Tacoma Power

Power Supply & Wholesale Revenue Update

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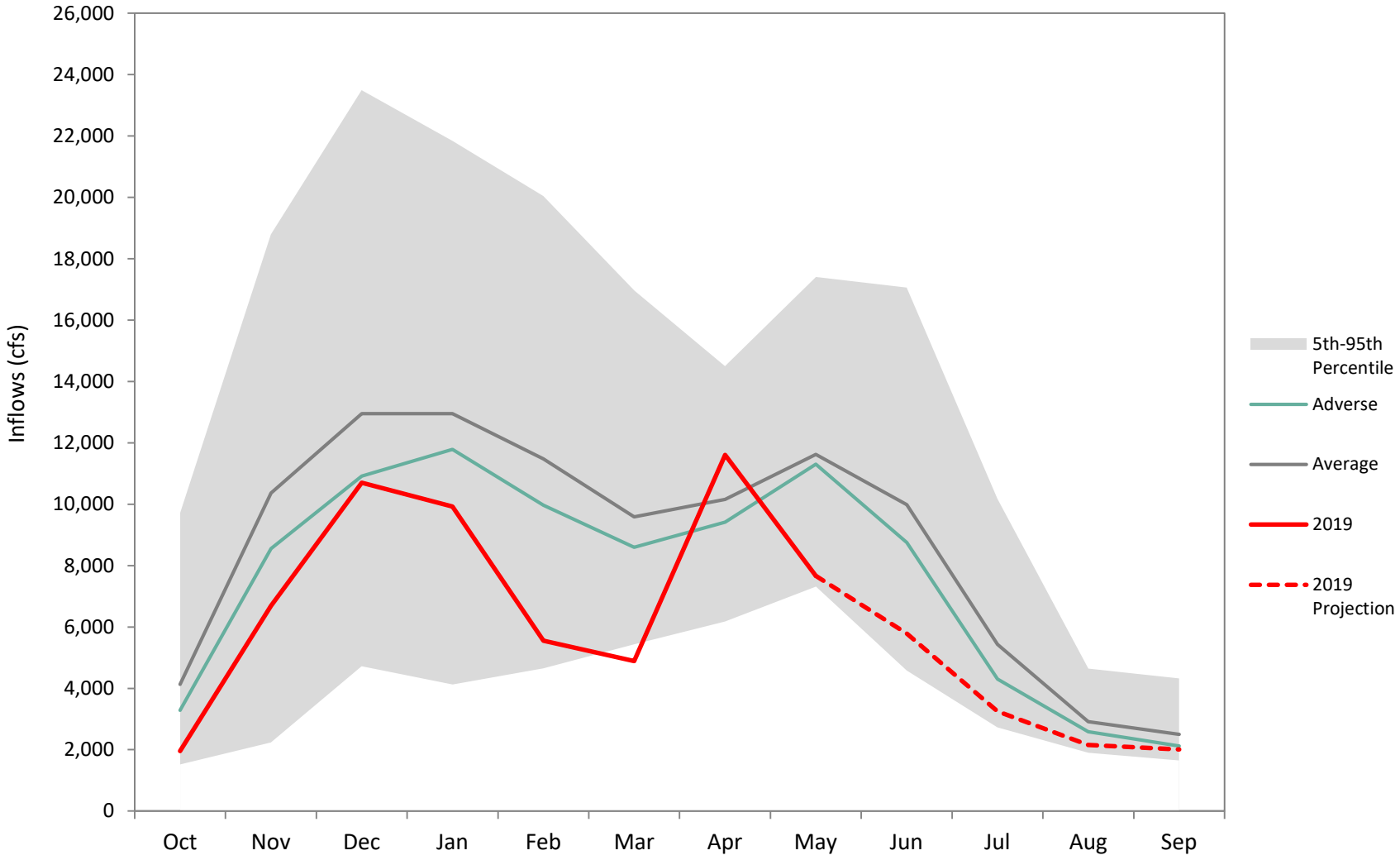
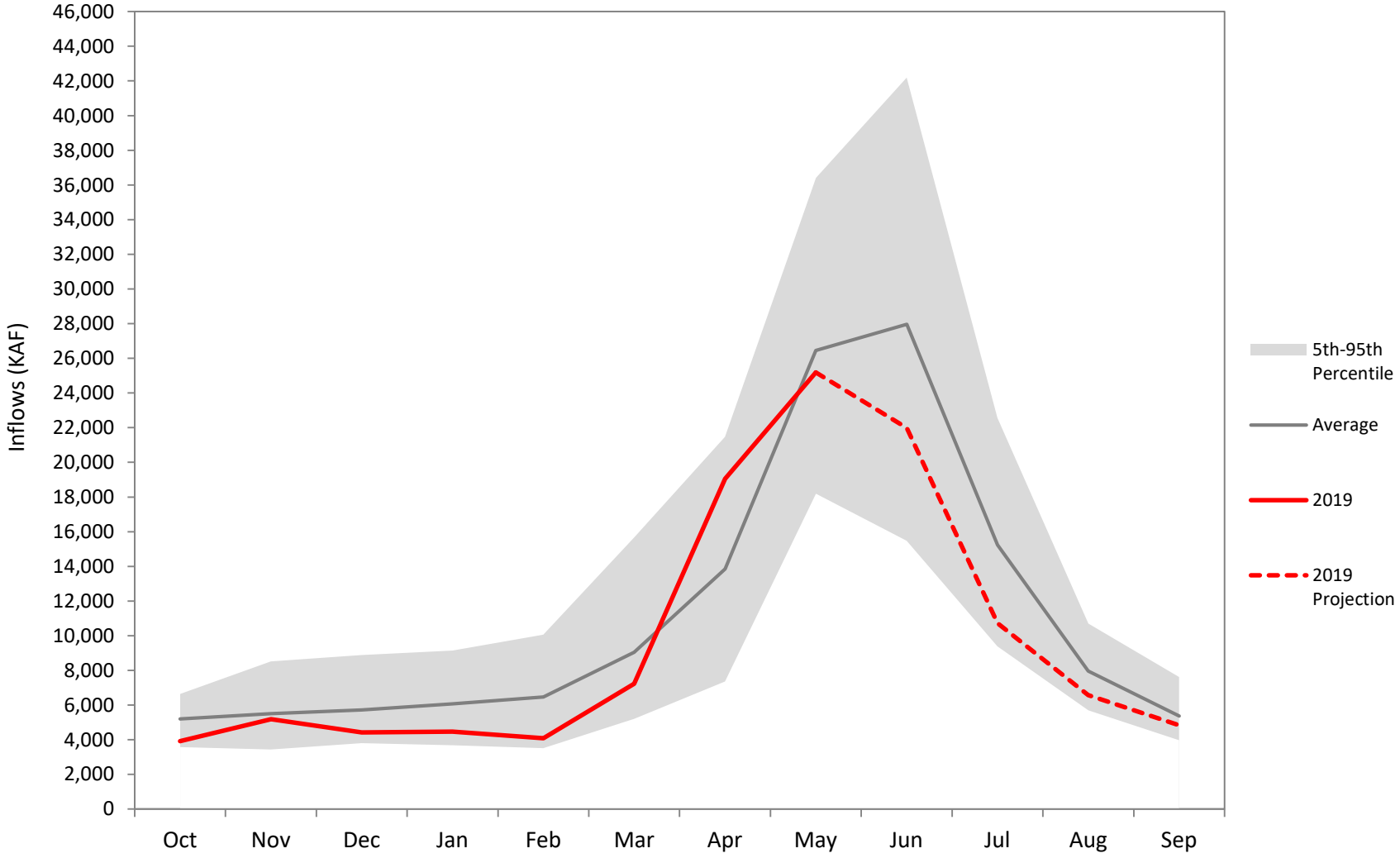
Graph 1: Tacoma System Flows Near 5th Percentile in May

(Tacoma System Hydro Flows, Water Year 1929 – 2019)



