

# **Draft**

# **Residential Solar Plan**

## **Public Utility Board Study Session**

Clay Norris

August 23, 2017

# Tacoma City Council Resolution

Req. #17-0369

## **RESOLUTION NO. 39699**

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF TACOMA:

Section 1. That the City Council hereby requests the Tacoma Public Utility Board (“Board”) to develop a plan to increase the use of residential solar in the City of Tacoma, which plan will address economic inequality and ensure an equitable increase in the number of residential solar users from all income levels.

Section 2. That the Board shall present its plan to the City Council no later than October 1, 2017.

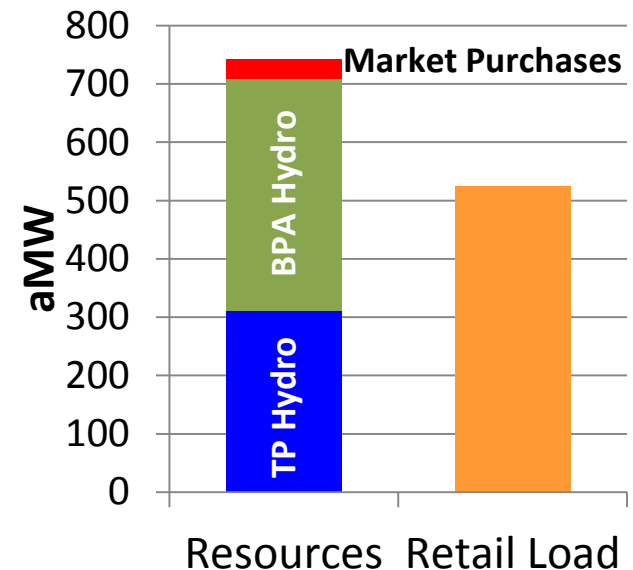
# Residential and Low-Income Solar Plan

Plan Element	Increase Res. Solar Use	Address economic inequality -- Increase LI Res. Solar Use
Identify Strategic Partners and Funding Opportunities	✓	✓
Create Marketing Strategy	✓	✓
Investigate Low Income Zero Interest Loan Feasibility		✓
Waive interconnection and inspection fees		✓
Provide incentive based on REC value		✓
Provide incentive based on energy value		✓
Advocate for State Legislation for Low Income Incentives and Assistance		✓
Revamp Evergreen Options		✓
Analyze New Community Solar	✓	✓
Pursue Multi-Family Pilot		✓

**BACKGROUND**

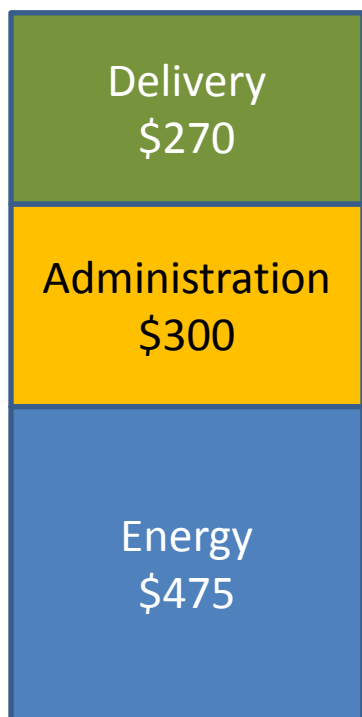
# Solar Power is Not the Best Resource Fit for Tacoma Power

- Tacoma Power has identified conservation as the best power resource to acquire
- Solar power does not allow Tacoma Power to reduce the size of our generation, transmission, or distribution system as our retail use is highest on winter nights
- Solar Power does not make Tacoma Power's resource portfolio more "renewable" as it replaces renewable hydro power rather than a thermal resource
- Solar Power is more expensive than Tacoma Power's current portfolio of renewable hydro resources



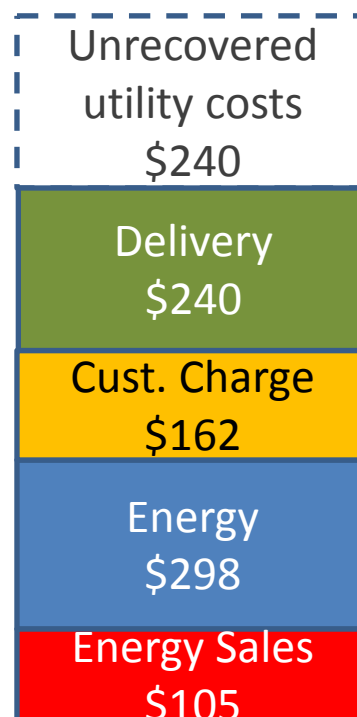
# Solar Generation Shifts Costs

**Utility Cost** to serve a “Typical”  
Residential Customer  
(11,300 kWh annual load)



Total Annual Cost ~\$1045

**Utility Revenue** from a “Typical”  
Residential Customer with a  
4kW solar system (4200kWh)



Total Annual Revenue ~\$805

# Solar Incentives Falling

- The Federal Tax Credit drops from 30% in 2019 to 10% in 2022
- The Washington state production incentive was reauthorized in 2017 at lower levels and capped at 1.5% (vs. 0.5%) of 2014 utility revenues

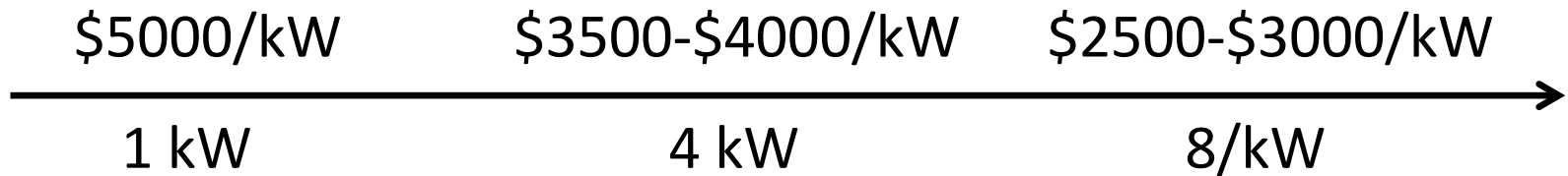
## For Solar Systems With Made in WA components

	Residential	Community	Commercial	Shared Commercial
2016	\$0.54/kWh	\$1.08/kWh	NA	
2017	Transitioning to new incentive on October 1, 2017			
2018*	\$0.21/kWh		\$0.11/kWh	
2019*	\$0.18/kWh		\$0.08/kWh	
2020*	\$0.15/kWh		\$0.05/kWh	
2021*	\$0.12/kWh		\$0.04/kWh	

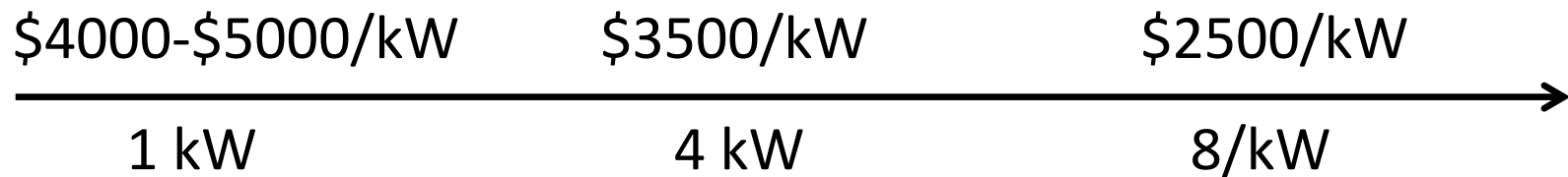
\*Incentive ends after 8 years or when 50% of system cost recovered

# Solar Costs Are Also Falling

## Indicative costs (all-in) at end of 2016



## Updated indicative costs





# PLAN DEVELOPMENT

# Consultation During Plan Development

- Brainstormed ideas internally (Tacoma Power)
- PUB feedback during presentation of initial elements
- On-line research
- Consulted with Tacoma Public Utilities groups
  - Market Development
  - Customer Solutions
  - Legal Department
- Reached out to local solar installers
- Raised the issue with other utilities
- Reached out to other stakeholders
  - Tacoma Housing Authority
  - Bonneville Energy Foundation
  - WA Department of Commerce
  - Spark Northwest (formerly NW SEED)
  - Smart Electric Power Alliance (SEPA)

# Low Income Eligibility

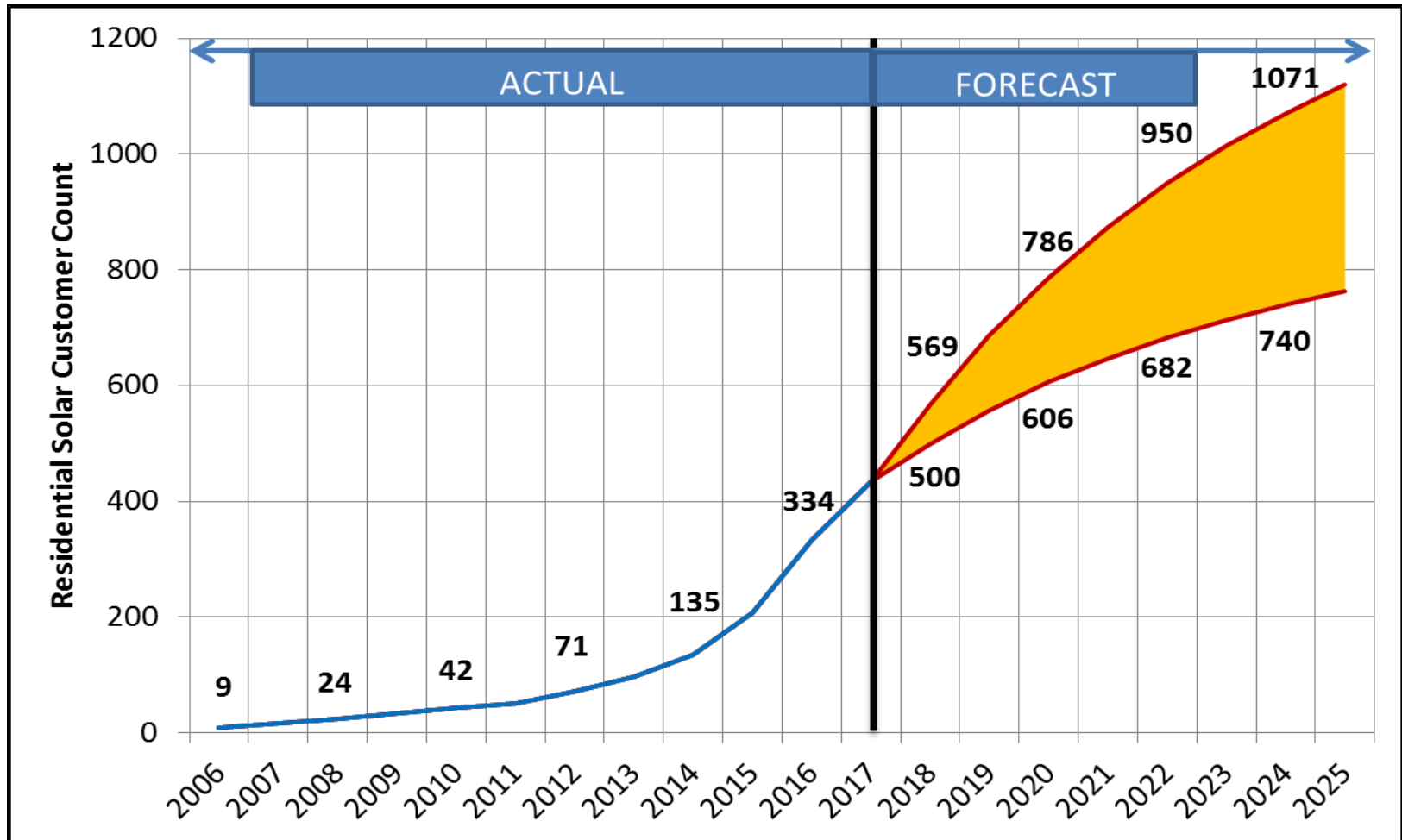
Plan to follow the criteria used by Tacoma Power's Conservation Resource Management to establish low-income eligibility:

