

# Advanced Metering Program Update

Public Utility Board  
Reports of the Director  
February 23, 2022

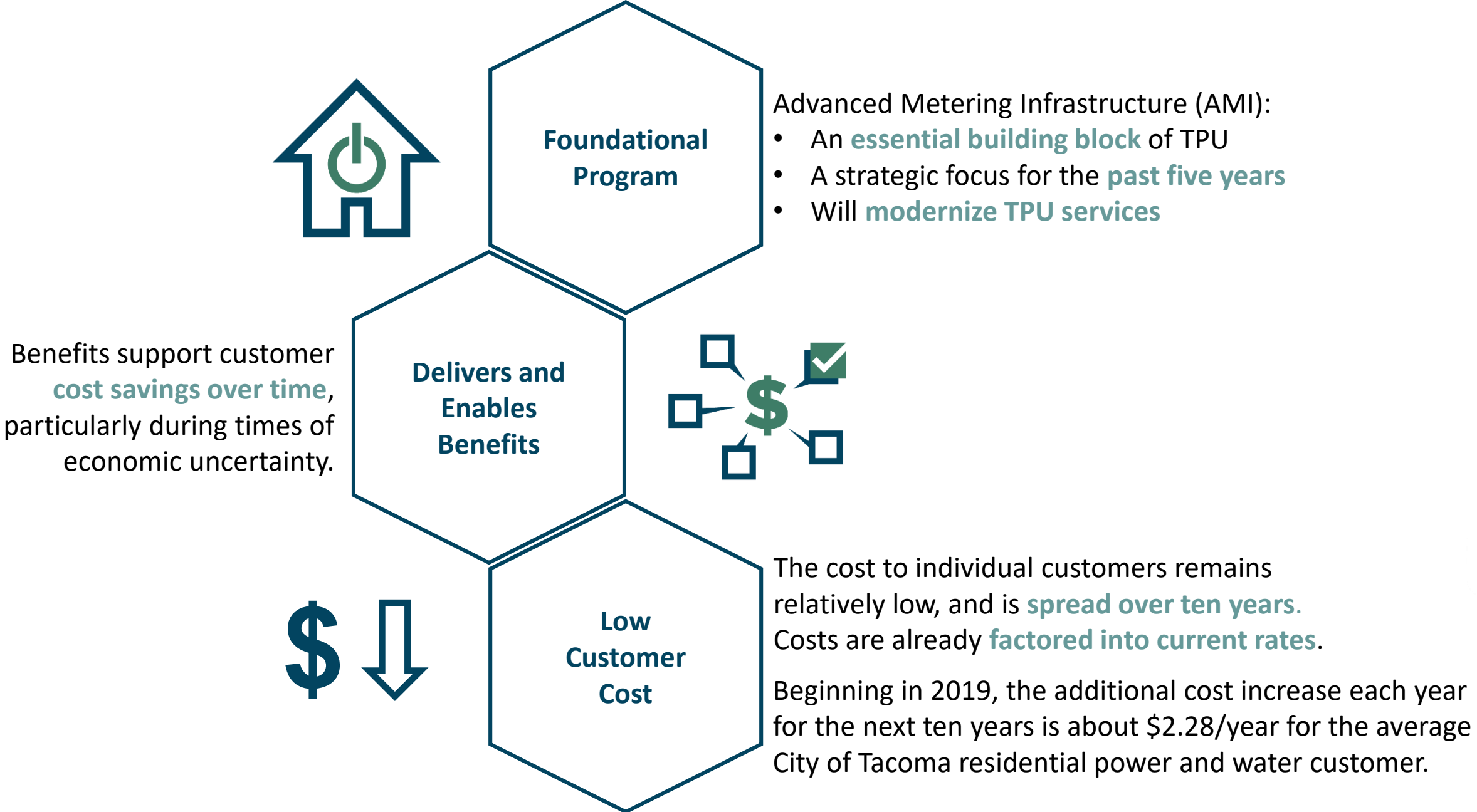


# Agenda



1. Strategic Program & Milestones