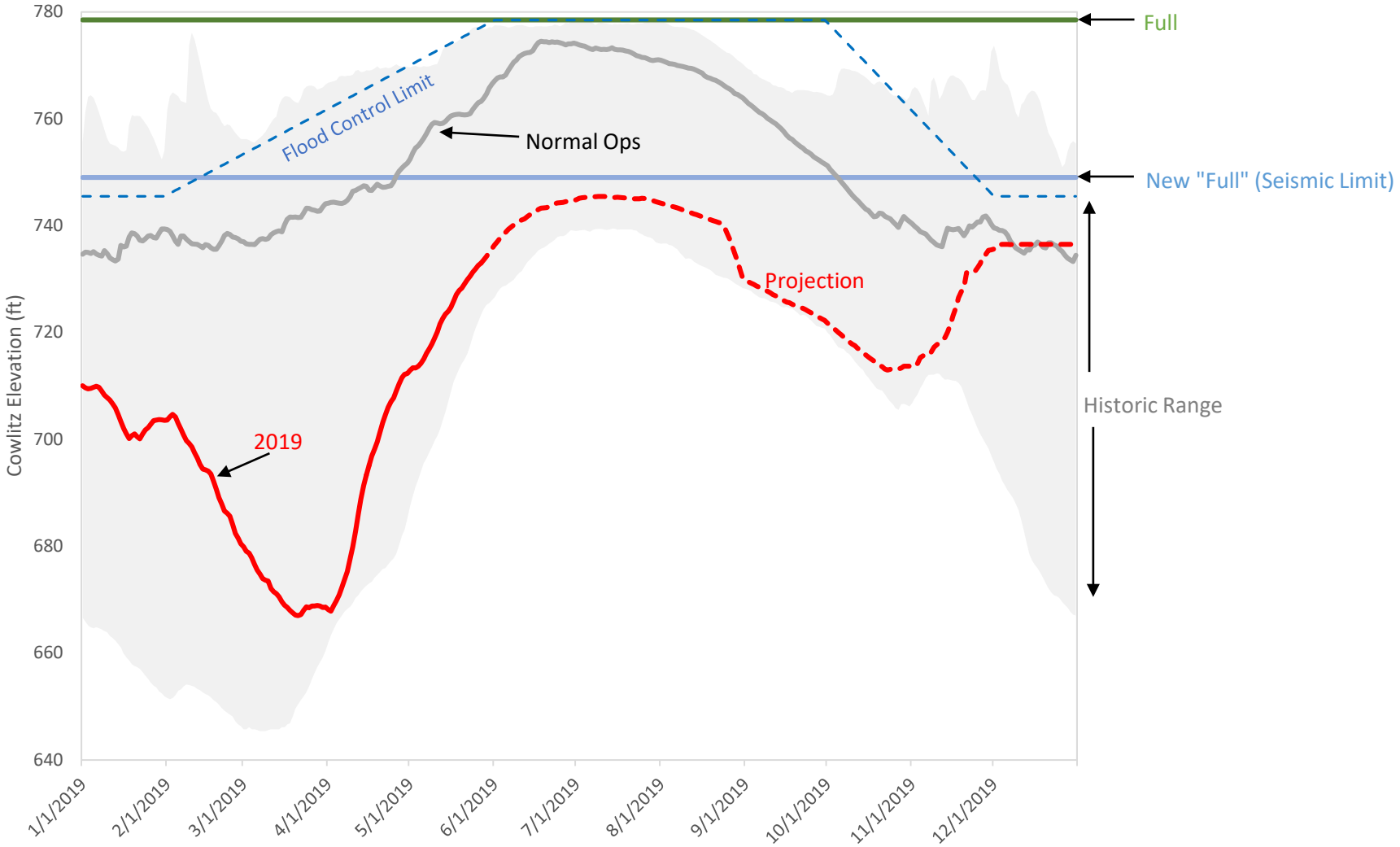
Graph 2: Federal System Flows Have Been Below Average

(Federal System Hydro Flows, Water Year 1961 – 2019)



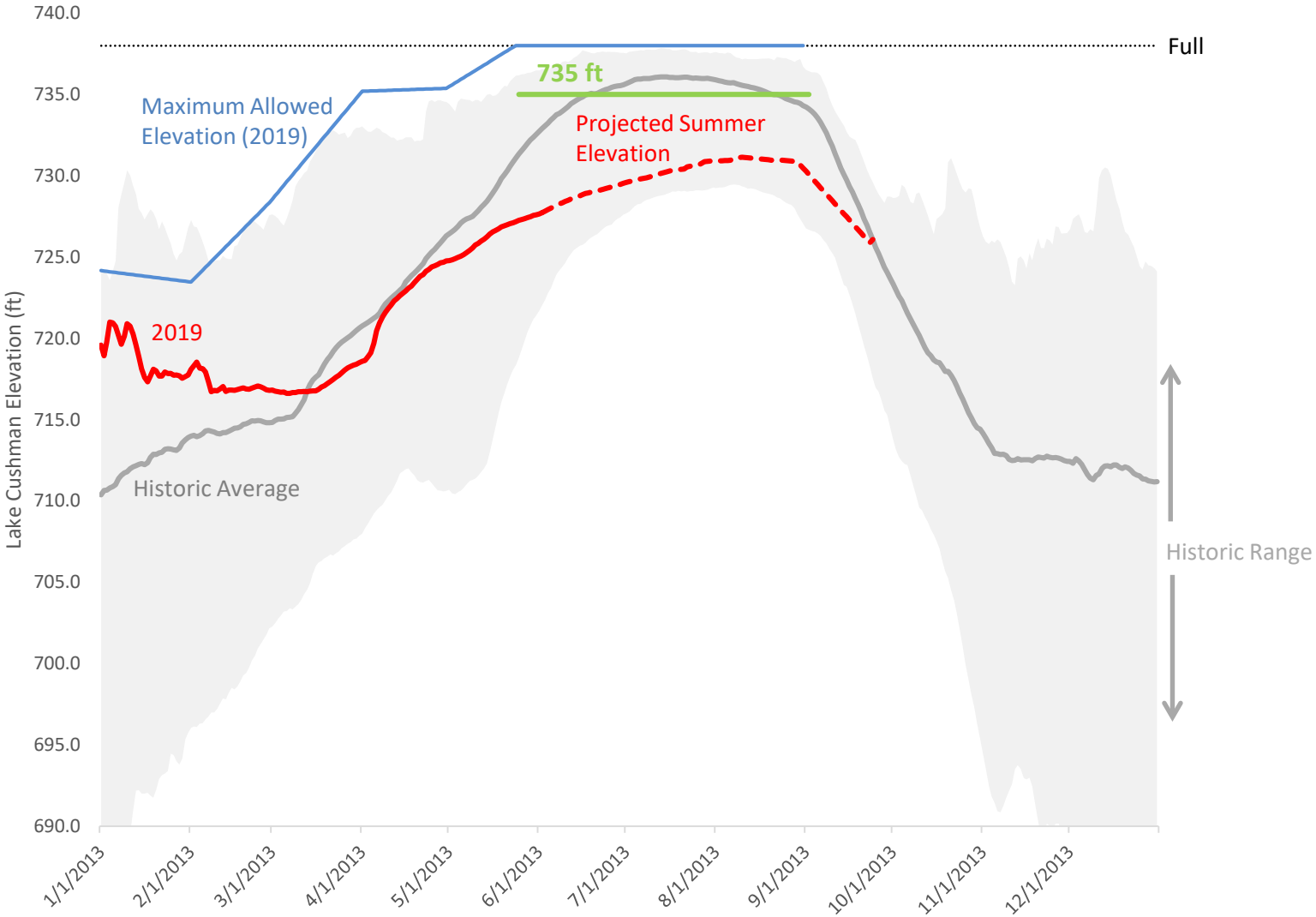
Graph 3: Cowlitz Has Filled Substantially, but is Unlikely to Reach “Full”

(Cowlitz Elevation, Current vs. Historic)



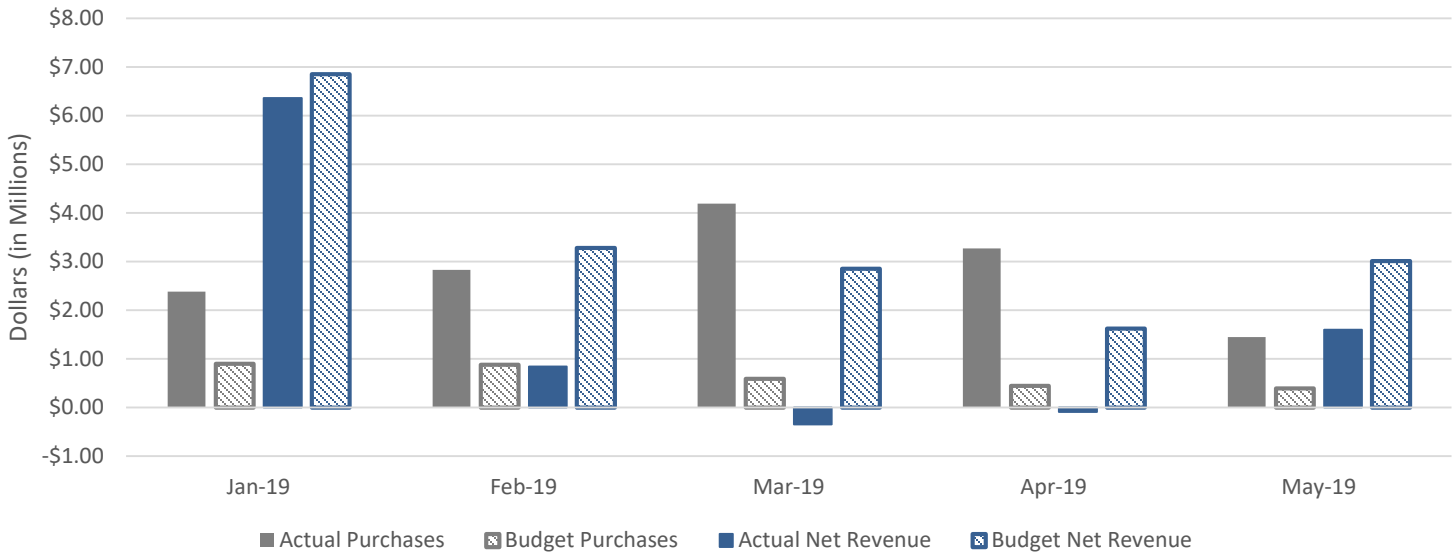
Graph 4: Lake Cushman unlikely to reach 735 ft this summer

(Cushman Elevation, Current vs. Historic)



Graph 5: Actual Wholesale Net Revenue is $9.3M Below Budget YTD

(Monthly Actual vs. Budget Wholesale Purchases and Net Revenues)