- Customers earn less than 60% of state median income
  - \$51,000/per year for a family of 4
- Multi-family building low income criteria
  - 50% of residents must be low income
  - Certified through Tacoma Power
  - Tacoma Housing Authority qualified tenants
- Demographics: 41% of Tacoma low-income customers own their own homes, 28% live in apartments

# **THE PLAN – PART 1**

## **Increasing Overall Residential Solar**

# Residential Roof-Top Solar Counts Are Anticipated to Continue to Grow



# Expand Marketing, Customer Outreach and Education

- Develop marketing/education strategy for solar programs
- Improve website to make solar content easier to find
  - Explore incorporating a third party off-the-shelf tool such as from Avista's Watt Plan
- Link to outside resources that could benefit customers, e.g., federal and state assistance and incentives



**Timing:** Fall 2017 – 2018

# Identify Strategic Partners and Funding Opportunities

- **Bonneville Environmental Foundation** – Expertise in community renewables project development, project financing, and matching grant programs
- **Washington State Housing Finance Commission** – offers low-interest loans for renewable energy projects
- **Washington State Department of Commerce** – Energy Efficiency and Solar grant program (dependent on passage of state Capital Budget)

**Timing:** Ongoing

# Change SAP Process

- Currently, all solar credit billing and state solar production credit administration is done manually
  - We perform these tasks manually for 350 solar customers
- Look into automating these tasks in SAP in with support from City
  - Perform cost and feasibility analysis

**Timing:** Q2 2018



## **THE PLAN – PART 2**

# **Addressing Residential Solar Equity**

# Explore Opportunities with Strategic Partners

- **Washington State Department of Commerce** – Federal grant to develop Solar Plus Strategies for WA & OR
  - Tacoma Power has been formally invited to join Solar Plus
- **Regional Workshop** – Work with Commerce and Spark NW to host a regional workshop this fall focused on strategies to deliver solar benefits to low-income customers and communities
  - Participants could include solar installers, utilities, consumer advocates and state planners

**Timing:** Fall 2017 – Spring 2018

# Investigate Zero Interest Loan Program

- Loan to cover up to 100% cost
  - 30% Federal ITC does not reimburse until end of tax year (and many low-income customers may not pay federal taxes)
- The solar loan program would use the same mechanisms and participation requirements as CRM's conservation loan program:
  - lien on property
  - requires good Tacoma Power payment history
- Investigate impact on existing loan program and streamlining administration costs

**Timing:** Early 2018

# Solar Incentives for Low Income Customers

Tacoma Power Incentives	Utility Incentives for a 4kW system
Waive interconnection and other fees	\$240
Pre-pay for RECs (20yr)	\$600
Pre-pay for energy (20yr)	\$2840

**Timing: Q2 2018**

# Advocate for Legislation to Increase State Incentive for Low-Income Solar

Build a stakeholder coalition to:

- Develop state policies to help the nonprofit affordable housing sector to access the benefits of solar
- Amend the state production incentive to provide a higher incentive for low-income and community solar projects

Potential stakeholders: Department of Commerce, Housing Finance Commission, utilities, low-income advocacy groups, cities, legislative champion(s)

**Timing:** Q3 2017 – 2018+

# Revamp Evergreen Options to Include Bonus Scoring for Low-Income Housing Projects

- Since 2002 Tacoma Power has offered a voluntary program whereby customers can pay a little extra to purchase a quantity of new renewables such as wind
- Tacoma Power has revamped the program so that part of the proceeds can be used for local small renewable energy projects –most likely solar – for non-profit organizations
- Evaluation scoring has 35% weight on community benefits, including extra points if the organization helps low income
- Subscribers will vote to decide among applications for funding

**Timing:** Complete

# Analyze New Community Solar Project

Investigate public/private partnership or revisit previous approach

Under either structure,

- Divide array into purchasable “units”
- Carve out a portion of the Community solar system for low- income customers (e.g., \$10/share)
- Structure share price so that non-low-income customers buy down low-income costs

**Timing:** End of Q1 2018  
to develop business cases

# Pursue Multi-Family Pilot Project

- Provide solar incentives for low-income multi-family housing owners based on REC and energy value
- We estimate the owner would have slight financial benefit from a larger system, incentives (Tacoma Power, federal, and state) and tax depreciation benefit
- Require owner to distribute energy benefits to tenants





# Pursue Multi-Family Pilot Concept

Up-Front Cost/Benefits	Ongoing Costs/Benefits
<b>Building owner</b>	
Expenditure: 8-12 kW system	Expenditure: Loan Payments
Cost Reduction:	Benefit:
Federal Tax Credit	State Production Incentive
Utility Incentive (Power & RECs)	Federal Tax Depreciation
Utility Loan	Portion of net metering (?)
Net expenditure: \$0	Net benefit: positive
<b>Tacoma Power</b>	
Expenditure	Benefit
Incentive (NPV of RECs and Power)	RECs and Power
Utility Loan	Loan repayment
<b>Tenant</b>	
Expenditure: \$0	Benefit: Portion of net metering

# SUMMARY

# Residential and Low-Income Solar Plan

Plan Element	Increase Res. Solar Use	Address Economic Inequality -- Increase Low Income Res. Solar Use
Identify Strategic Partners and Funding Opportunities	✓	✓
Create Marketing Strategy	✓	✓
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**Thank You!**

# Click! Network

## Data Center Interconnection and Fiber-to-the-Home

Tenzin Gyaltzen

Click! General Manager

August 23, 2017



# Background

## Primary focus:

- Keep team engaged and energized.
- Increasing value to Click! customers and the Utility by:
  - Reducing operating and capital costs.
  - Pursuing initiatives that maximize the capabilities of the existing network, create market parity, and enhance products and services.

# Agenda

**Inform the Public Utility Board on two key business unit goals that Click! is prepared to execute:**

- Interconnections to Internet Exchanges and Data Centers.
- Fiber-to-the-Home.

# What is an interconnection?

- A physical link between two points.
- A point-to-point connection between a network and another equipment or facility.
- In our case, linking the Click! network to Internet Exchanges and Data Centers that are located outside our footprint such as Centeris in Puyallup, Cogent in Federal Way, the Westin Building in Seattle and Pittock in Portland.





# Why do an interconnection?

- Fully leverages the capabilities of the Click! network.
- Creates a regional presence.
- Access to larger telecommunications carriers (i.e. CenturyLink, Level3, Comcast, Zayo, Wave, etc.).
- Access to content owners and cloud services such as Google, Amazon, etc.
- Opportunities to further interconnect to Internet Exchanges and Data Centers in Seattle and Portland.
- Enhances commercial product and value to business customers.

# What are the benefits of an interconnection?

## Value to Customers

- Choice of data transport providers.
- Choice of data centers.
- Access to choice of telecommunications carriers.
- Enables corporate wide networking (i.e. retail chains, banks, etc.).
- Opportunity to negotiate better pricing for these services.

## Value to Click!

- Establishes Click! as a key player in the market.
- Revenue growth from new data transport and internet access services, and potentially referral fees from the data centers.
- Tremendous benefit for existing wholesale customers.
- Greatest value to Click! under a retail model.

# Why interconnect to Centeris?

Internet Exchange and Data Center based in Puyallup, WA

Modern state-of-the-art facility



Cooling loft with 54 air handling units



56,605 square feet of raised floor



Powered by dual fed-on-site 50 MW substations and robust redundant backup systems



Interconnected to Seattle and Portland



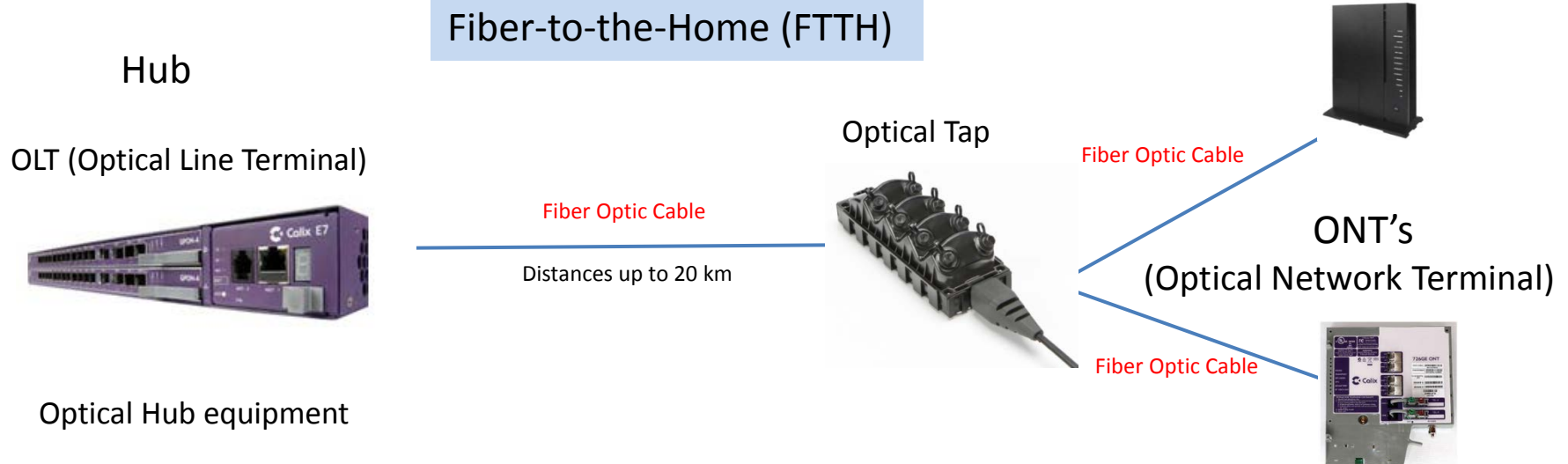
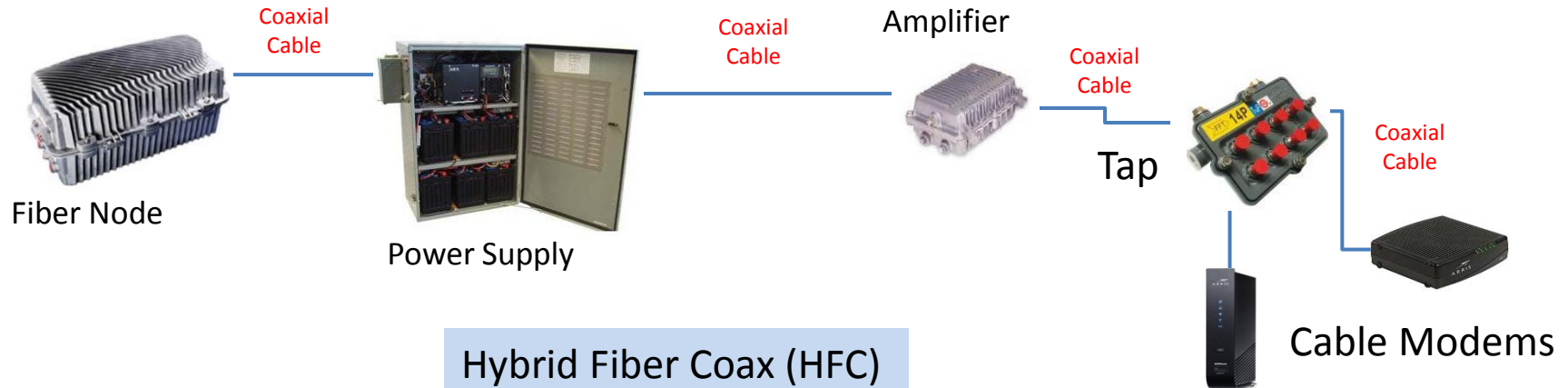
# Interconnection project, cost and timeline

- Click! will build approximately 2 miles of 288 count fiber linking Click! and Centeris.
- Install high capacity network switches.
- City of Puyallup telecommunications franchise for passage through a part of the City.
- One-time admin and permitting fees, but no recurring franchise fees (not cable TV).
- The overall project cost is just over \$200,000, including labor, material and other administrative costs.
- Network switches have a useful life of 5 to 7 years.
- Anticipated completion date of September 30, 2017, barring any unforeseen events.