2. Deployment Progress
3. Customer & Operational Benefits

# Advanced Metering: Strategic Program



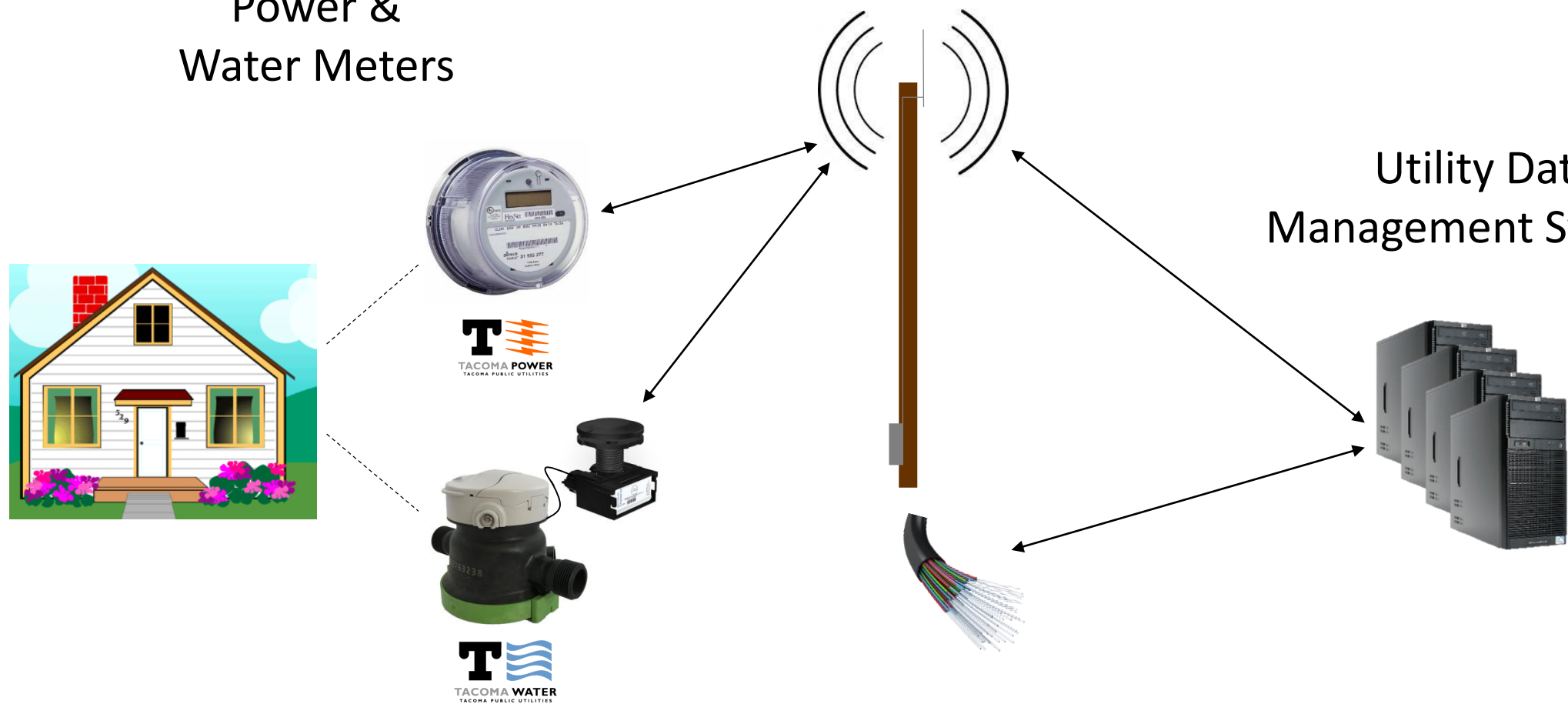
# Advanced Metering Infrastructure (AMI)