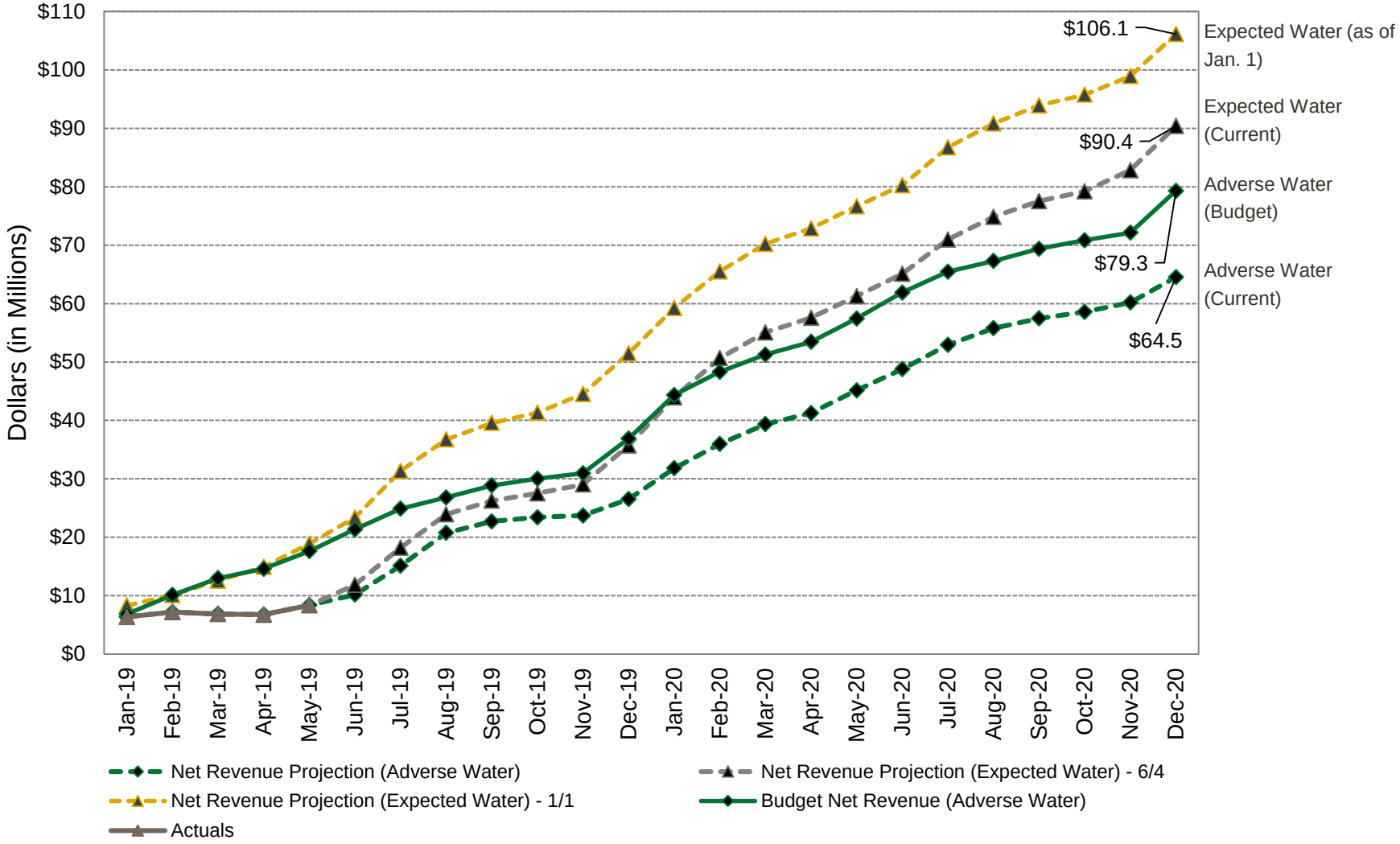


Actual Purchase are $10.9M Above Budget YTD

- Rainfall was about half of normal levels
- Temperature was about 5 degrees below normal for Q1, but February and the first half of March were especially cold (more than 10 degrees below normal)
- Tacoma inflows and Slice were both about 70% of the Adverse levels planned for in the budget
- Load was close to the forecasted amount for the quarter, but about 10% above the forecasted load in February and the first half of March
- Low inflow forecasts for the runoff period limited how much generation we could run in March and still refill the storage reservoirs

Graph 6: Wholesale Net Revenue Would Recover in 2020 Under Expected Water

(Cumulative Actual vs. Budget Wholesale Net Revenues, 2019 – 2020)



Low Income Conservation

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Today's Agenda

1. Background on conservation and weatherization
2. Discuss challenges facing low-income conservation
3. High level review of three options to address challenges
4. In-depth review of our intended option

Why we do conservation

1. Low cost power resource
2. Good for our customers
3. Comply with state mandates

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Our conservation plan follows three key principles

Conservation is analysis driven

- Conservation is a cost effective power resource
- Portfolio must exceed the EIA target

Programs must satisfy customers

- Products must meet customer needs
- Incentives must be compelling

Equitable access to programs

- All ratepayers fund conservation; Tacoma Power should offer a wide range of programs to allow all customers to participate

Tacoma Power has weatherized over 16,000 homes

Tacoma Power has had an active weatherization program active since 1980

- Weatherization and heating systems represent 45% of the residential potential
- In 2018 low-income and multifamily conservation accounted for 22% of sector savings, **but 48% of sector incentive spending**

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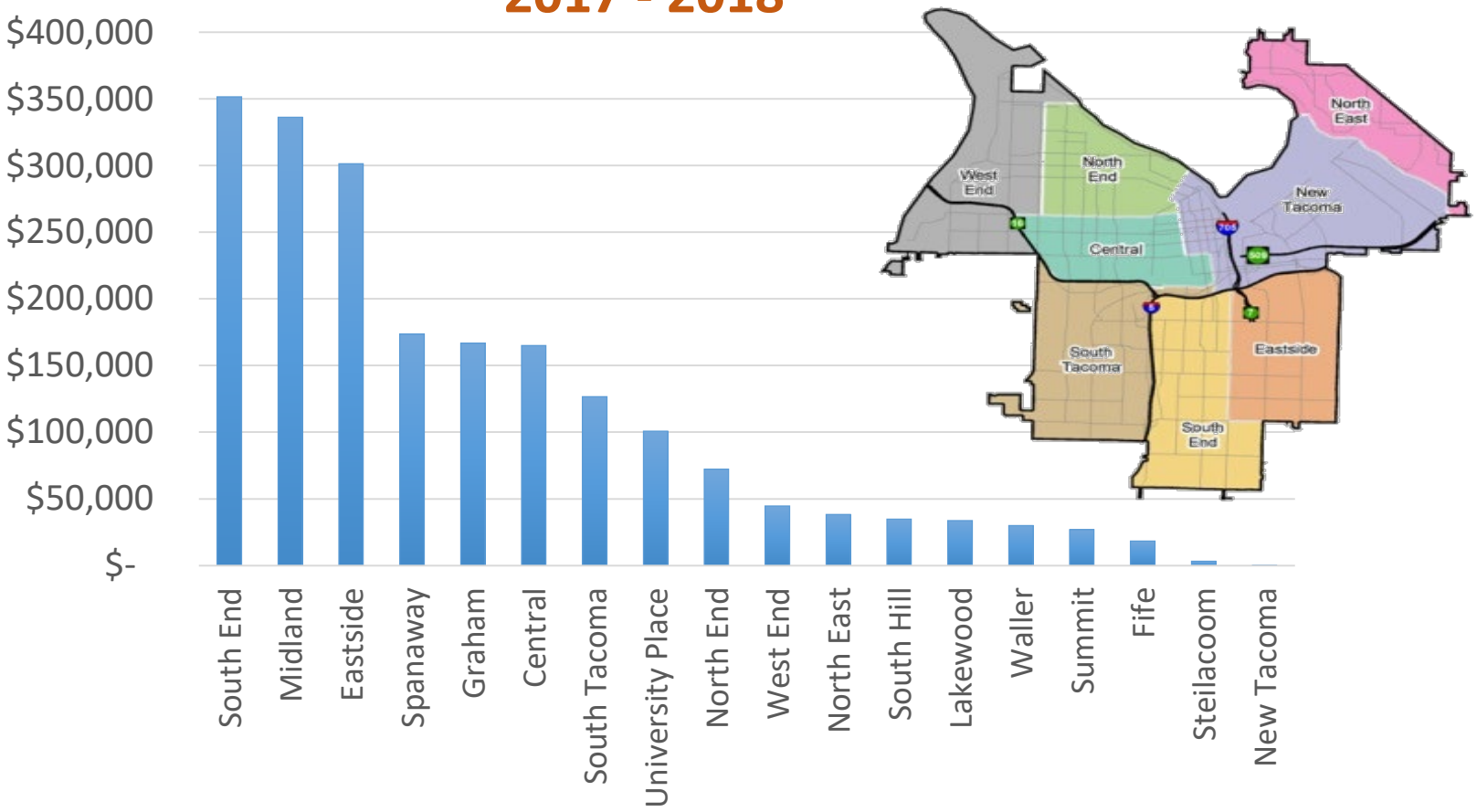
Program is active throughout our service territory