# What is Fiber-to-the-Home (FTTH)?

- FTTH takes fiber deeper into the network, up to the side of the customer premises.
- Uses different network components.

# Network architecture: HFC v. FTTH



# Why deploy FTTH?

- Although Click! intends to maximize the utility of the coaxial network, it is more practical to deploy fiber in new construction.
- The cost of constructing coaxial and fiber networks are comparable today.
- FTTH leverages existing fiber capacity and extends the useful life of the network.
- Fiber itself has a long life, but network components will need to be upgraded to address growth and faster speeds.
- It enables delivery of Gigabit Internet.
- It can be scaled to deliver 10 Gigabit and even higher speeds by swapping out edge components.
- Click! is concurrently exploring solutions for delivering 1 Gigabit Internet over the coaxial network.

# What are the benefits of FTTH?

- Fewer points of failure due to fewer network components.
- The optical signal is not susceptible to radio frequency interference resulting in fewer network outages and service disruptions to customers.
- Lower O&M costs resulting from reduced power consumption, network maintenance, and labor efficiencies.
- Potential to fuel customer growth due to growing consumer awareness and broader market adoption.
- An efficient way for capturing a share of the small business segment.



# FTTH pilot

- Click! is piloting a solution designed by Calix, our preferred vendor.
- It is set up for symmetrical (i.e. same download and upload speed) 1 Gigabit Internet service.
- Delivers existing Cable TV services, and Voice can be overlaid.
- Currently set up in certain Click! offices and TPU conference rooms.
- Maximum experienced throughput speeds of slightly under a Gigabit due to capability of consumer devices.
- Speed tests on Click!'s internal network consistently show symmetrical speeds in the low to mid 900 Mbps range.

<<PRODUCT DEMONSTRATION>>

# FTTH project

- Click! has a franchise requirement to extend network to new developments (i.e. multi-dwelling units, subdivisions, etc.).
- Click! on average extends its network to over 1,000 new units each year.
- Depending upon timing of projects, launch in Tacoma first.
- Over time, upgrade saturated/troublesome sections of coaxial network.
- Other opportunities include extension of network to ~2,500 homes in the Loveland area based on economics.
- Prefer to use Calix.
  - Leader in the FTTH sector;
  - Allows for quick deployments; and
  - Have staff with residential and commercial deployment experience.

# FTTH cost and timeline

- Estimated budget of \$915,000 for the biennium.
  - Cost to establish base network is approximately \$100,000.
  - Incremental cost per unit is approximately \$540.
  - Covers approximately 1,500 new units.
- Prefer to go from pilot to full integration and commercial launch.
- Add 60 to 90 days to timeline if we are required to issue an RFP.



# Financial Outlook

2nd Quarter 2017

August 23, 2017

- **Forecast Assumptions**
- **Summary of Outlook**
- **Water Retail Sales and Revenues**
- **Revenue and Expense Summary**
- **Estimated Current Fund Cash**

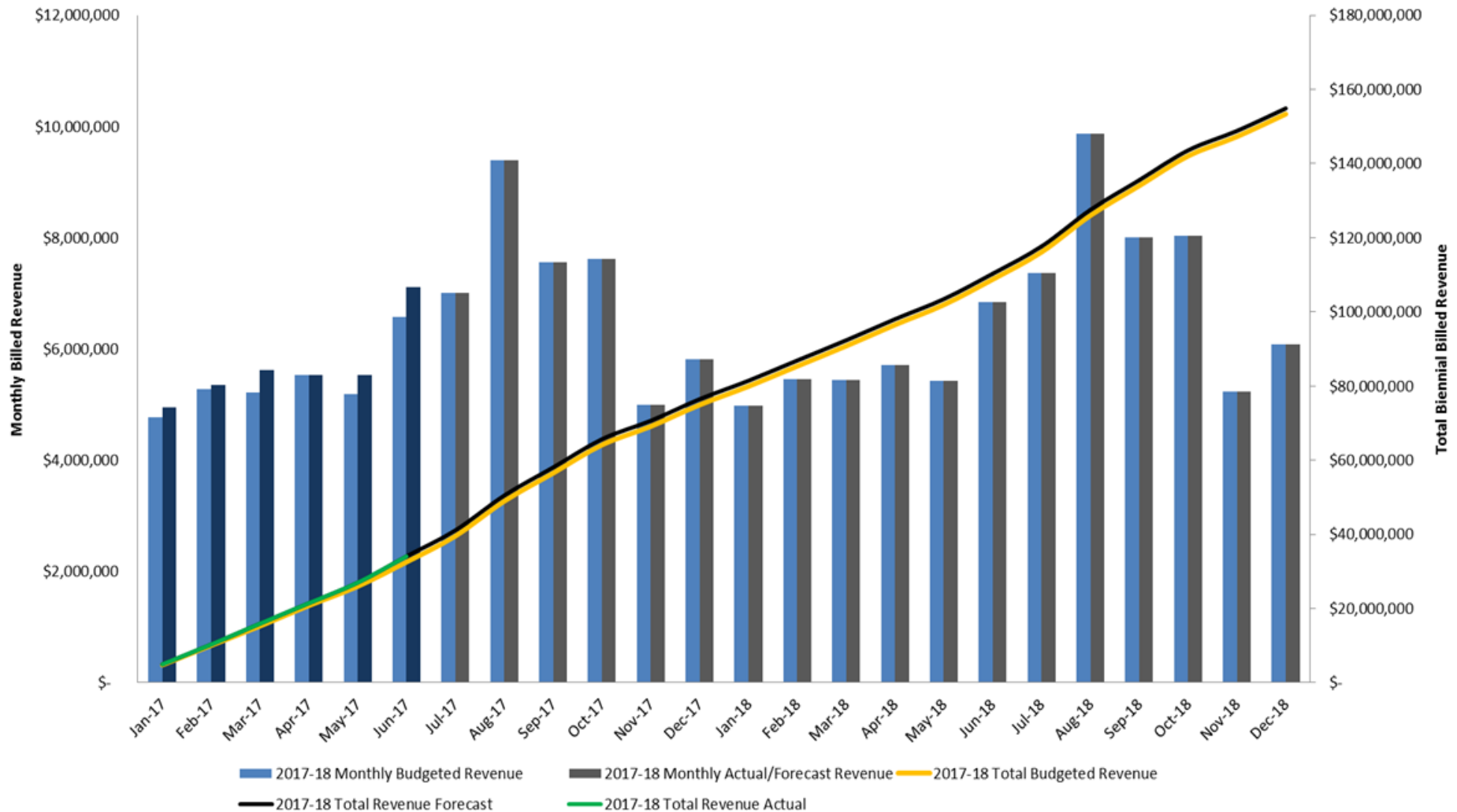
- **Forecast includes actual revenues and expenses through June 2017.**
- **Water sales and revenue projection based on current demand forecast with updated assumptions as they become known.**
- **Expense projections include savings-to-date adjusted for updated assumptions and shaping of expenditures in future months.**
- **All other revenue and expense projections are based on 2017/2018 budget.**

# 2017/2018 Biennium Summary of Financial Outlook

- **Water sales are projected to be \$1.6 million higher than budget for the biennium.**
- **Total expenditures are projected to be \$1.6 million under budget for the biennium.**
- **Net total revenues less expenditures is expected to be approximately \$3.5 million over budget.**
- **The Current Fund cash balance is expected to decrease \$6.3 million over the biennium.**

# Billed Revenue

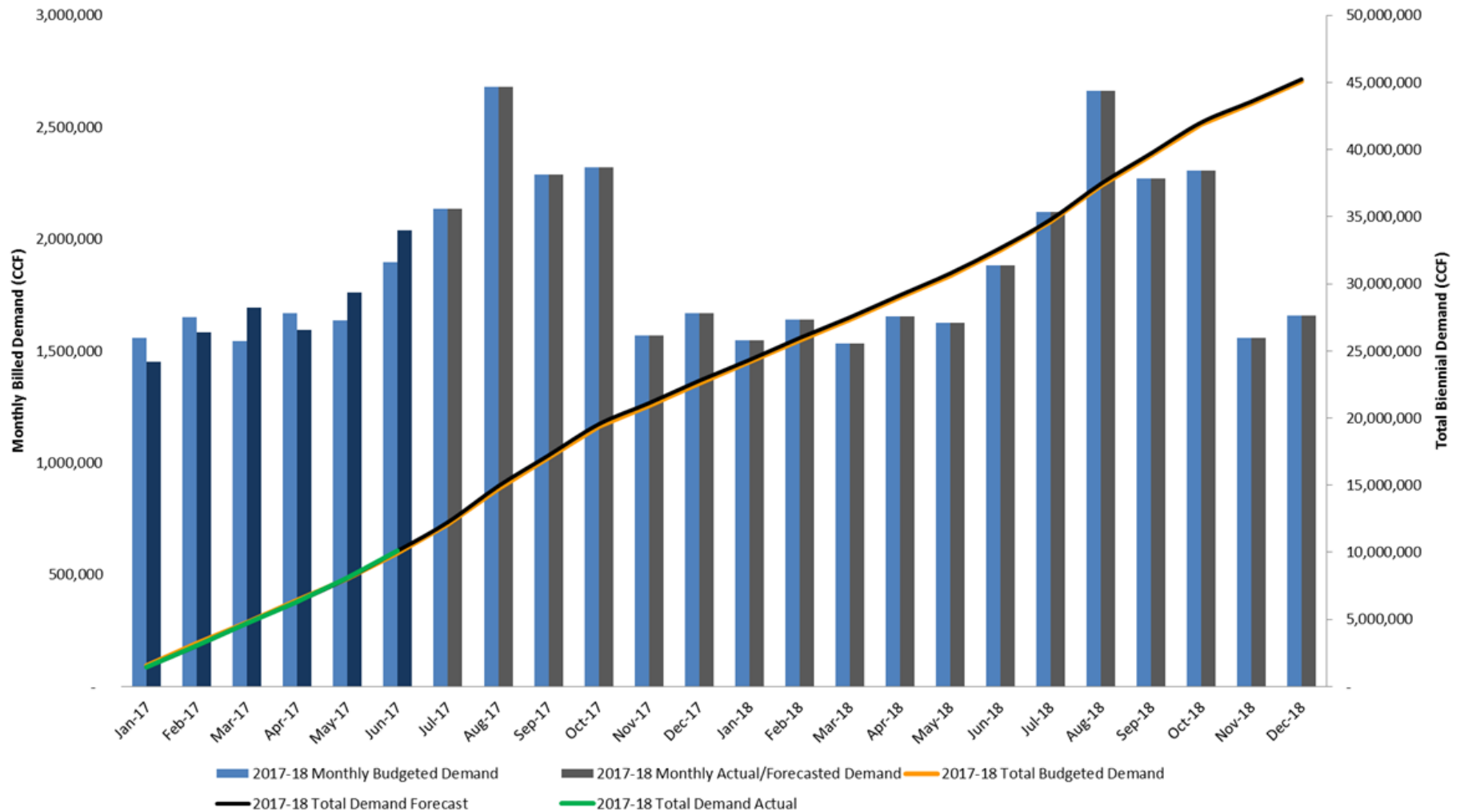
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# Billed Demands