Communications Network

Power & Water Meters

Utility Data Management Systems



Current Phase

# Milestones & Highlights



Updated 2/16/2022

91,000+

AMI Meters  
Installed



21,000+ Customers  
Converted to Monthly Billing

31%

Meter Installations Complete  
≈202k Remaining of 293k Total



\$2 million in Federal Grant  
Funding Awarded to TPU

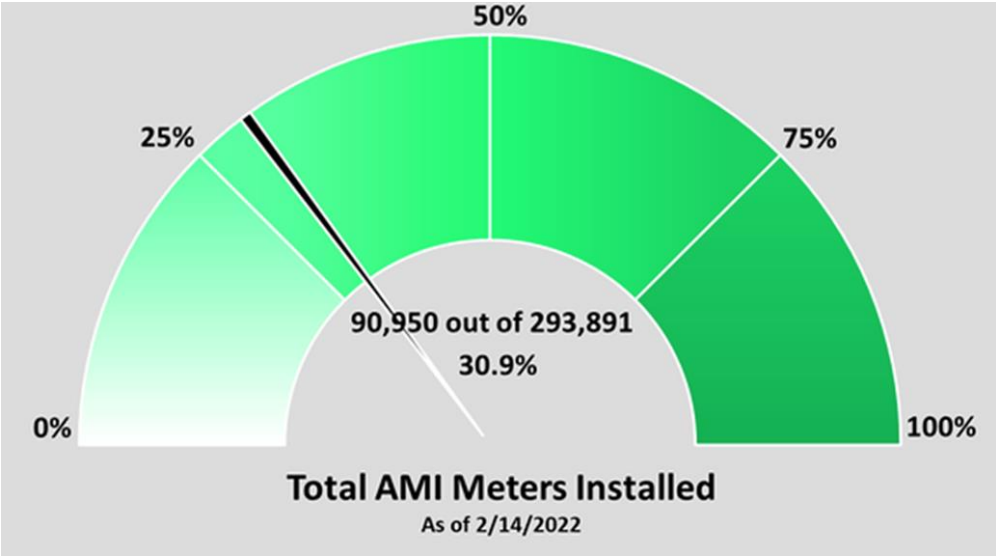
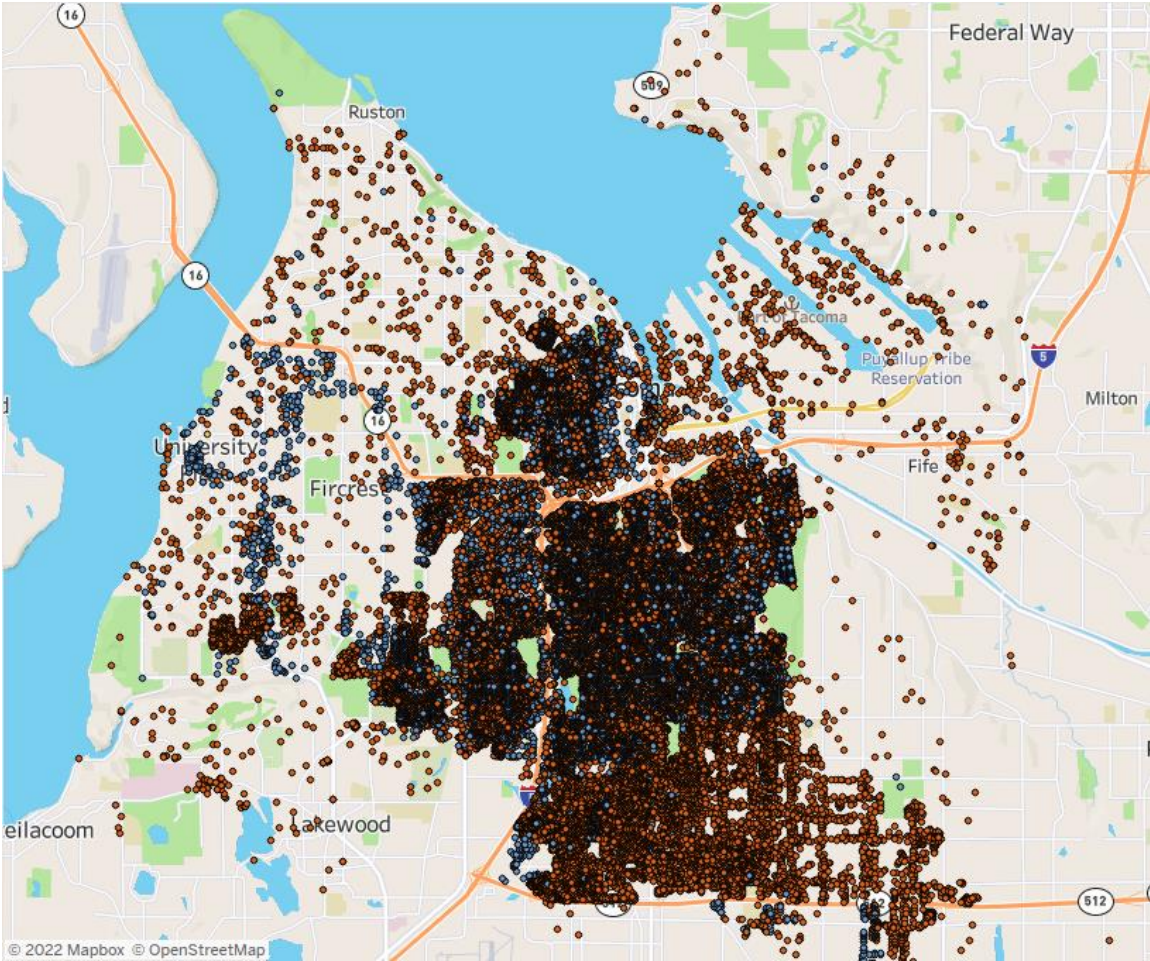
# Deployment Progress