Low-income and Multifamily Spending
2017 - 2018



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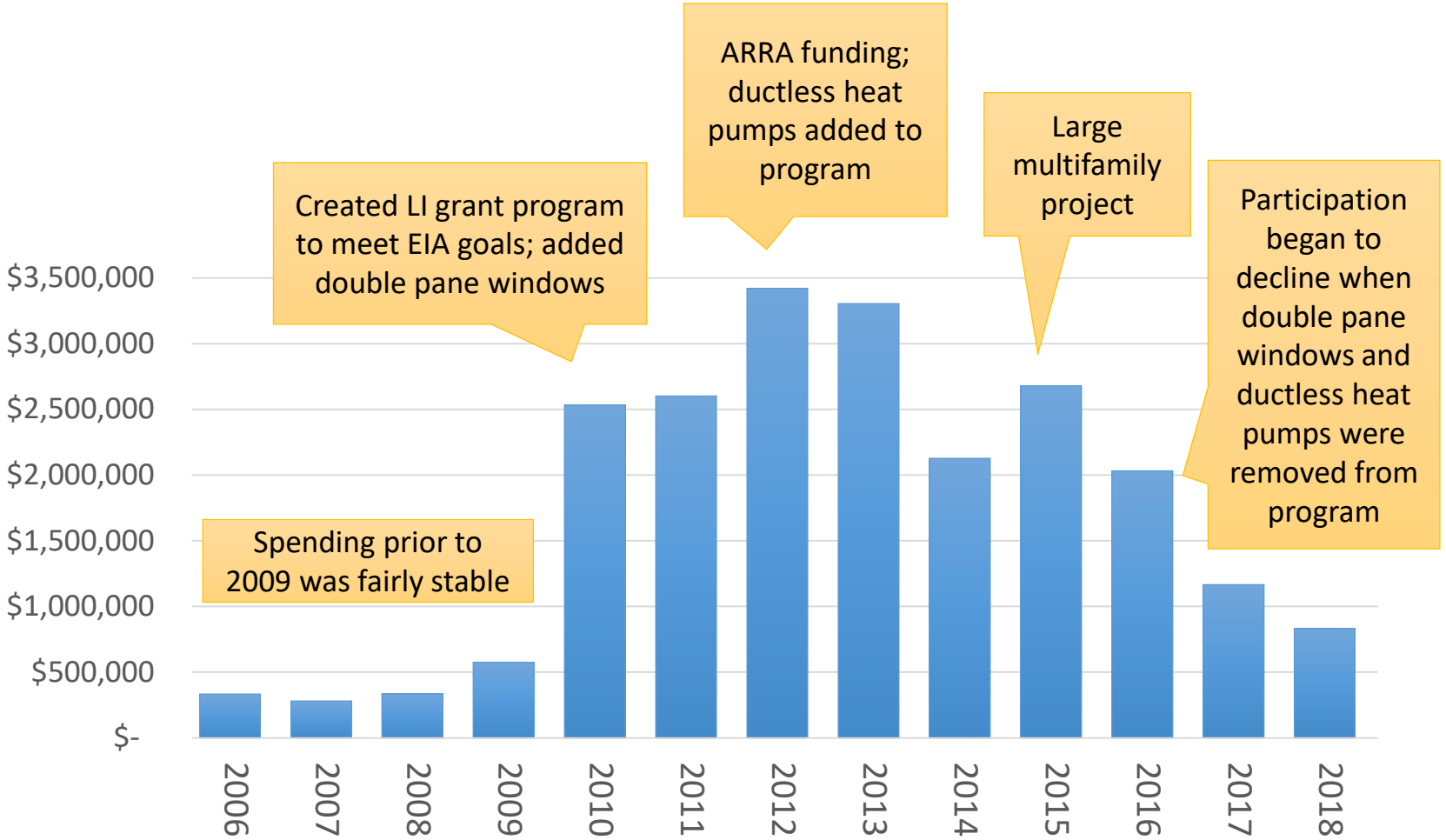
Low-income spending is trending downward



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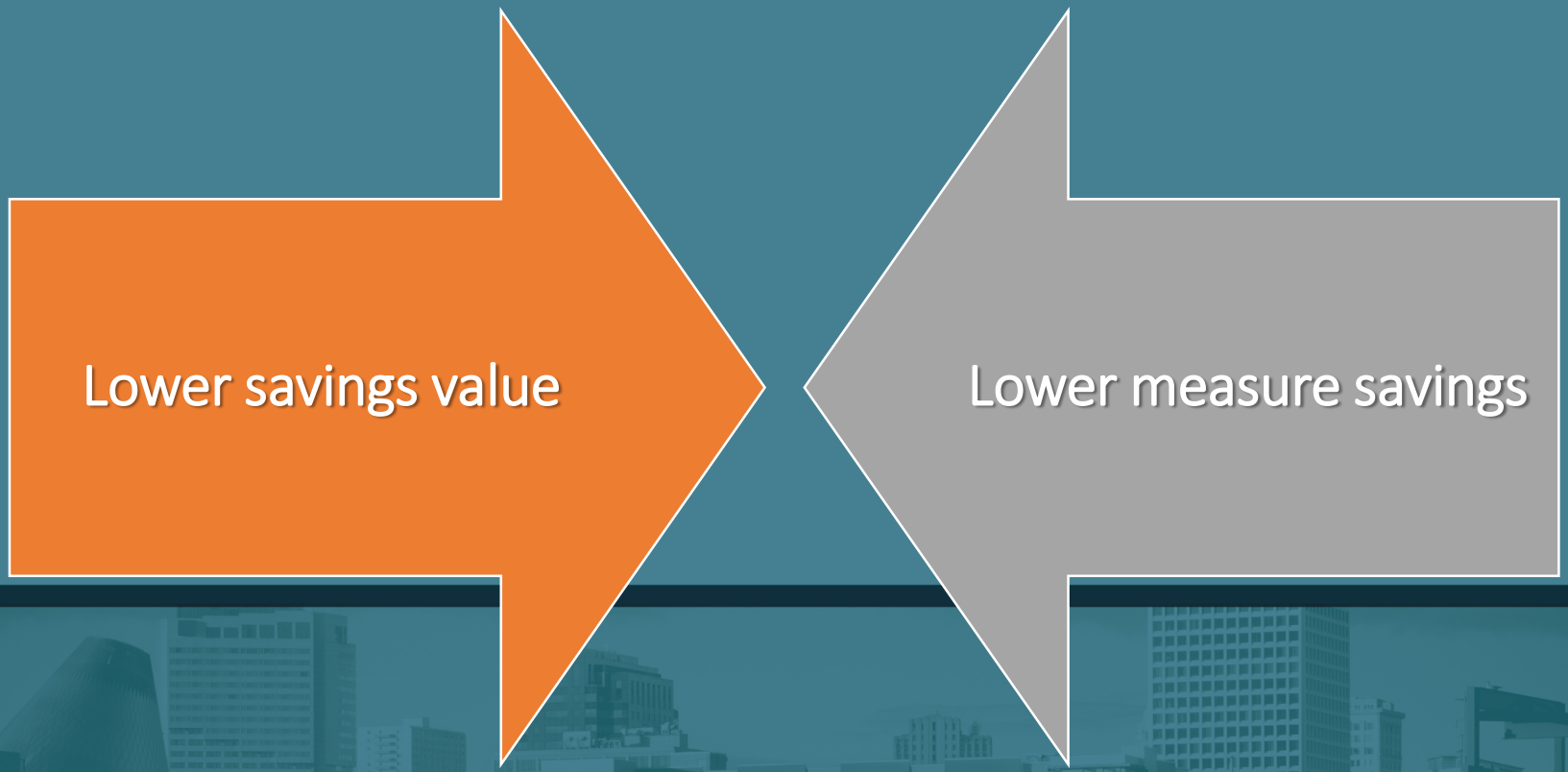
Two trends are putting pressure on our low-income programs



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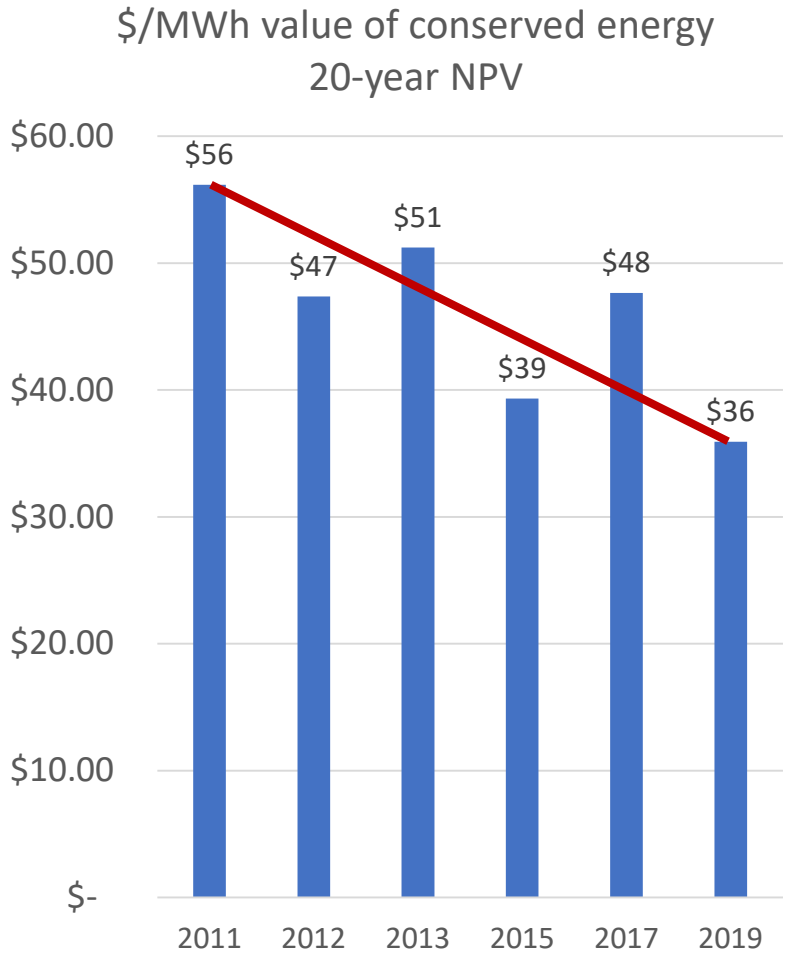
Savings value is declining

