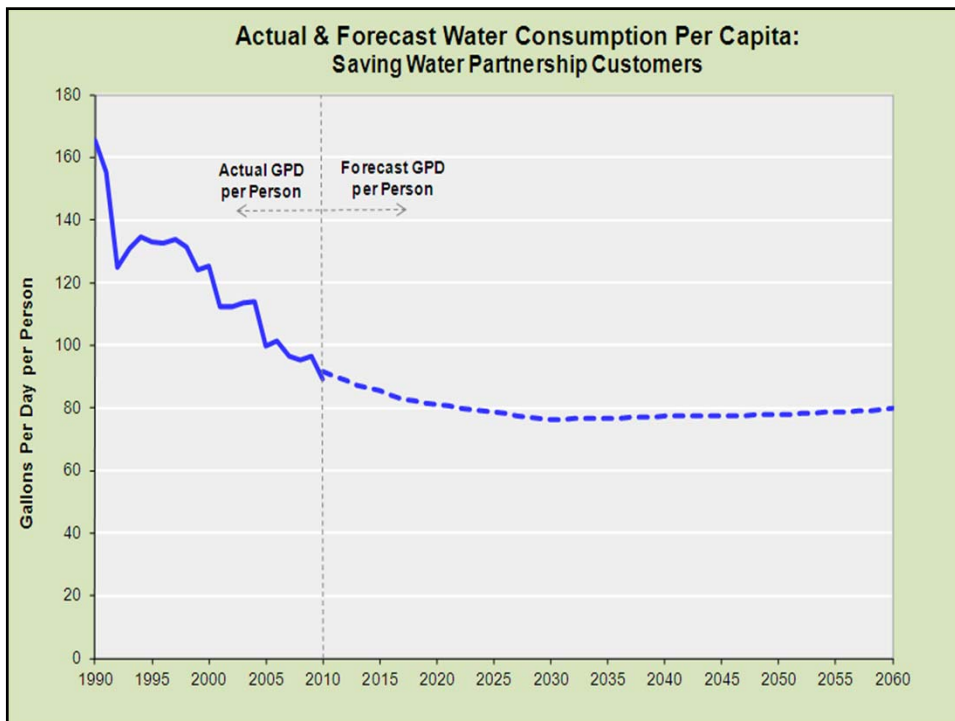
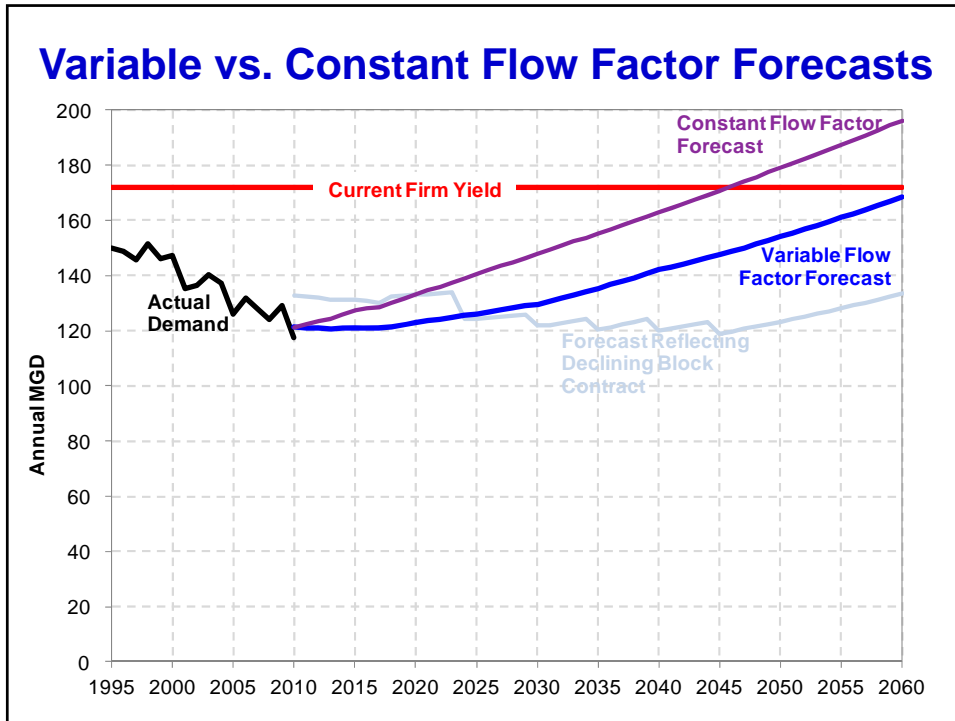