# Deployment Progress: February 2022



Updated 2/16/2022

## Completed Meter Installation Map:



**48 Radio Base Stations  
Installed**

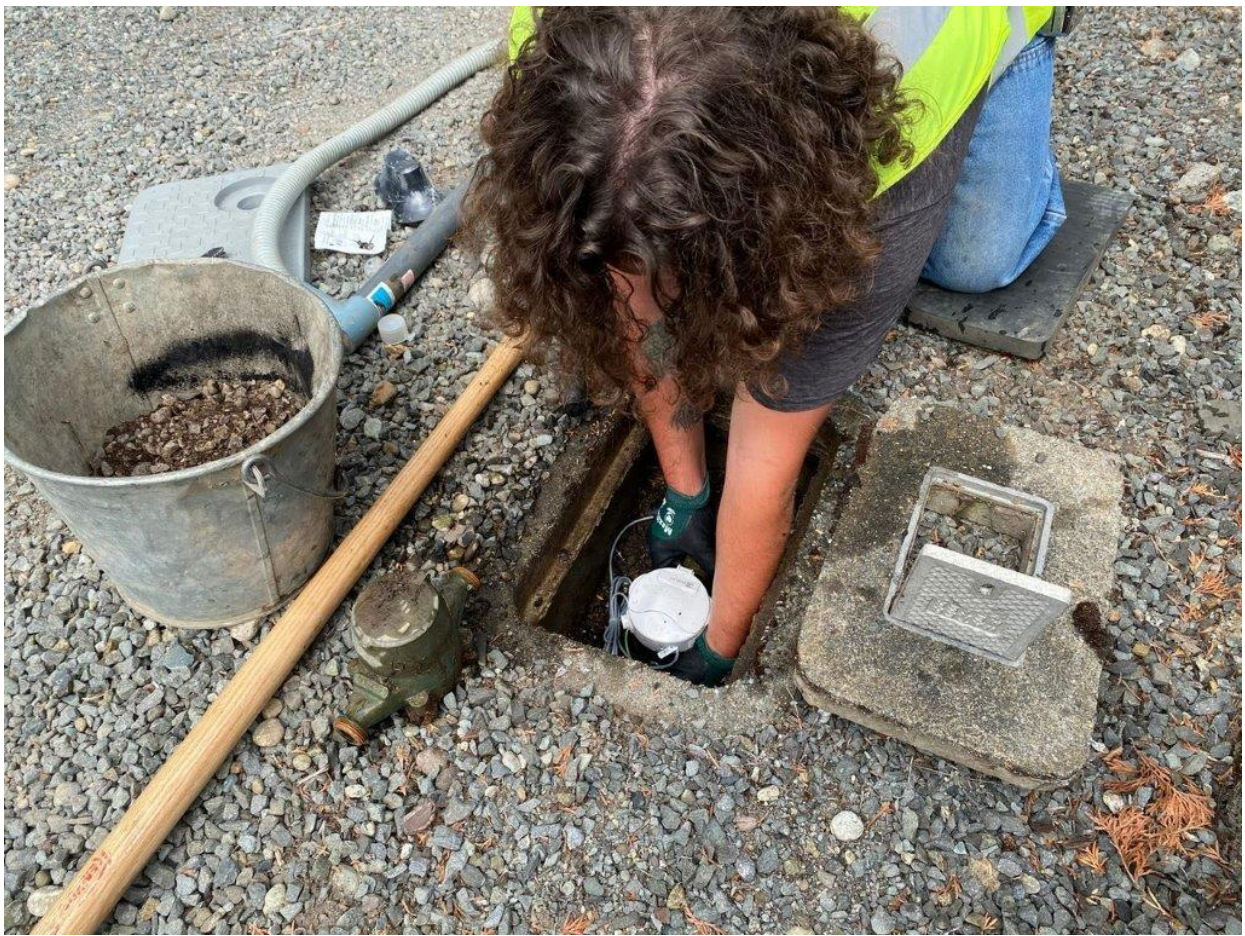
**Phase 1 Communications Network: 100% Complete**

Phase 1: Full system communications coverage

Phase 2: System hardening throughout deployment



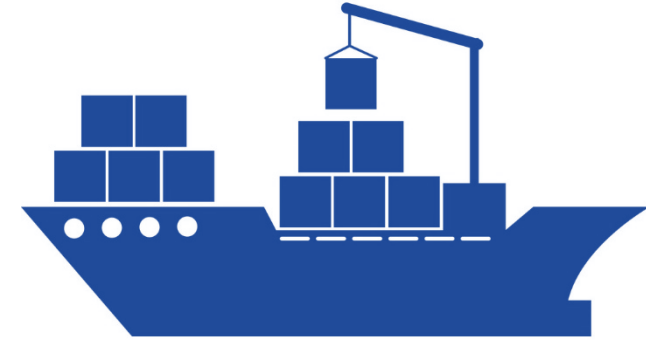
# Mass Meter Deployment





# Unanticipated Global Events

1. COVID-19 Pandemic
2. Meter Supply Chain Disruptions



## Program Impacts

- Schedule extension
- Potential cost increase
- Customer communications plan modifications
- Resolution and agreement updates

## Mitigation Strategy

- Agile, optimized meter deployment planning
- Detailed inventory management
- Deliver customer benefits as soon as possible
- Pursue least cost alternatives