Value of conservation today is about 35% lower than 2011

- Declining loads
- Lower natural gas prices
- More renewable generation



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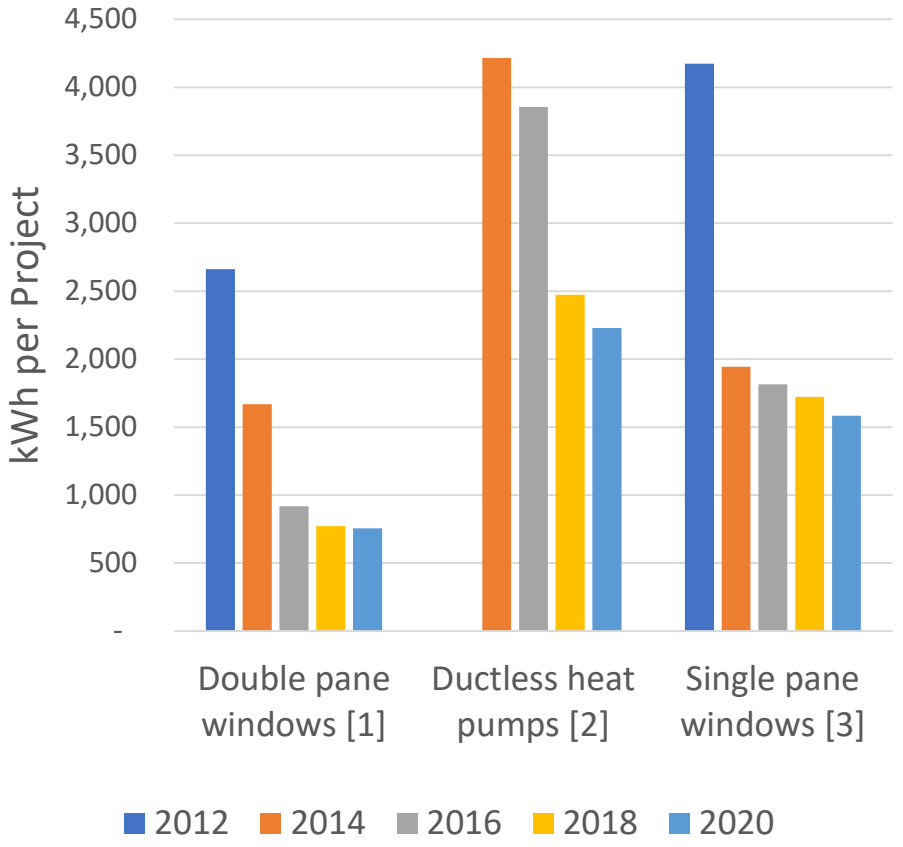
Measures are saving less

Measure savings have declined about 45% since 2014

Savings determined by the Regional Technical Forum, part of the Northwest Power and Conservation Council.

Key drivers:

- Improved modeling
- More heat pumps
- Interactive effects



[1] Double pane windows removed from program in 2016.
[2] Ductless heat pumps removed from program in 2018.
[3] Under current program design single pane windows will be removed from the program in 2020.

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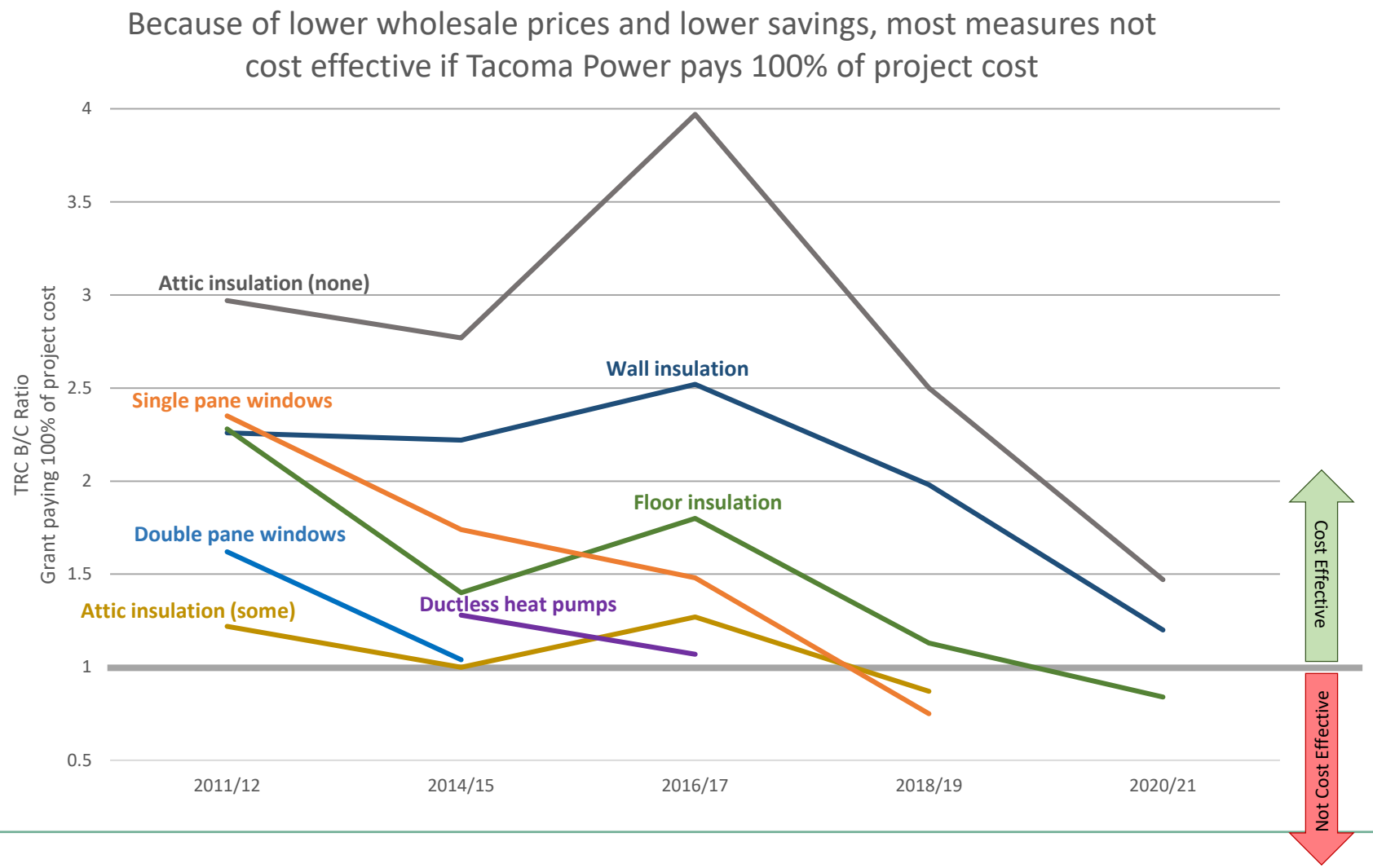
LI will not be cost effective under the current approach