6



# 2017/2018 Biennium Forecast vs. Budget

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1. The projection for total revenue has increased \$1.9 million primarily due to increased actual retail revenues.
2. Expenditures are projected to be \$1.6 million lower than budget due to lower than anticipated personnel expenses, primarily due to unfilled positions, and slightly lower than forecast supplies expenses.
3. As a result, total revenue less expenditures is forecast to increase \$3.5 million over the biennium.
4. Total capital expenditures are expected to be \$12.5 million lower than budget due to a combination of lagging projects and contingency funds that are not projected to be spent.
5. The current fund cash balance is expected to decrease \$6.3 million over the biennium due to the items mentioned above and the planned appropriation from the operating reserve.

# 2017/2018 Biennium Forecast vs. Budget

All \$'s in 1000's	2017 Budget	2017 Forecast	2017 Difference	2018 Budget	2018 Forecast	2018 Difference	Total Biennium Budget	Total Biennium Forecast	Biennium Difference \$	Biennium Difference %
<b>Revenue</b>										
Residential Water Sales	48,519	49,552	1,033	50,480	50,480	-	98,999	100,032	1,033	1%
Pulp Mill Water Sales	6,470	6,292	(178)	6,793	6,793	-	13,263	13,085	(178)	-1%
Wholesale Water Sales	2,118	2,333	215	2,108	2,108	-	4,226	4,441	215	5%
Other Water Sales	17,819	18,322	503	19,006	19,006	-	36,825	37,328	503	1%
Public Fire Protection	3,085	3,063	(22)	3,358	3,358	-	6,443	6,421	(22)	0%
Other Operating Revenue	3,872	3,907	35	3,831	3,831	-	7,703	7,738	35	0%
<b>Total Operating Revenue</b>	<b>81,883</b>	<b>83,469</b>	<b>1,586</b>	<b>85,576</b>	<b>85,576</b>	<b>-</b>	<b>167,459</b>	<b>169,045</b>	<b>1,586</b>	<b>1%</b>
Non-Operating Revenue (includes BAB's subsi	3,090	3,416	326	3,141	3,141	-	6,231	6,557	326	5%
<b>Total Revenue</b>	<b>84,973</b>	<b>86,885</b>	<b>1,912</b>	<b>88,717</b>	<b>88,717</b>	<b>-</b>	<b>173,690</b>	<b>175,602</b>	<b>1,912</b>	<b>(1)</b>
<b>Expenditures</b>										
Personnel Costs	26,709	25,407	(1,302)	27,813	27,813	-	54,522	53,220	(1,302)	-2%
Supplies, Other Services & Charges	27,627	26,808	(819)	25,648	25,648	-	53,275	52,456	(819)	-2%
Debt Service	26,506	26,606	100	26,506	26,506	-	53,012	53,112	100	0%
Taxes	11,105	11,496	391	11,638	11,638	-	22,743	23,134	391	2%
<b>Total Expenditures</b>	<b>91,947</b>	<b>90,317</b>	<b>(1,630)</b>	<b>91,605</b>	<b>91,605</b>	<b>-</b>	<b>183,552</b>	<b>181,922</b>	<b>(1,630)</b>	<b>(2)</b>
<b>Total Revenue less Total Expenditures</b>	<b>(6,974)</b>	<b>(3,432)</b>	<b>3,542</b>	<b>(2,888)</b>	<b>(2,888)</b>	<b>-</b>	<b>(9,862)</b>	<b>(6,320)</b>	<b>3,542</b>	<b>(3)</b> -36%
<b>Appropriation from Current Fund</b>	<b>6,974</b>	<b>3,432</b>	<b>(3,542)</b>	<b>2,888</b>	<b>2,888</b>	<b>-</b>	<b>9,862</b>	<b>6,320</b>	<b>(3,542)</b>	
<b>Capital Outlay Financing Detail</b>										
Funded from Bond Funds	20,020	13,669	(6,351)	20,020	16,975	(3,045)	40,040	30,644	(9,396)	-23%
Funded from Capital Reserve Fund	4,005	1,528	(2,477)	4,006	3,347	(659)	8,011	4,875	(3,136)	-39%
<b>Total Capital Outlay</b>	<b>24,025</b>	<b>15,197</b>	<b>(8,828)</b>	<b>24,026</b>	<b>20,322</b>	<b>(3,704)</b>	<b>48,051</b>	<b>35,519</b>	<b>(12,532)</b>	<b>(4)</b>
<b>Debt Service Coverage Ratio</b>		<b>1.80x</b>			<b>2.18x</b>			<b>2.18x</b>		
<b>EOY Current Fund (Jan 17 Balance \$54,438)</b>		<b>51,006</b>			<b>48,118</b>			<b>48,118</b>	<b>(6,320)</b>	<b>(5)</b>

- 1. Projection for total revenue has increased \$1.3 million, primarily due to increased actual residential and commercial retail revenues and higher than expected interest earned on investments.**
- 2. Expenditures are projected to be nearly \$1 million lower than projected last quarter primarily due to lower than anticipated personnel and supplies expense.**
- 3. As a result of these updates, the current fund cash balance is forecast to increase about \$2.3 million from the projection presented last quarter.**

# 2017/2018 Current Outlook vs. Previous Outlook

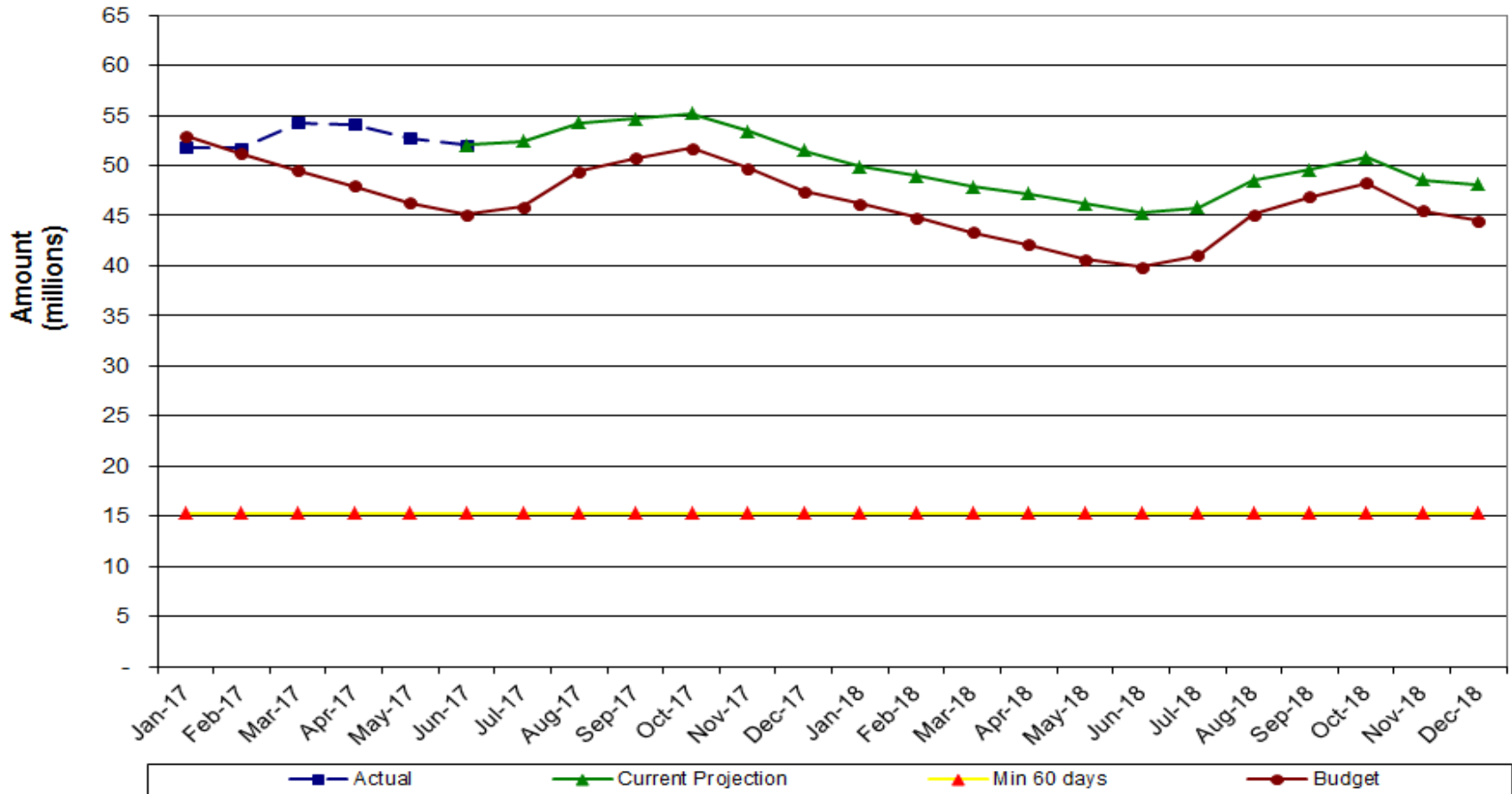
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All \$'s in 1000's	Previous Forecast	Biennium Forecast As of Qtr 2 2017	Difference \$	Difference %
<b>Revenue</b>				
Residential Water Sales	99,421	100,032	611	1%
Pulp Mill Water Sales	13,040	13,085	45	0%
Wholesale Water Sales	4,377	4,441	64	1%
Other Water Sales	37,120	37,328	208	1%
Public Fire Protection	6,397	6,421	24	0%
Other Operating Revenue	7,682	7,738	56	1%
<b>Total Operating Revenue</b>	168,037	169,045	1,008	1%
Non-Operating Revenue (includes BABs subsidy)	6,277	6,557	280	4%
<b>Total Revenue</b>	174,314	175,602	1,288 (1)	1%
<b>Expenditures</b>				
Personnel Costs	53,865	53,220	(645)	-1%
Supplies, Other Services & Charges	52,932	52,456	(476)	-1%
Debt Service	53,066	53,112	46	0%
Taxes	23,068	23,134	66	0%
<b>Total Expenditures</b>	182,931	181,922	(1,009) (2)	-1%
<b>Total Revenue less Total Expenditures</b>	(8,617)	(6,320)	2,297	-27%
<b>EOY 2018 Current Fund Balance Projection</b>	45,821	48,118	2,297	
<b>Change in Current Fund Projection Reconciliation</b>				
Change in Operating Activities			2,297	
Change in Cash provided by (used for) Changes in Operating Asset & Liabilities			-	
<b>Change in Current Fund Cash Projection</b>			2,297 (3)	