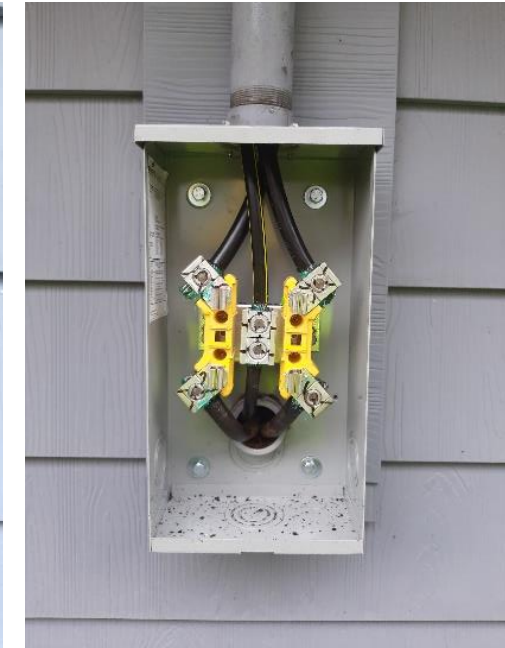
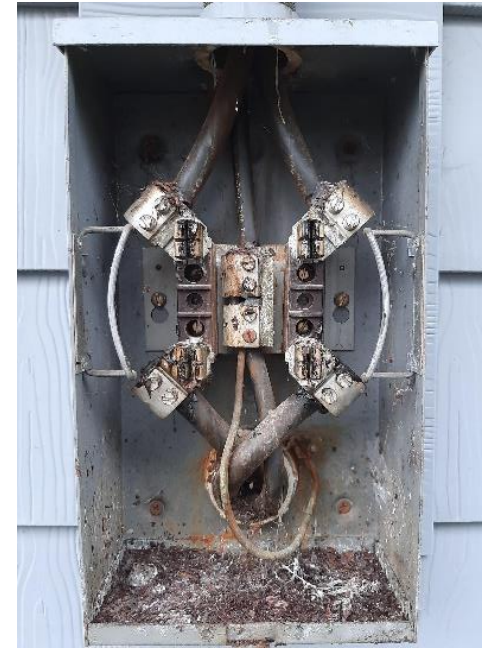
# Meter Deployment Schedule

## Target Completion Timing

- Large commercial, industrial, and solar meter installations
  - No change - on track to complete in 2022
- Residential and small commercial meter installations
  - Now targeted to complete in 2024
  - Dependent on meter supply chain

## Current Focus

- Supply chain mitigations
- Mass meter deployment
- Customer communications
- Monthly billing conversions
- Network hardening



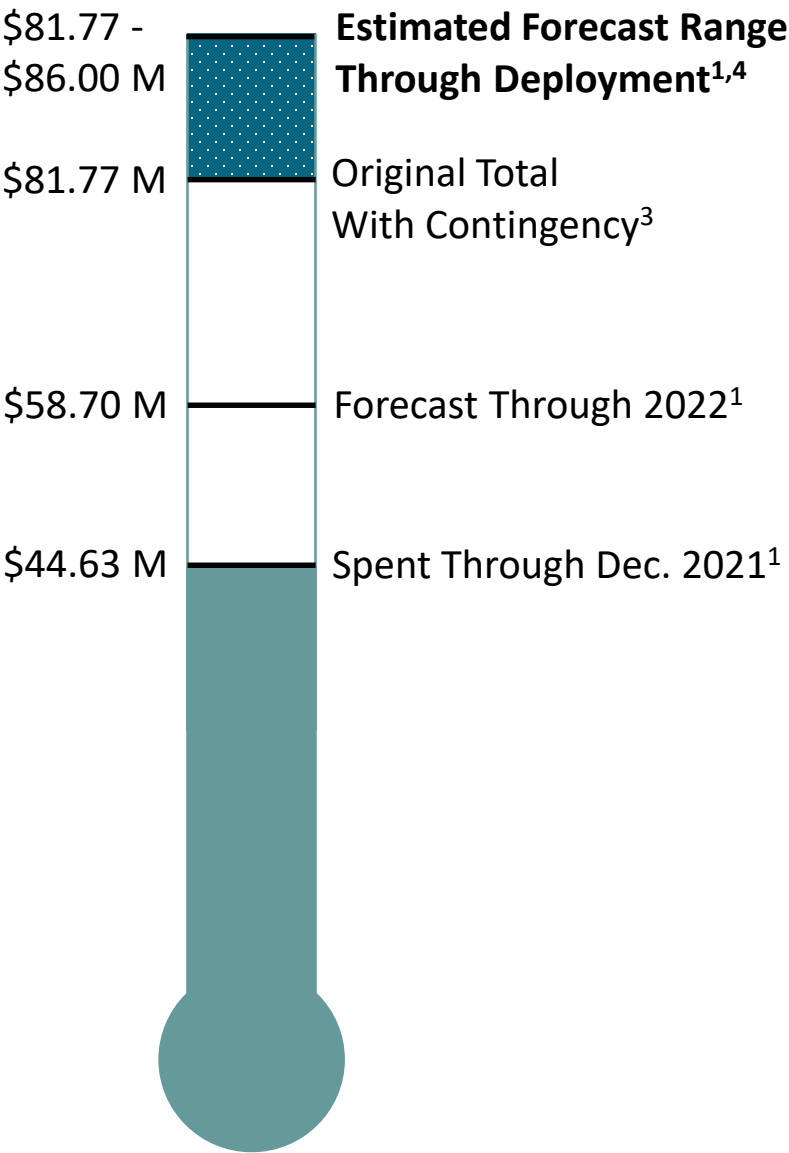
**Example of electric meter with safety issues that were identified and corrected before the AMI meter upgrade.**