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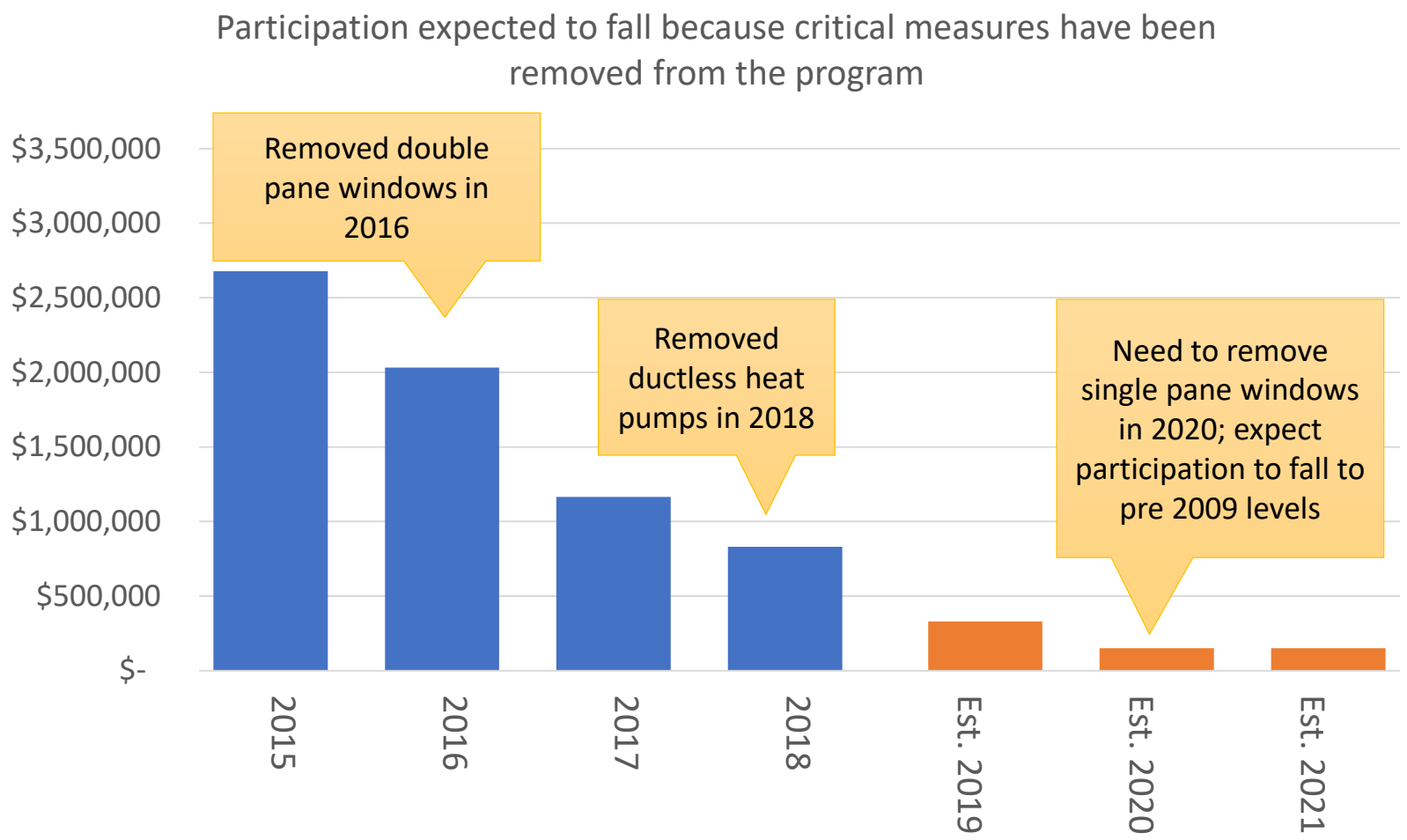
We expect participation to fall below 2009 levels



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We explored three options to increase participation

1. Do low-income even though not cost effective
2. Supply low-income agencies with grant funds
3. Offer deferred loans and partial grants

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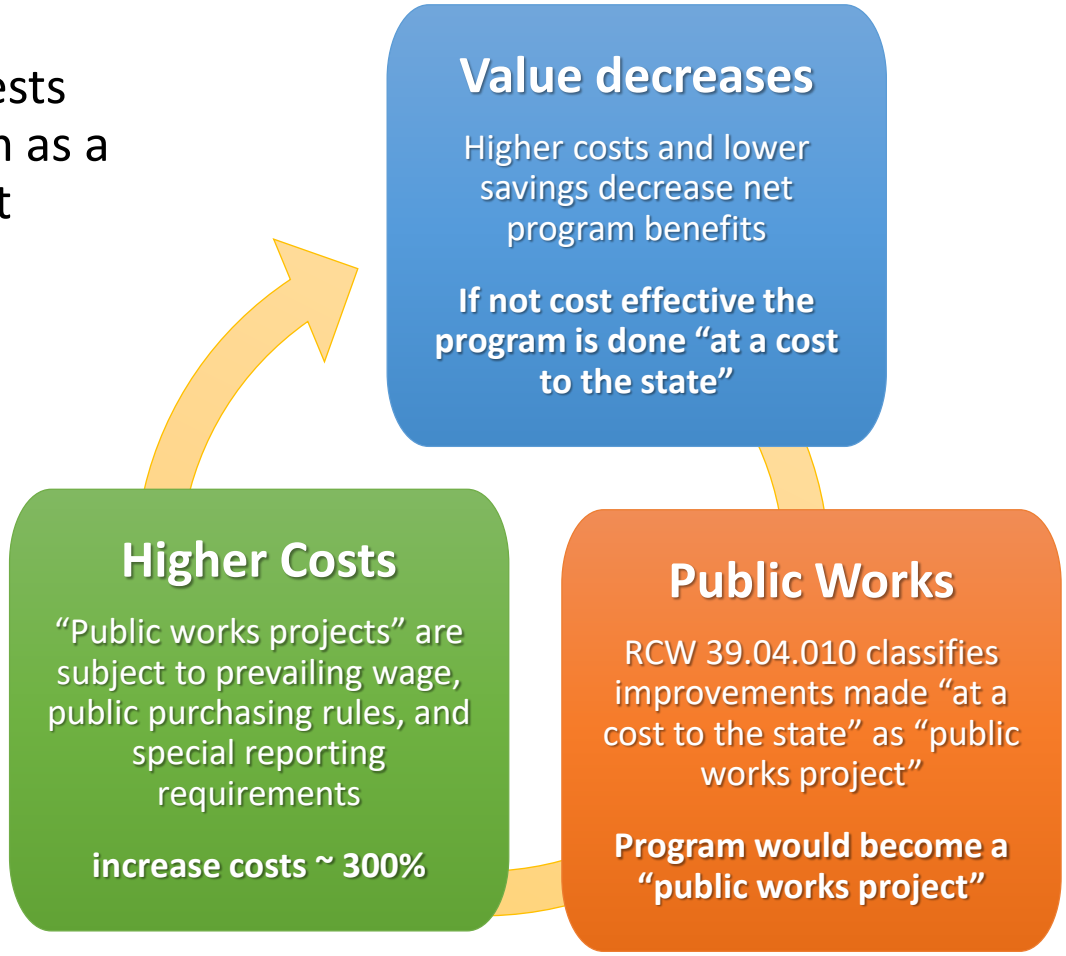
Do low-income even though not cost effective

Ignoring cost effective tests would classify the program as a "public works" project

This option would serve fewer customers at a significant cost to other customers



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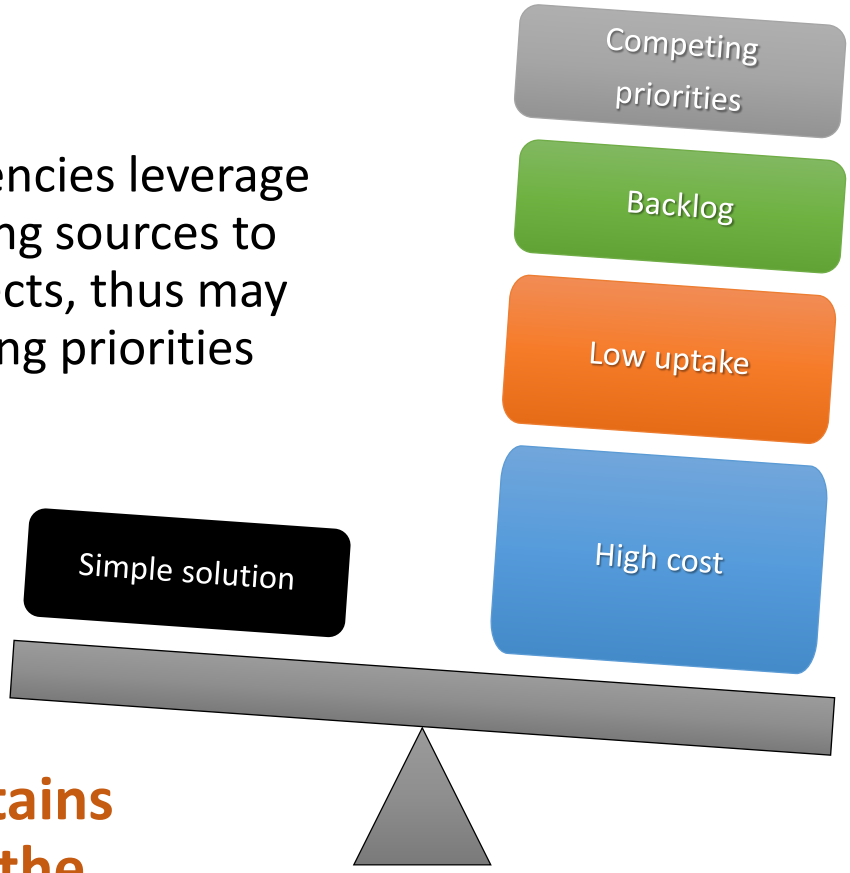
Supply low-income agencies with grant funds