# Cash Projection

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**TACOMAWATER**  
**CURRENT FUND CASH PROJECTIONS**  
Actual & Estimated Cash for 2017/2018





**TACOMA POWER**  
TACOMA PUBLIC UTILITIES

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# Financial Outlook

**2nd Quarter 2017**

August 23, 2017

## **2017/2018 Biennium:**

- Assumptions
- Electric Retail Revenues
- Wholesale Revenues
- Revenue & Expense Details
- Projected Liquidity Balance



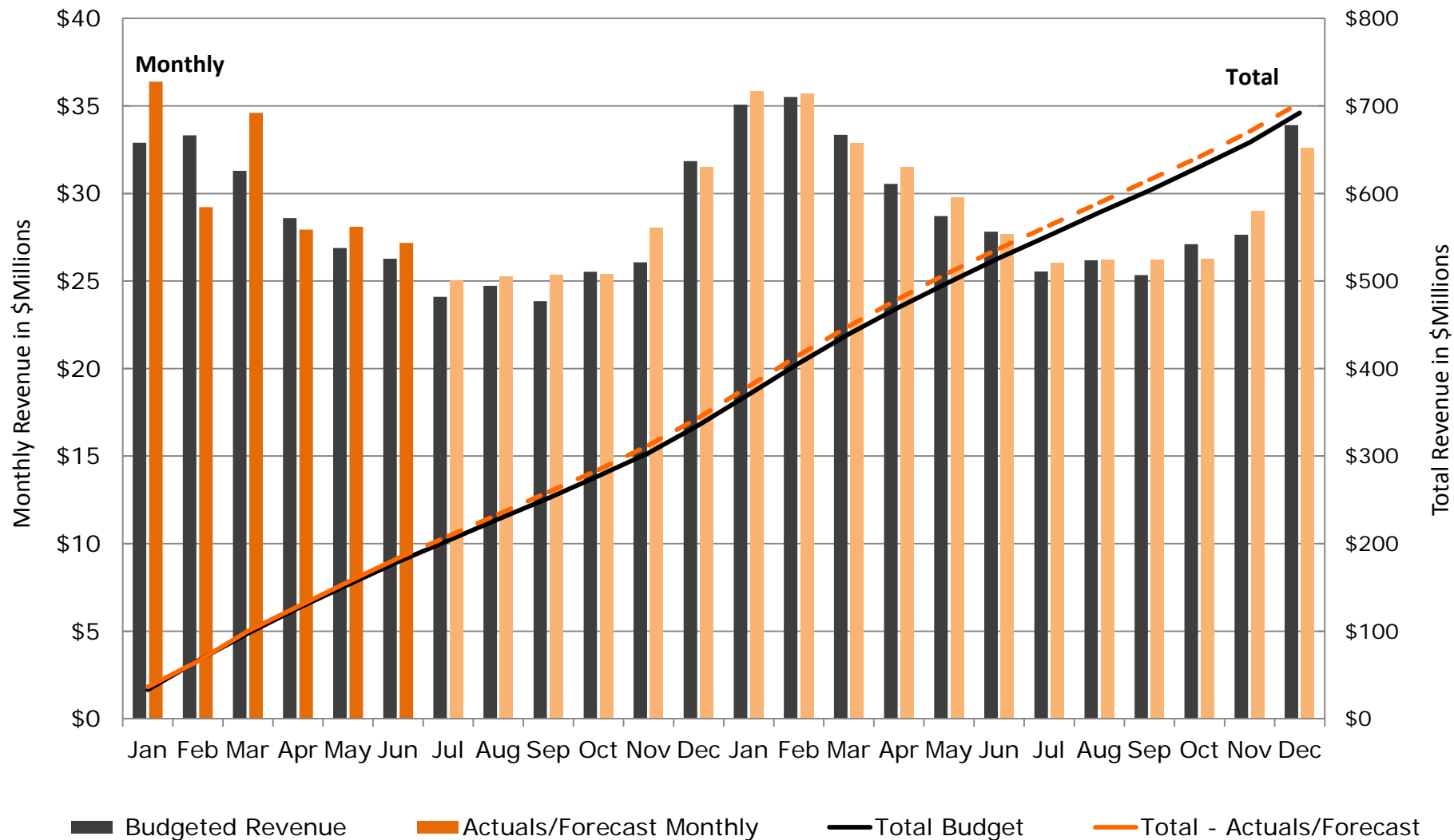
- Actuals updated through June 2017
- New June 2017 load forecast
- Wholesale revenue forecast:
  - Expected water conditions for July & Aug 2017
  - Adverse water forecast through remainder of biennium
  - Forward prices updated 07/12/17
- Capital spending forecast updated on 6/30/2017

## Forecasting Practices

- Personnel expenditures assume a 5% vacancy rate
- O&M expenditures are forecast based on actuals and historical trends

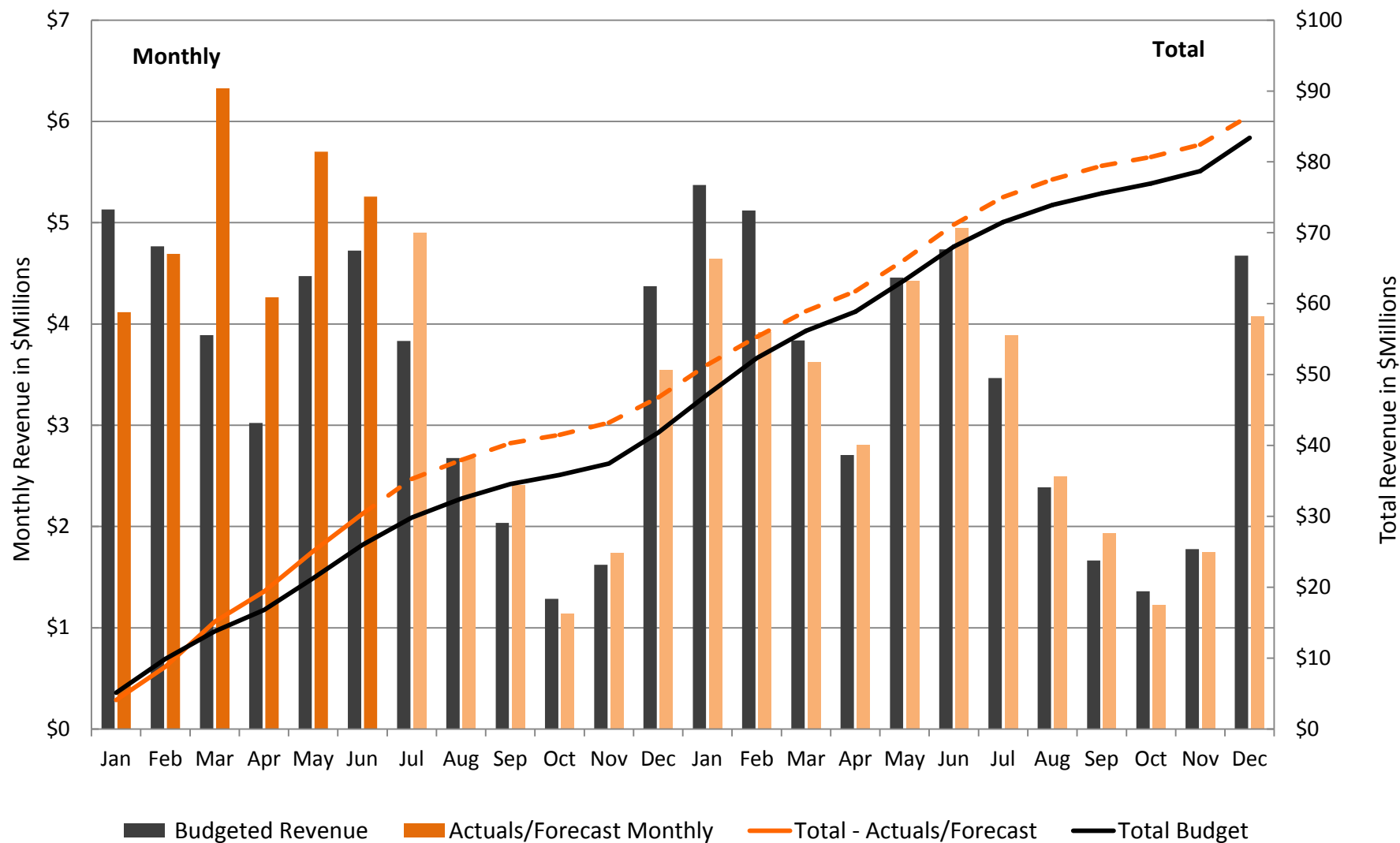
# 2017/2018 Electric Retail Revenues

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# 2017/2018 Wholesale Revenues

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## Forecast for Revenue Over Budget: \$15.1 million (2%)

1. Retail Revenues: forecast \$11.4 million over budget
  - Cooler than anticipated weather increased heating loads
2. Wholesale Revenues: forecast \$3.1 million over budget
  - Higher precipitation in first quarter

## Forecast for Expenditures Under Budget: \$49.7 million (5%)

3. Personnel expenses: forecast \$12.1 million under budget
  - 5% vacancy rate forecast for the budget is \$10 million.
4. Supplies, Other Services, & Charges: forecast \$14.6 million under budget
  - \$10 million from actual underspending in first two quarters
5. Capital expenses funded from the Current Fund: forecast \$16.2 million under budget
  - Underspending on Current Funded capital projects through June