# AMI Deployment Budget: February 2022



Updated 2/16/2022



Forecasted Contingency <sup>2</sup>	Amount <sup>1</sup>
Original Contingency <sup>3</sup>	\$11.41 M
Estimated Forecast Range Beyond Original Contingency <sup>4</sup>	\$0 - 4.23 M +0-5%

AMI Program Workstream	Percent Complete <sup>1</sup>
Vendor Procurement	100%
System Integration	95%
Ph. 1 Wireless Communications Network	100%
Electric Meter Deployment	32%
Water Meter Deployment	27%
Communications	65%
Overall	65%

<sup>1</sup>Updated Feb. 2022, includes preliminary actuals through Dec. 2021 and \$2.0M in grant funding.

<sup>2</sup>Contingency is only allocated within the budget forecast, not yet spent.

<sup>3</sup>Feb. 2019 AMI business case values for the period 2018-2022. In addition to business case costs shown, TPU Internal Support Costs are tracked separately and do not incrementally impact rates.

<sup>4</sup>Uncertainty within range is based on supply chain disruptions causing meter inventory shortages. Most likely timeline for receiving full meter shipments again is included in the Deployment Budget forecast: projected as Q4 2022 - Q1 2023. Forecast includes best known assumptions and schedule impacts.

# Customer & Operational Benefits



# Advanced Meter Customer Benefits

Benefits Available As Customers Receive New Meters



Updated 10/6/2021

2020-2021



Monthly Billing



Automated Meter Reading



Expanded Ways to Save:  
Detailed Usage Data on Web Portal



Abnormal Consumption Notifications  
Emergency Water Leak Notifications



Reduced Environmental Impact



Improved Safety



Easier Move In, Move Out,  
& Remote Reconnection



Enhanced Personal Privacy

2022



PrePay for Electric



Enhanced Customer Web Portal



Selectable Bill Due Date



Enhanced Customer Outage Notifications

# As a TPU Customer



## Before

It was hard to understand my energy and water usage.

I received an expensive bill every two months...



## Now with an advanced meter

I can track my energy and water usage weekly, daily, hourly, and more!

My monthly bill is much more manageable!



# Real World Examples



## Customer Access of Usage Data

6,000+ total portal visits

4:46 average time accessing usage data (min:sec)

55% Desktop  
40% Mobile  
5% Tablet



## Proactive Leak Notifications

300+ leaks identified

90% found on water meters  
1" and smaller

84% proactively resolved by  
TPU contacting the customer



## Accelerated Emergency Response

October 2021:  
Remote meter disconnect  
accelerated fire services'  
ability to safely fight a  
residential home's fire  
without risk of electrocution

# Usage Data Via Web Portal



## Service Usage

☐ Power ☒ Water | Meter 23598543 | Date Range: Oct 2019 - Oct 2020  
Period: **SEASONAL** MONTHLY WEEKLY DAILY HOURLY 15 MIN Download

Data: ☐ None ☒ Outside Temperature



## Service Usage

748 Gal = 1 CCF Download

	Water - Gal	Water - CCF
Monthly High Usage	119,680 Gal	160.8 CCF
Monthly Low Usage	65,225 Gal	87.2 CCF
Monthly Average Usage	90,059 Gal	120.4 CCF
Total Usage	1,170,769 Gal	1,565.2 CCF

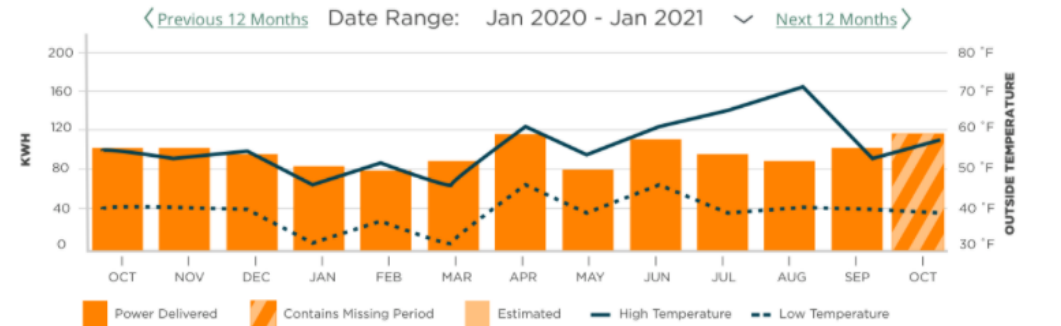
## Outside Temperature

Oct 2019 - Oct 2020

Month	Oct '19	Nov '19	Dec '19	Jan '20	Feb '20	Mar '20	Apr '20	May '20	Jun '20	Jul '20	Aug '20	Sep '20	Oct '20
Average High	61°F	51°F	46°F	45°F	50°F	53°F	58°F	65°F	70°F	75°F	75°F	68°F	62°F
Average Low	44°F	37°F	35°F	33°F	36°F	37°F	40°F	45°F	50°F	53°F	54°F	50°F	44°F