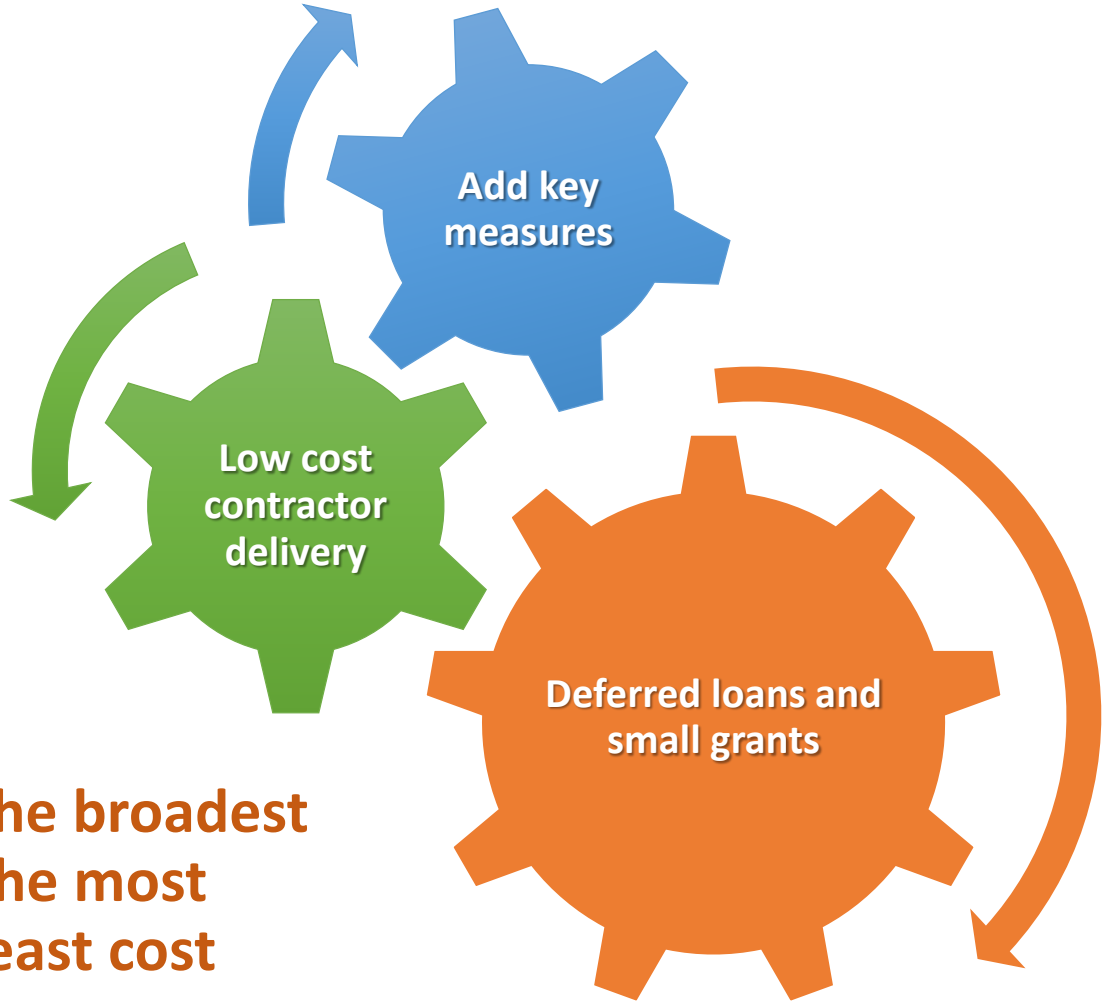
Low-income agencies leverage multiple funding sources to complete projects, thus may have conflicting priorities



This option is simple but retains all issues of Option 1 with the challenges of agency coordination

Offer deferred loans and partial grants

Deferred loans lower program costs because the money is eventually paid back; we offered a deferred loan program from 1995 – 2009



This option provides the broadest program offer to the most customers at the least cost

The Deferred Loan option

Tacoma Power offers a grant and deferred loan that cover 100% of project cost; we lien property to ensure repayment

Customer enjoys energy savings when equipment is installed; loan payments are deferred

Customer repays the loan using equity from their home; loan is paid back when the home sells or is occupied by somebody else

- **Full insulation package**
- **Single pane windows**
- **Double pane windows**
- **Ductless heat pumps**
- **One-off custom projects**

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Deferred loan program details

How much will Option 3 cost?

- Estimate additional outlay of $6M over 10 years
- Will need ~ $4 million to stabilize loan fund
- May inhibit other uses of the loan fund

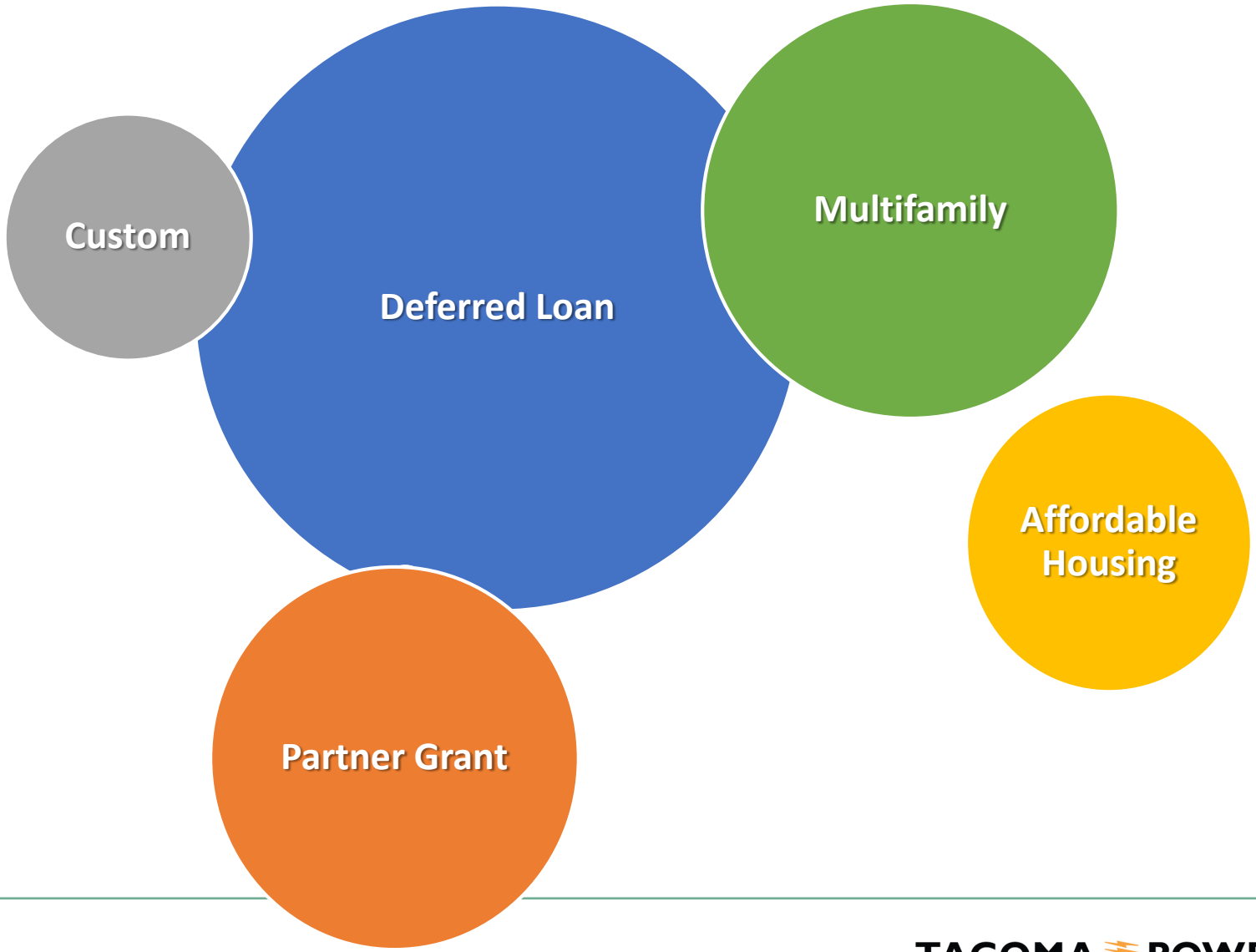
How long until loans repaid?

- Half of loans paid off in under 5 years
- 20% of loans issued 1995-2009 are still open
- The oldest loan was issued in 1995

What about default?

- Lien on property with ability to disconnect power
- Low default rate; 1 of 410 have defaulted
- Likely to see more defaults as older loans mature

Deferred loan is part of our low-income program



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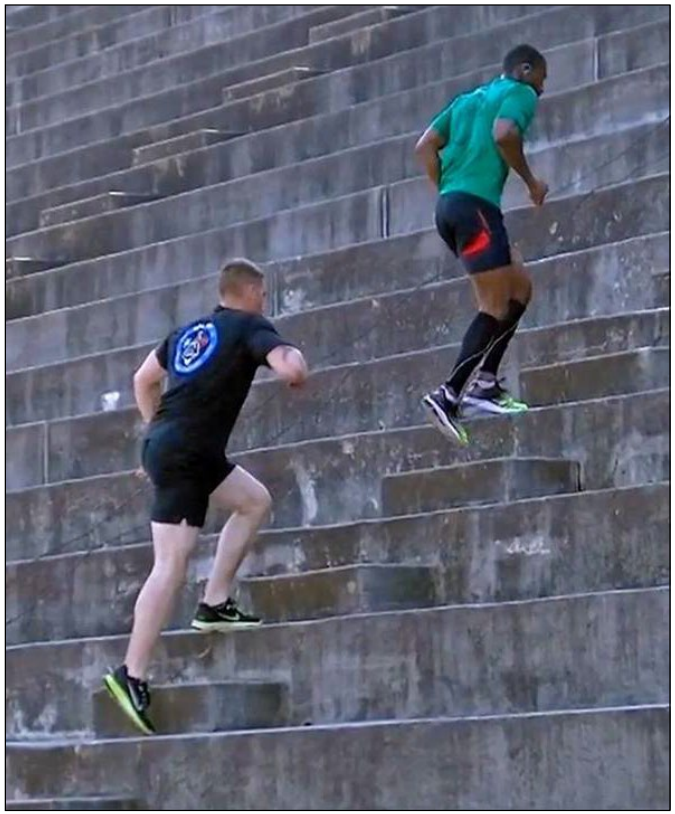
Many challenges remain