## Net Revenue:

6. Total revenues less expenditures net to \$64.8 million

# 2017/2018 Biennium Forecast vs. Budget

## Tacoma Power

### 2017/2018 Biennium Adjusted Estimates Comparison to Budget

as of 6/30/2017

	2017 Budget	2017 Actual / Forecast	2017 Diff.	2018 Budget	2018 Forecast	2018 Diff.	Total Biennium Budget	Total Biennium Forecast	Biennium Diff.	Biennium Diff. (%)
<i>All \$'s in 1000's</i>										
<b>Revenue</b>										
Retail Sales	\$335,395	\$343,947	\$8,552	\$356,722	\$359,554	\$2,832	\$692,117	\$703,501	\$11,384	(1) 2%
Bulk Power (wholesale) Sales	\$41,834	\$46,770	\$4,936	\$41,557	\$39,751	(\$1,805)	\$83,390	\$86,521	\$3,131	(2) 4%
Other Electric Revenue	\$17,626	\$18,451	\$825	\$17,868	\$17,868	\$0	\$35,495	\$36,319	\$825	2%
Telecommunications Revenue	\$28,167	\$27,221	(\$946)	\$33,133	\$33,133	\$0	\$61,300	\$60,353	(\$946)	-2%
<b>Total Operating Revenue</b>	<b>\$423,022</b>	<b>\$436,388</b>	<b>\$13,366</b>	<b>\$449,279</b>	<b>\$450,306</b>	<b>\$1,027</b>	<b>\$872,301</b>	<b>\$886,694</b>	<b>\$14,393</b>	2%
Other Income	\$6,520	\$7,072	\$551	\$6,402	\$6,557	\$155	\$12,922	\$13,629	\$706	5%
<b>Total Revenue</b>	<b>\$429,543</b>	<b>\$443,460</b>	<b>\$13,917</b>	<b>\$455,681</b>	<b>\$456,863</b>	<b>\$1,182</b>	<b>\$885,224</b>	<b>\$900,323</b>	<b>\$15,099</b>	2%
<b>Expenses</b>										
Personnel Costs	\$100,228	\$93,137	(\$7,092)	\$100,228	\$95,228	(\$5,000)	\$200,457	\$188,365	(\$12,092)	(3) -6%
Supplies, Other Services & Charges	\$79,920	\$68,027	(\$11,893)	\$79,920	\$77,189	(\$2,731)	\$159,840	\$145,216	(\$14,624)	(4) -9%
Purchased Power & RECs	\$152,770	\$148,033	(\$4,737)	\$154,307	\$155,508	\$1,201	\$307,077	\$303,541	(\$3,536)	-1%
Capital Outlay funded from Current Fund	\$40,915	\$27,941	(\$12,974)	\$40,915	\$37,664	(\$3,251)	\$81,830	\$65,605	(\$16,225)	(5) -20%
Debt Service	\$33,494	\$30,677	(\$2,817)	\$33,501	\$31,358	(\$2,143)	\$66,995	\$62,035	(\$4,960)	-7%
Taxes	\$52,191	\$53,698	\$1,507	\$54,992	\$55,187	\$196	\$107,183	\$108,886	\$1,703	2%
<b>Total Expenses</b>	<b>\$459,519</b>	<b>\$421,513</b>	<b>(\$38,006)</b>	<b>\$463,863</b>	<b>\$452,134</b>	<b>(\$11,729)</b>	<b>\$923,382</b>	<b>\$873,647</b>	<b>(\$49,735)</b>	-5%
<b>Total Revenues less Expenditures</b>	<b>(\$29,976)</b>	<b>\$21,947</b>	<b>\$51,923</b>	<b>(\$8,182)</b>	<b>\$4,729</b>	<b>\$12,911</b>	<b>(\$38,158)</b>	<b>\$26,676</b>	<b>\$64,834</b>	(6)
<b>Appropriation from Current Fund</b>	<b>\$29,976</b>	<b>(\$14,725)</b>	<b>(\$44,701)</b>	<b>\$8,182</b>	<b>\$2,494</b>	<b>(\$5,688)</b>	<b>\$38,158</b>	<b>(\$12,231)</b>	<b>(\$50,389)</b>	
<b>Capital Outlay Financing Detail</b>										
Funded From Current Fund	\$40,915	\$27,941	(\$12,974)	\$40,915	\$37,664	(\$3,251)	\$81,830	\$65,605	(\$16,225)	-20%
Funded From Bond Fund	\$54,322	\$57,281	\$2,959	\$54,322	\$57,573	\$3,251	\$108,644	\$114,854	\$6,210	6%
<b>Total Capital Outlay</b>	<b>\$95,237</b>	<b>\$85,222</b>	<b>(\$10,015)</b>	<b>\$95,237</b>	<b>\$95,237</b>	<b>\$0</b>	<b>\$190,474</b>	<b>\$180,459</b>	<b>(\$10,015)</b>	-5%
<b>Adjusted Ratios</b>	<b>2016</b>	<b>2017 Budget</b>	<b>2017 Actual</b>	<b>2017 Diff.</b>	<b>2018 Budget</b>	<b>2018 Forecast</b>	<b>2018 Diff.</b>			
Debt Service Coverage Ratio	2.31	1.33	2.63	1.30	1.98	2.35	0.37			
Days Liquidity	236.4	173.7	213.4	39.75	164.0	202.8	38.8			
EOY Rate Stabilization Fund Balance	\$48,000	\$48,000	\$48,000	\$0	\$48,000	\$48,000	\$0			
EOY Current Fund Balance*	\$232,514	\$120,177	\$145,004	\$15,487	\$111,995	\$146,300	\$34,304			
<b>Total Liquidity</b>	<b>\$280,514</b>	<b>\$168,177</b>	<b>\$193,004</b>		<b>\$159,995</b>	<b>\$194,300</b>				

\*Includes \$19,165,000 cash defeasance of the 2013A Bonds in 2017.

# 2017/2018 Current Outlook vs. Previous Outlook

- 1. Retail revenues were \$8.1 million more than the previous forecast.**
  - Revenues in the second quarter of 2017 mostly increased due to the new retail load forecast compared to first quarter.
- 2. Purchased Power expenses were \$3.5 million less than the previous forecast.**
  - Mostly related to lower Purchased Power expenses than forecasted.
- 3. Supplies, Other Services & Charges were \$4.3 million less than the last forecast.**
  - Due to continued underspending & delayed external contract charges.
- 4. Current Funded Capital was \$4.3 million less than the last forecast.**
  - Due to continued underspending on capital projects.
- 5. Debt Service was \$4 million less than the last forecast.**
  - Due to updated projections for our upcoming bond issue and defeasance.
- 6. Anticipating defeasance of \$19.1 million in outstanding Bonds in September**

# 2017/2018 Current Outlook vs. Previous Quarter

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## Biennium Projection Compared to Prior Outlook Forecast

#s in 1000's

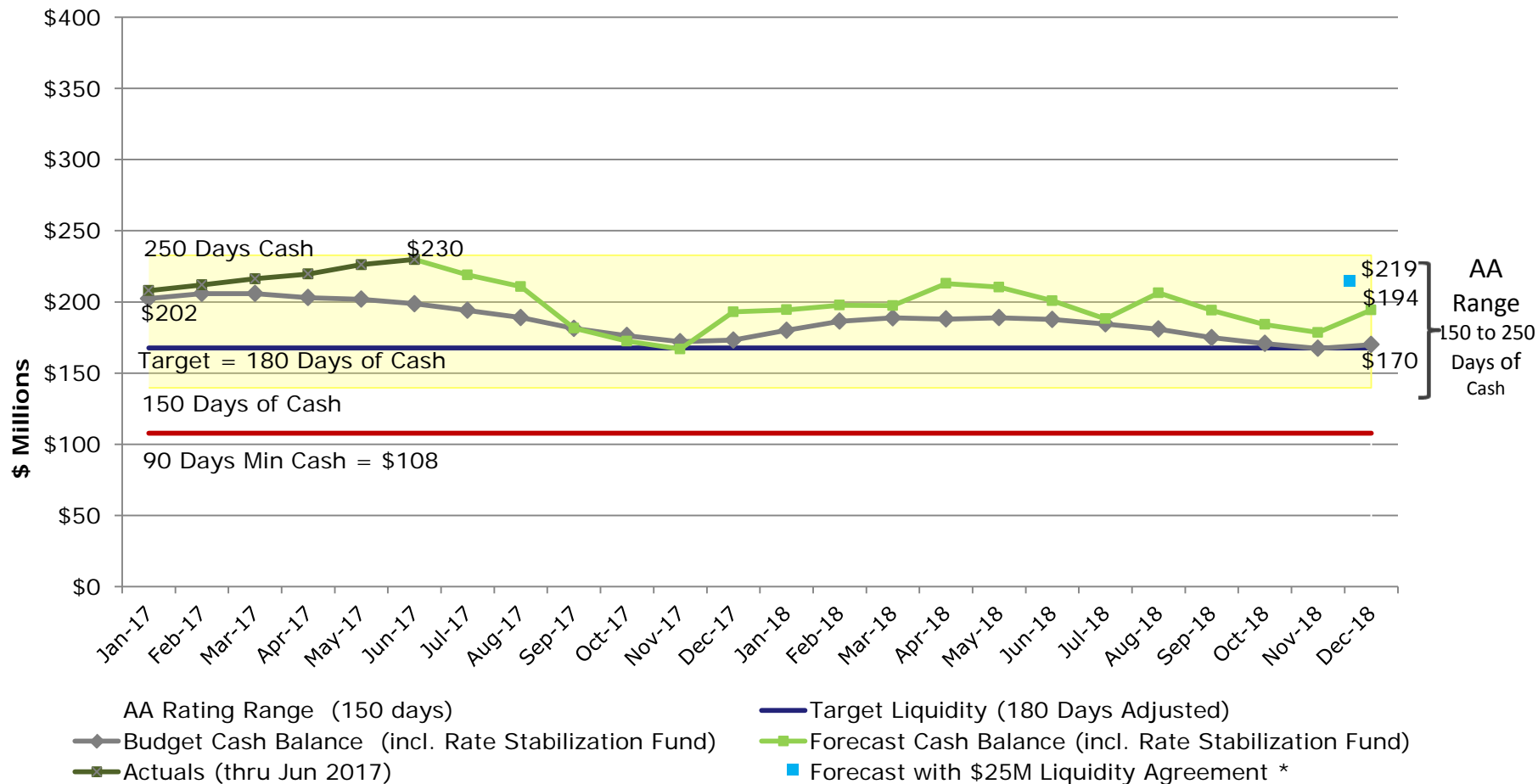
	17/18 Projection as of 3/31/2017	17/18 Projection as of 6/30/2017	Difference	% Diff.
<b>Revenue</b>				
Retail Sales	\$695,403	\$703,501	\$8,098	(1) 1.2%
Bulk Power (wholesale) Sales	86,445	86,521	76	0.1%
Other Electric Revenue	35,974	36,319	345	1.0%
Telecommunications Revenue	60,771	60,353	(418)	-0.7%
<b>Total Operating Revenue</b>	<b>\$878,593</b>	<b>\$886,694</b>	<b>\$8,101</b>	0.9%
Other Income	13,690	13,629	(61)	-0.4%
<b>Total Revenue</b>	<b>\$892,283</b>	<b>\$900,323</b>	<b>\$8,040</b>	0.9%
<b>Expenditures</b>				
Purchased Power & RECs	\$307,011	\$303,541	(\$3,470)	(2) -1.1%
Personnel Costs	\$189,741	\$188,365	(\$1,376)	-0.7%
Supplies, Other Services & Charges	149,511	145,216	(4,295)	(3) -2.9%
Capital Outlay Funded from Current Fund	69,594	65,605	(3,989)	(4) -5.7%
Debt Service	66,044	62,035	(4,009)	(5) -6.1%
Taxes	107,808	108,886	1,078	1.0%
<b>Total Expenditures</b>	<b>\$889,710</b>	<b>\$873,647</b>	<b>(\$16,063)</b>	-1.8%
<b>Total Revenue less Total Expenditures</b>	<b>\$2,573</b>	<b>\$26,676</b>	<b>\$24,103</b>	
Appropriation from Current Fund	(\$3,996)	\$13,939	\$17,935	
<b>EOY 2016 Current Fund Balance Projection</b>	<b>\$164,235</b>	<b>\$146,300</b>	<b>(\$17,935)</b>	(6) -10.9%
<b>Change in Current Fund Projection Reconciliation</b>				
Change in Operating Activities			\$24,103	
Change in Cash provided by (used for) Changes in Operating Assets and Liabilities *			(\$10,160)	
Change in Cash due to Capital Improvements			(\$11,401)	
<b>Change in Current Fund Projection</b>			<b>\$2,542</b>	
<b>EOY 2016 Rate Stabilization Fund Balance</b>	<b>\$48,000</b>	<b>\$48,000</b>	<b>\$0</b>	

\* Includes items such as Accounts Receivable and Unbilled Revenues, Taxes and other Payables and Receivables.