## Service Usage

☒ Power ☐ Water | Meter 23598543 | Period: Month | Data Layer: Temperature  
Jan 2020-Jan 2021, Month Download



+ Commercial Analysis

## Service Usage Summary

	Power
Monthly High	241.4 kWh
Monthly Low	153.2 kWh
Monthly Average	182.3 kWh
13-Month Total	2,369.8 kWh

## Outside Temperature

Month	Oct '19	Nov '19	Dec '19	Jan '20	Feb '20	Mar '20	Apr '20	May '20	Jun '20	Jul '20	Aug '20	Sep '20	Oct '20
Average High	61°F	51°F	46°F	45°F	50°F	53°F	58°F	65°F	70°F	75°F	75°F	68°F	62°F
Average Low	44°F	37°F	35°F	33°F	36°F	37°F	40°F	45°F	50°F	53°F	54°F	50°F	44°F



# As Power and Water Operations



## *Before*

I had limited visibility into real-time power operations...

It was difficult to identify water leaks in the system...



## *Now with advanced metering*

I can ensure a resilient grid through alerts, alarms, and indicators of system health!

I can remotely detect leaks, high flow events, and other system issues!



## Additional Information

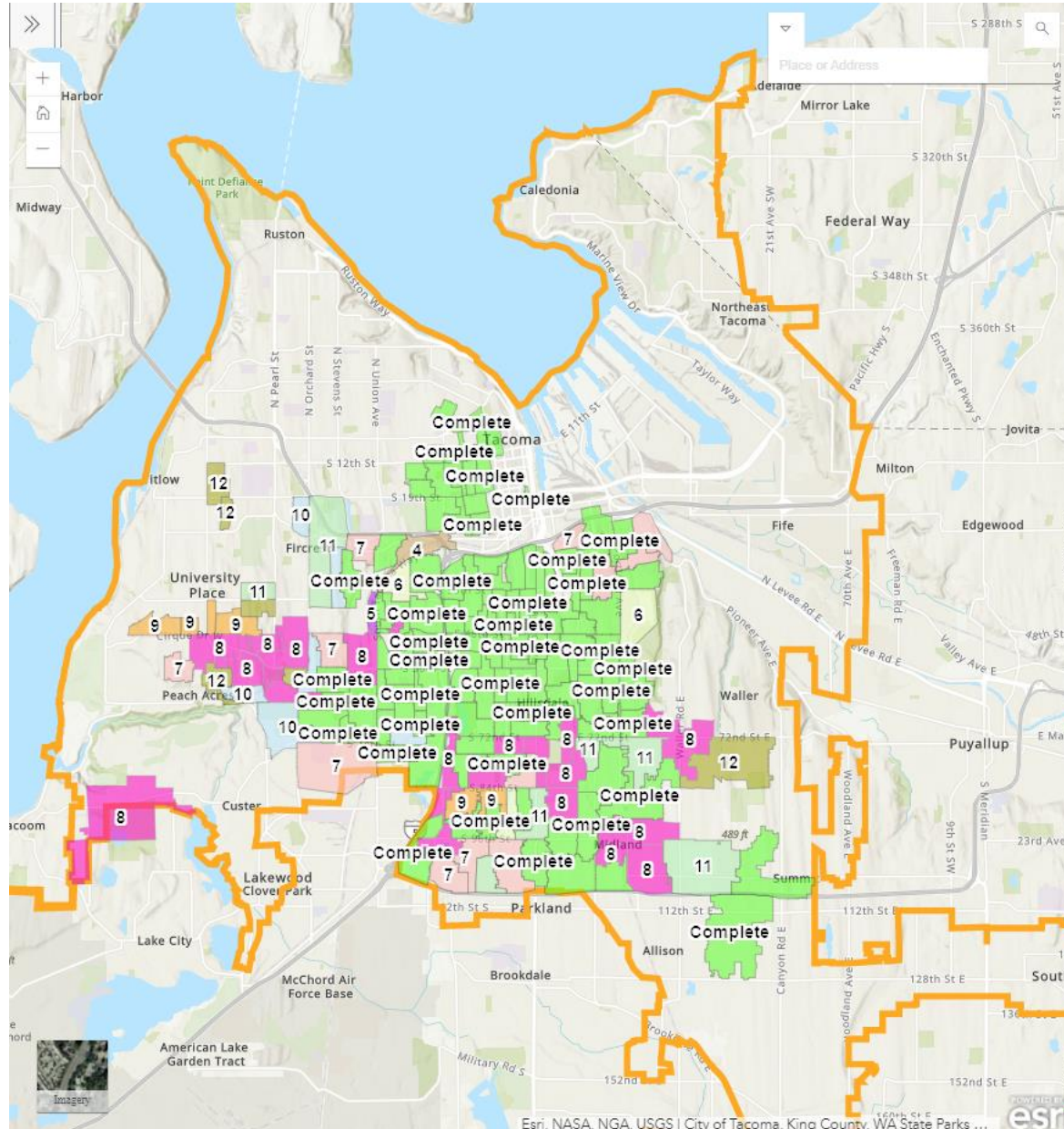
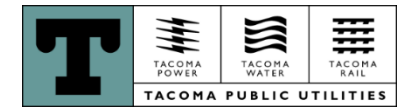
- [MyTPU.org/AdvancedMeters](https://MyTPU.org/AdvancedMeters)
  - Installation Video
  - Deployment Map
  - Program Fact Sheets
  - Program Timeline
  - FAQs - Frequently Asked Questions
  - Public Process
  - Advanced Meter Policies