Uptake is unknown

- Could be higher (require more funds)
- Could be lower (unforeseen barriers)

Rental housing remains a challenge

- Planned outreach to landlords
- Actively engaged in the City's Affordable Housing Action Plan[1]

Coordination is hard

- Agencies have different requirements
- Actively engaging with City programs, TPU Customer Solutions, Rebuilding Together South Sound, MDC, and Pierce County Human Services

[1] Details available in Supporting Data on slide 24

Thank you

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Supporting Data

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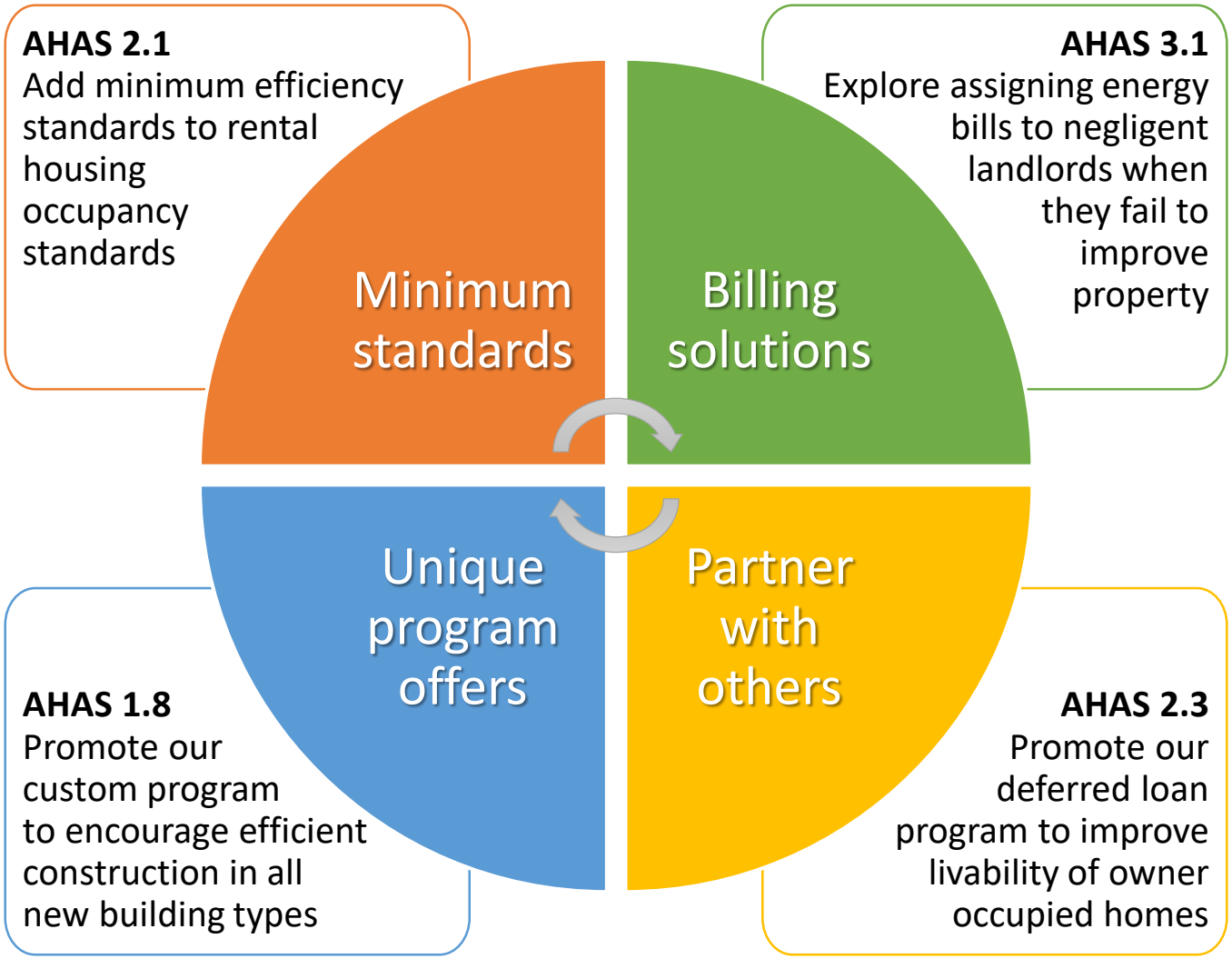
How proposed program would compares to other utilities

	Minimum	Average	TP Proposed	Maximum
Low-income spending as a % of residential retail revenue	0.01%	0.48%	1.18%	2.35%

12 Municipal and cooperative utilities

- Anaheim Public Utilities
- Austin Energy
- Burlington Electric Department
- City of Palo Alto
- Jacksonville Electric Authority
- Long Island Power Authority
- Los Angles Dept. of Water and Power
- New Hampshire Electric Co-Op
- Orlando Utilities Commission
- Pasadena Water and Power
- Sacramento Municipal District
- Southern Maryland Electric Co-Op

Details of partnership with the City's AHAS effort



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Low-income portfolio economic analysis

Program	Savings (aMW)	Grants ($ Total)	Deferred Loan ($/total)	Overhead ($/total)	Projects (total)	TRC B/C Ratio	UCT B/C Ratio
Deferred Loan	0.077	$243,635	$1,102,285	$263,103	375	0.40	1.01
Partner program	0.014	$69,515	$0	$14,305	45	0.39	1.03
Multifamily Weatherization	0.039	$181,946	$0	$15,000	20	0.98	1.80
Total or Average	**0.130**	**$495,096**	**$1,102,285**	**$292,408**	**440**	**0.50**	**1.21**

Deferred loan incentives and economic analysis

Measure or Program	Incentive ($/Unit)	Deferred Loan ($/Unit)	TRC B/C Ratio	UCT B/C Ratio	Participant B/C Ratio
Typical weatherization project	$2,075	$2,075	0.75	1.22	14.26
Attic insulation (no existing)	$1/ft^2	$1/ft^2	1.29	1.75	25.52
Attic insulation (some existing)	$1/ft^2	$1/ft^2	0.57	0.48	7.04
Floor insulation (average)	$1/ft^2	$1/ft^2	0.76	0.90	12.87
Wall insulation	$1/ft^2	$1/ft^2	1.14	1.29	18.81
Single Pane Windows	$5.00/ft^2	$18.00/ft^2	0.57	1.22	6.00
Double Pane Windows	$2.50/ft^2	$18.00/ft^2	0.23	0.79	2.79
Ductless Heat Pump	$300	$3,600	0.28	1.08	1.01
Custom Project	$4,000	$8,000	0.72	1.03	2.17
Program Average			**0.40**	**1.01**	

Partner program incentives and economic analysis

Measure or Program	Incentive ($/Unit)	TRC B/C Ratio	UCT B/C Ratio
Combination WX project	$2,750	0.86	1.00
Attic insulation (no existing)	$1.50/ft^2	1.38	1.40
Attic insulation (some existing)	$1.00/ft^2	0.61	0.54
Floor insulation (average)	$1.50/ft^2	0.81	0.71
Wall insulation	$1.50/ft^2	1.22	1.03
Single Pane Windows	$8.00/ft^2	0.63	1.21
Double Pane Windows	$4.00/ft^2	0.25	1.00
Ductless Heat Pump	$800	0.31	1.11
Custom Project	$5,000	0.77	1.03
MFG Home Replacement	$5,500	0.07	1.02
Program Average		**0.39**	**1.03**

Multifamily incentives and economic analysis

Measure or Program	Incentive ($/Unit)	TRC B/C Ratio	UCT B/C Ratio
Attic insulation (no existing)	$0.80/ft^2	0.84	1.16
Floor insulation	$0.80/ft^2	0.99	1.12
Wall insulation	$0.80/ft^2	1.34	1.58
Single Pane Windows	$12.00/ft^2	1.17	2.00
Double Pane Windows	$8.00/ft^2	0.59	1.48
Custom Project	$0.50/kWh	0.94	1.16
Program Average		**0.98**	**1.80**

TRC values over time

Measure	2011/12 TRC	2014/15 TRC	2016/17 TRC	2018/19 TRC	2020/21 TRC
Attic Insulation - no existing	2.97	2.77	3.97	2.50	1.47
Attic Insulation - some existing	1.22	1.00	1.27	0.87	0.53
Wall Insulation	2.26	2.22	2.52	1.98	1.20
Floor Insulation	2.28	1.40	1.80	1.13	0.84
Single Pane Windows	2.35	1.74	1.48	0.75	0.61
Double Pane Windows	1.62	1.04	0.75	0.35	0.31
Ductless Heat Pump	n/a	1.28	1.07	0.44	0.33
Heat pump water heater	n/a	n/a	n/a	n/a	0.27