# 2017/2018 Projected Liquidity Balance

as of 6/30/2017

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\* \$25 million Key Bank Liquidity Agreement can be increased to \$50 million





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# Financial Outlook

2<sup>nd</sup> Quarter 2017

August 23, 2017

# Summary of Assumptions

- Projections include actual revenue and expense through July 2017
- Intermodal volumes adjusted down to current actuals
  - Small increase anticipated in January 2018
- Oil trains reduced to 14 per month through the rest of the biennium

# Summary of Financial Situation

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- Traffic analysis

Quarter	2016		2017		%	
	Intermodal	Commercial	Intermodal	Commercial	Intermodal	Commercial
1	59,355	11,625	61,604	12,211	4%	5%
2	57,238	12,152	46,515	12,232	-19%	1%
3						
4						
Total	116,593	23,777	108,119	24,443	-7%	3%

- Intermodal:

- Year over year: NIM **1%**, PCT **-18%**, WUT **-14%**
    - Down **8%** from budgeted volumes

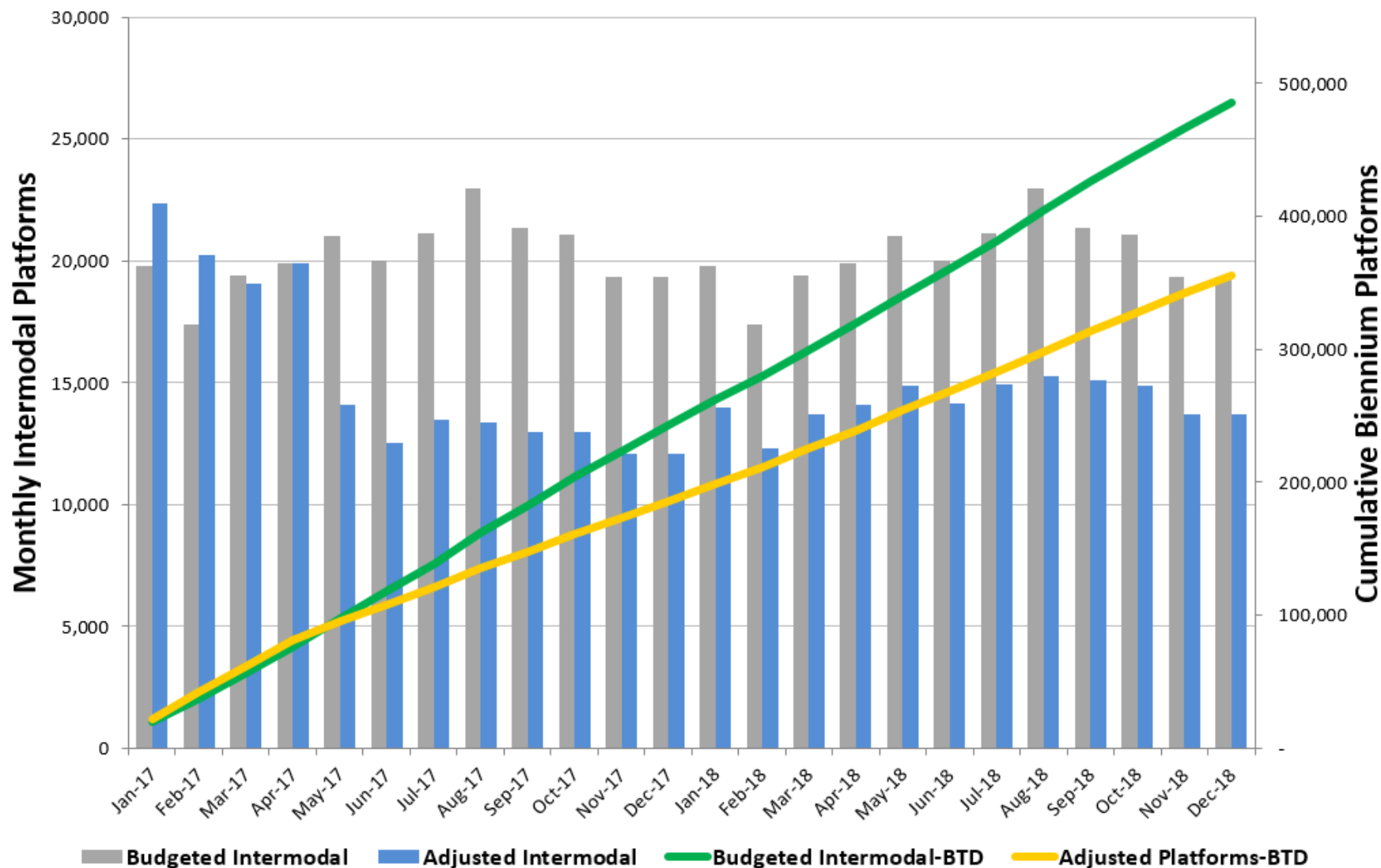
- Commercial:

- Year over year: US Oil **-9%**, Targa Sound **55%**, AWC **-11%**
    - Down **6%** from budgeted volumes

- Cash is projected above the 60 days of budget threshold

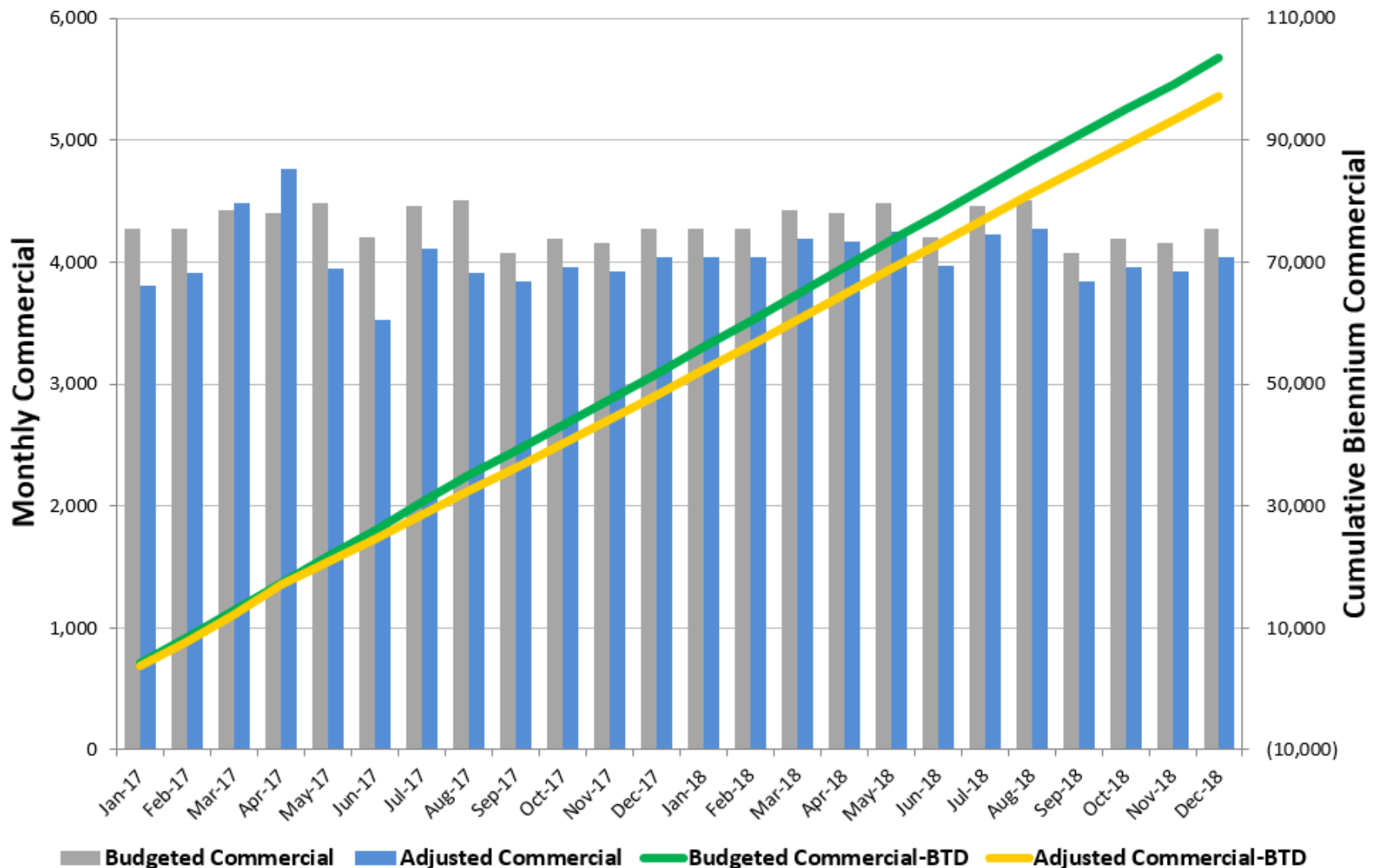
# Intermodal Volumes

25



# Commercial Volumes

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- 1. Decrease in railcar volumes**
- 2. Actual locomotive servicing revenue above budget**
- 3. Deferred capital projects**
  - Locomotive repower delayed due to additional funding opportunities and lack of railcar volumes. Potential opportunity with VW settlement.
- 4. No incentive allowance accruing due to lack of intermodal volumes**
- 5. Lower taxes from lower revenue generation**