# Supplemental Slide

- Deployment map and video
- Utility benefits
- Additional budget details
- Rate impact details

# Deployment Map



- Color coded map by install week
- Address searchable
- [MyTPU.org/AdvancedMeters](https://MyTPU.org/AdvancedMeters)

## Video - Meter Installation

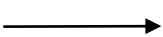




# Advanced Metering Utility Benefits



***Meter Upgrades***



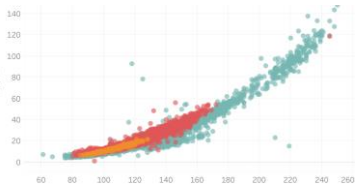
***Metering infrastructure  
needs replacement.***



***Improved Forecasting  
& Modeling***



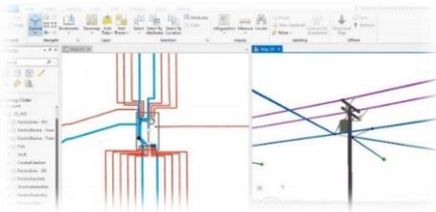
***Better planning  
keeps customer costs low.***



***Improved Asset Management  
& Resiliency***



***More data means TPU can  
maximize existing infrastructure.***



***Improved Operational Efficiency  
& Safety***



***Increased savings  
minimizes the growth of rates.***



# Advanced Metering Deployment Budget



February 2022

Category	Current Forecast <sup>1</sup>
Electric Meter Deployment	\$ 28,757,781
Water Meter Deployment <sup>3</sup>	\$ 21,795,317
Communications Network Deployment	\$ 3,450,207
System Integration	\$ 8,908,380
Capital Internal Labor	\$ 7,259,288
Professional Services	\$ 4,964,792
Operations & Maintenance (O&M) Costs	\$ 8,457,250
AMI Customer Engagement Portal <sup>4</sup>	\$ 250,000
<b>Original Total With Contingency<sup>2</sup></b>	<b>\$ 81,765,443</b>
<b><i>Current Projected Total</i></b>	<b><i>\$ 83,843,015</i></b>
Estimated Forecast Range	\$ 81,765,443 -
Through Deployment <sup>1,5</sup>	\$ 86,000,000

- Approx. \$44,600,000 spent to date (through Dec. 2021)
- Currently in the final phase of a 5 year project
- Forecast range reflects:
  - Disruptions to meter manufacturing and global supply chains
  - Uncertainty in project impacts
  - Best known estimates and assumptions

<sup>1</sup>Updated Feb. 2022, includes preliminary actuals through Dec. 2021 and \$2.0M in grant funding.

<sup>2</sup>Feb. 2019 AMI business case values for the period 2018-2022. In addition to business case costs shown, TPU Internal Support Costs are tracked separately and do not incrementally impact rates.

<sup>3</sup>Complementary budget for replacing end of life water meters is budgeted within the Water Division.

<sup>4</sup>Budget included for AMI specific web portal integration.

<sup>5</sup>Uncertainty within range is based on supply chain disruptions causing meter inventory shortages. Most likely timeline for receiving full meter shipments again is included in the Deployment Budget forecast: projected as Q4 2022 - Q1 2023. Forecast includes best known assumptions and schedule impacts.

# Advanced Metering Rate Impact



## Rate Impact

- A financial impact analysis was completed in 2019 to estimate the customer rate impacts of implementing AMI
  - Estimated impacts reflect the incremental cost to TPU for the project and includes new meters, software, communications equipment, and labor.
- The cost to individual customers remains relatively low, and is **spread over ten years**.
- Costs are already **factored into current rates**.
- Beginning in 2019, the additional cost increase each year for the next ten years is about:
  - 8 cents/month for the avg. residential power customer (\$0.96/year)
  - 11 cents/month for the avg. residential water customer in the City of Tacoma (\$1.32/year) and 13 cents/month outside City (\$1.56/year)

### *Example:*

For the average residential power customer, the additional cost is projected to be about \$0.96 per year in year one, increasing \$0.96 each year to about \$9.60 per year in year ten.