**Conservation Overlap Function**

Price/Programmatic/Passive

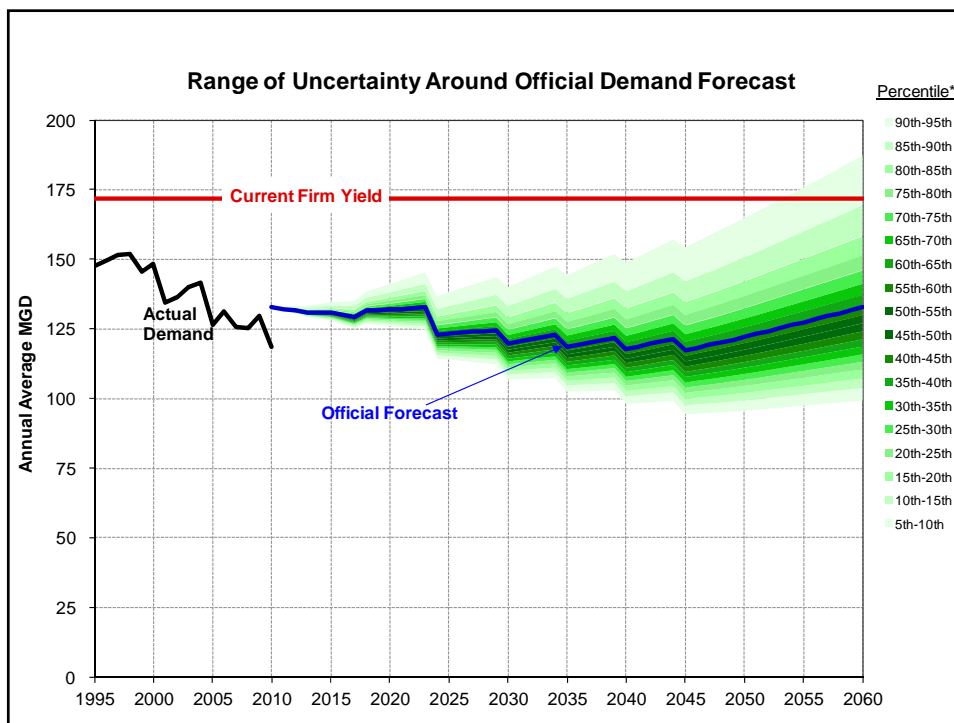
- ✓ Assumed that half the price effect overlaps with passive and programmatic savings
- ✓ Overall effect – reduces total gross conservation savings by 15%

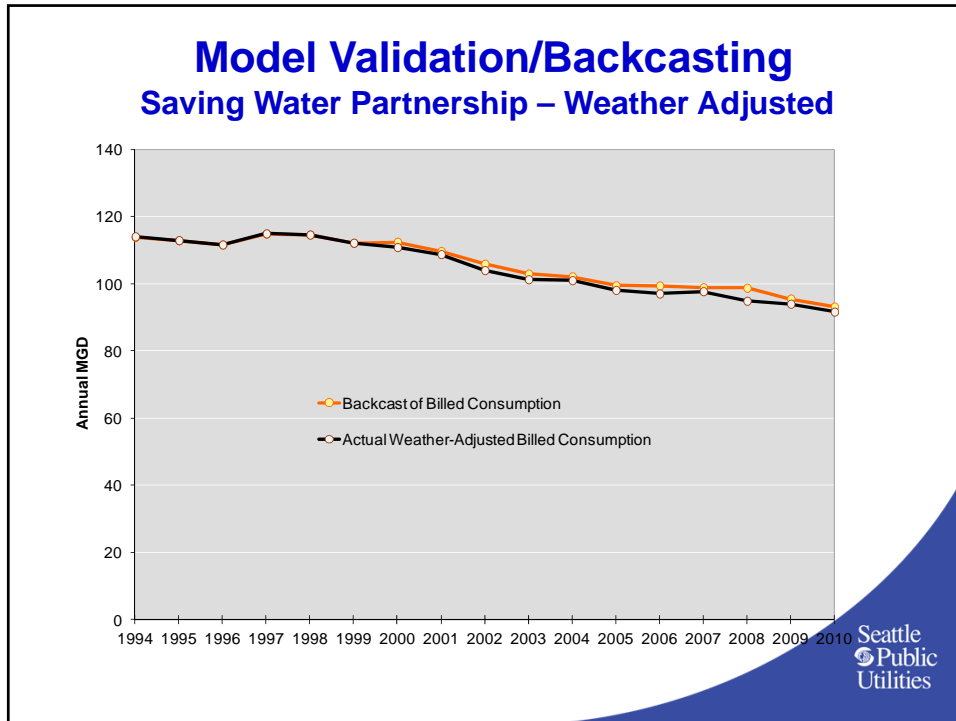




## Uncertainty

- Sources of uncertainty
  - ✓ Forecasts of input variables
  - ✓ Elasticities and other assumptions
- Estimate range of uncertainty around model inputs
- Assign probability distributions
- Run Monte Carlo simulations





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Demand Forecast Documentation  
[http://www.seattle.gov/util/About\\_SPU/Water\\_System/Plans/WaterSystemPlan/index.htm](http://www.seattle.gov/util/About_SPU/Water_System/Plans/WaterSystemPlan/index.htm)

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