# 2017/2018 Biennium Forecast vs. Budget

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All \$'s in 1,000s

	2017 Budget	2017 Forecast	2017 Difference	2018 Budget	2018 Forecast	2018 Difference	Budget Biennium	Adjusted Forecast	Biennium Difference	Biennium Diff. (%)	
<b>Revenue</b>											
Switching Revenue	\$ 28,735	\$ 26,298	\$ (2,437)	\$ 28,993	\$ 25,309	\$ (3,683)	\$ 57,728	\$ 51,607	\$ (6,121)	-11%	(1)
Demurrage Fees	1,150	1,226	76	1,150	1,150	-	2,300	2,376	76	3%	
Locomotive Servicing	1,865	2,224	360	1,865	1,865	-	3,729	4,089	360	10%	(2)
Other	261	203	(58)	261	261	-	522	464	(58)	-11%	
<b>Total Operating Revenue</b>	<b>\$32,011</b>	<b>\$29,951</b>	<b>\$ (2,060)</b>	<b>\$32,268</b>	<b>\$ 28,585</b>	<b>\$ (3,683)</b>	<b>\$64,279</b>	<b>\$58,536</b>	<b>\$ (5,743)</b>	<b>-9%</b>	
Interest	102	99	(3)	102	96	(6)	204	195	(9)	-4%	
Rent & Misc Income	1,080	1,143	63	1,080	1,080	-	2,160	2,223	63	3%	
<b>Total Revenue &amp; Avail Funds</b>	<b>\$ 33,193</b>	<b>\$ 31,194</b>	<b>(1,999)</b>	<b>\$ 33,450</b>	<b>\$ 29,761</b>	<b>\$ (3,689)</b>	<b>\$66,643</b>	<b>\$60,954</b>	<b>\$ (5,689)</b>	<b>-9%</b>	
<b>Expenditures</b>											
Personnel Costs	\$ 15,500	\$ 15,398	\$ (101)	\$ 16,044	\$ 15,826	\$ (218)	\$ 31,544	\$ 31,224	\$ (320)	-1%	
Supplies, Other Services	8,862	9,041	178	8,843	8,767	(76)	17,705	17,808	103	1%	
Current Fund Capital Outlay	1,664	573	(1,090)	2,635	2,455	(180)	4,299	3,028	(1,270)	-30%	(3)
Debt Service	895	842	(54)	905	905	(0)	1,800	1,746	(54)	-3%	
Incentive Allowance	2,500	1,250	(1,250)	2,500	-	(2,500)	5,000	1,250	(3,750)	-75%	(4)
Taxes	3,136	2,942	(194)	3,160	2,809	(351)	6,296	5,751	(545)	-9%	(5)
<b>Total Expenditures</b>	<b>\$ 32,556</b>	<b>\$ 30,046</b>	<b>\$ (2,511)</b>	<b>\$ 34,087</b>	<b>\$ 30,762</b>	<b>\$ (3,325)</b>	<b>\$66,643</b>	<b>\$60,808</b>	<b>\$ (5,836)</b>	<b>-9%</b>	
<b>Total Revenues Less Expenditures</b>	<b>\$ 637</b>	<b>\$ 1,148</b>	<b>\$ 512</b>	<b>\$ (637)</b>	<b>\$ (1,001)</b>	<b>\$ (365)</b>	<b>\$ (0)</b>	<b>\$ 147</b>	<b>\$ 147</b>		
<b>Appropriation from Current Fund</b>	<b>\$ (637)</b>	<b>\$ (845)</b>	<b>\$ (208)</b>	<b>\$ 637</b>	<b>\$ 1,001</b>	<b>\$ 365</b>	<b>\$ -</b>	<b>\$ (845)</b>	<b>\$ (845)</b>		
<b>Capital Outlay Financing Detail</b>											
Funded from Current Fund	\$ 1,664	\$ 573	\$ (1,090)	\$ 2,635	\$ 2,455	\$ (180)	\$ 4,299	\$ 3,028	\$ (1,270)	-30%	
Grants, Transfers & Pledges	-	36	36	400	-	(400)	400	36	(364)	-91%	
Funded from New Debt	311	707	396	650	650	-	961	1,357	396	41%	
<b>Total Capital Outlay</b>	<b>\$ 1,975</b>	<b>\$ 1,317</b>	<b>\$ (658)</b>	<b>\$ 3,685</b>	<b>\$ 3,105</b>	<b>\$ (580)</b>	<b>\$ 5,660</b>	<b>\$ 4,422</b>	<b>\$ (1,238)</b>	<b>-22%</b>	
<b>Starting Cash Balance</b>	<b>\$ 5,963</b>	<b>\$ 5,963</b>	<b>-</b>	<b>\$ 6,600</b>	<b>\$ 6,808</b>	<b>208</b>	<b>\$ 5,963</b>	<b>\$ 5,963</b>	<b>0%</b>	<b>0%</b>	
<b>EOY Current Fund Balance</b>	<b>\$ 6,600</b>	<b>\$ 6,808</b>	<b>208</b>	<b>\$ 5,963</b>	<b>\$ 5,806</b>	<b>(157)</b>	<b>\$ 5,963</b>	<b>\$ 5,806</b>	<b>-3%</b>	<b>-3%</b>	

# Quarter Forecast Comparison

- 1. Switching revenue decrease**
  - Intermodal volumes adjusted down
  - Oil train volumes adjusted down
- 2. Cost control on personnel costs**
- 3. Deferred capital expenditures**
- 4. Volume incentive down due to intermodal traffic**
- 5. End of biennium cash balance not anticipated to drop below 60 days of cash**
  - 60 days of budget is \$5.48 million



# Quarter Forecast Comparison

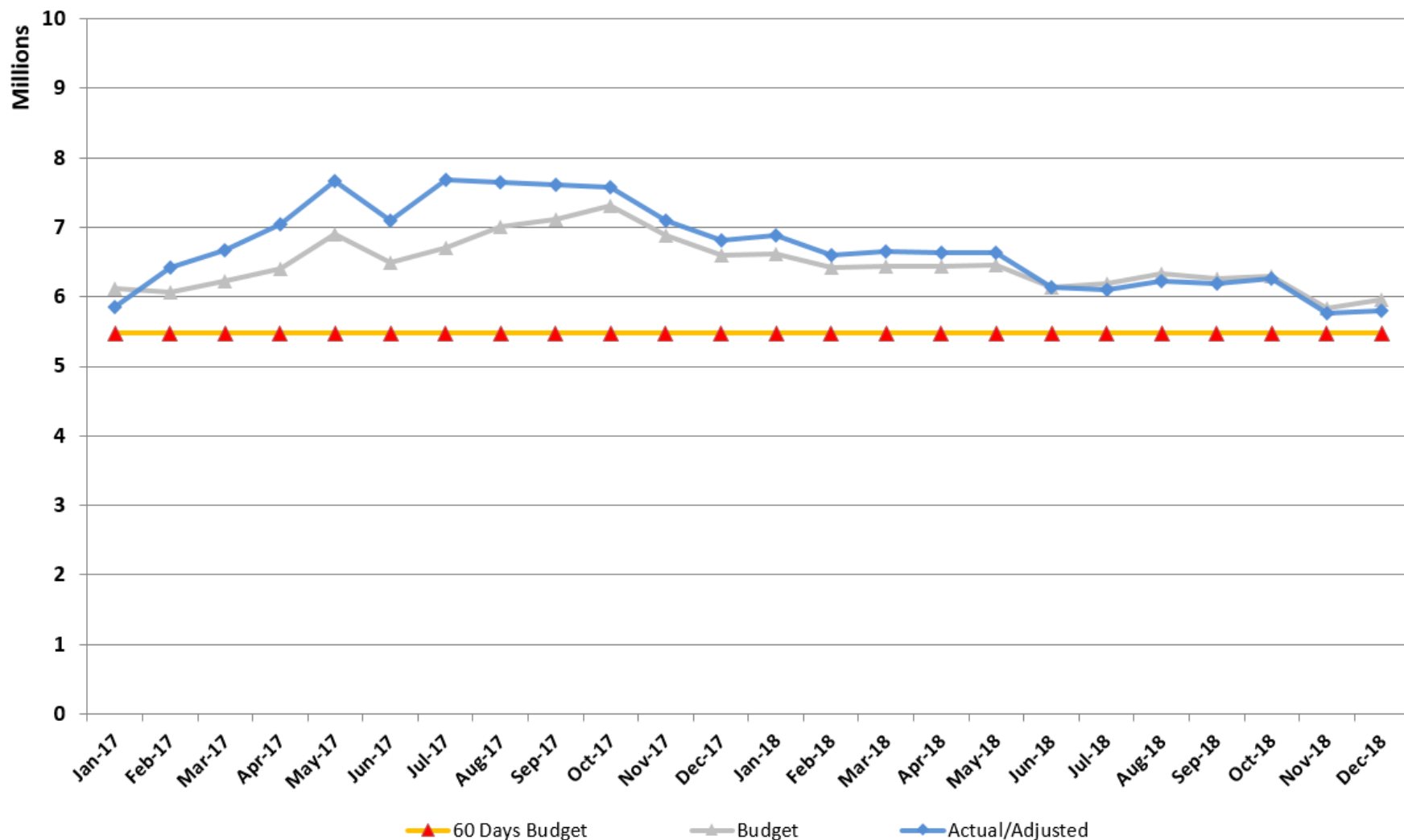
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All \$'s in 1,000s

	Previous Forecast Biennium	Current Forecast Biennium	Biennium Diff.	Biennium Diff. (%)
<b>Revenue</b>				
Switching Revenue	59,199	51,607	(7,592)	-13% (1)
Demurrage Fees	2,316	2,376	60	3%
Locomotive Servicing	3,989	4,089	100	3%
Other	502	464	(38)	-8%
Interest	191	195	4	2%
Rent & Misc Income	2,099	2,223	124	6%
<b>Total Revenue &amp; Avail Funds</b>	<b>\$ 68,296</b>	<b>\$ 60,954</b>	<b>(7,342)</b>	<b>-11%</b>
<b>Expenditures</b>				
Personnel Costs	\$ 31,867	\$ 31,224	\$ (643)	-2% (2)
Supplies, Other Services	17,686	17,808	122	1%
Current Fund Capital Outlay	3,911	3,028	(883)	-23% (3)
Debt Service	1,746	1,746	0	0%
Volume Incentive	5,500	1,250	(4,250)	-77% (4)
Taxes	6,404	5,751	(653)	-10%
<b>Total Expenditures</b>	<b>\$ 67,114</b>	<b>\$ 60,808</b>	<b>(6,306)</b>	<b>-9%</b>
<b>Total Revenues Less Expenditures</b>	<b>\$ 1,182</b>	<b>\$ 147</b>	<b>\$ (1,035)</b>	<b>-88%</b>
<b>EOB Current Fund Balance</b>	<b>\$ 6,989</b>	<b>\$ 5,806</b>	<b>\$ (1,183)</b>	<b>-17% (5)</b>

# Biennium Cash Projection

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# Performance Metrics Update

2nd Quarter 2017

August 23, 2017

# Performance Metrics Summary

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Quarter 2, 2017 Performance Metrics Report Tacoma Public Utilities					
					
Financial Performance: Power		Water		Rail	
1 Debt Service Coverage		1 Debt Service Coverage		1 Debt Service Coverage	
2 Liquidity - Days Cash on Hand		2 Liquidity - Days Cash on Hand		2 Liquidity - Days Cash on Hand	
3 Budget Performance		3 Budget Performance		3 Budget Performance	
Operational Excellence: Power		Water		Rail	
4 Residential Bill Comparison		4 Residential Bill Comparison		4 Railroad Tariffs Comparison	
5 O&M Cost per Customer		5 O&M Cost per Account		5 Operating Ratio	
6 Outage Duration		6 Unplanned Service Disruptions		6 Revenue Moves per Shift	
7 Outage Frequency		7 Distribution System Leakage		7 On-Time Switching	
8 Non-Carbon Power Resources		8 Regulatory Compliance		8a Diesel Conversion	
9 Power Conservation		9 Water Conservation		8b Storm Water Remediation	
Commitment to Cust & Employees: Power		Water		Rail	
10 Customer Satisfaction		10 Customer Satisfaction		10 Customer Satisfaction	
11 Employee Satisfaction		11 Employee Satisfaction		11 Employee Satisfaction	
12 Employee Safety		12 Employee Safety		12 Employee Safety	
13 Call Center Responsiveness	 	13 Call Center Responsiveness	 		
		14 Technical Service Complaints			

## Some Highlights:

### ❖ Financial Metrics –

- All in green territory – No changes from prior quarter

### ❖ Operational Metrics – Mostly green status

- O&M benchmarking (Water and Power)
- Water Conservation – annual measure, no change

## Highlights (continued):

### ❖ Customer and Employee Metrics

- Customer and Employee Satisfaction – updates coming
- Call Center (80% answered in 60 seconds) – return to green in Q2
- Technical Service Complaints (water)
- Employee Safety (TPU-wide) – improving

Further Questions?