

## WALLA WALLA CITYWIDE AMI PROJECT ADVANCED WATER-METER INFRASTRUCTURE RETROFIT CASE STUDY



### TODAY'S PRESENTERS

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# AGENDA

- Project background & objective
- Pilot study
- ESPC contracting solution
- Collaborative project development
- Project completion
- Project outcomes & lessons learned
- Q&A Discussion



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3

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# CITY OF WALLA WALLA WATER SYSTEM

Over 33,600 people served by water system

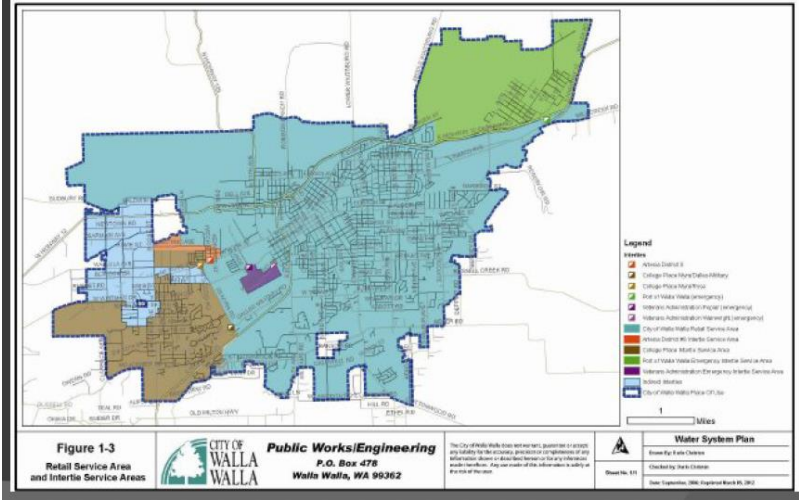
Over 10,000 small meters (3/4" and 1" meters)

Nearly 500 large meters (1.5" to 10")

Over 180 miles of water lines in system

2 meter readers driving over 10,000 miles/yr

## Retail Service Area



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4

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### WALLA WALLA WATER LOSS – PRIMARY PROJECT DRIVER

2014 Water Produced:	3.412 B Gal /Yr
- Accounted for Consumption:	2.408 B Gal /Yr
Annual Non-Revenue Water: (3 yr. running avg = 31.4% water loss)	1.04 B Gal /Yr

WAC 246-290-820 requires less than 10% water loss

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5

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### CITY OF WALLA WALLA – PROJECT HISTORY

- 2006-2010 - Pervasive water loss documented
- 2011 – Bench testing of mechanical meters performed
- 2012 – Pilot study of solid state meters completed

Annual Water Loss

Year	Annual Water Loss (%)
2006	-28
2007	-24
2008	-30
2009	-33
2010	-34

2010 Production (MG)

Category	Value (MG)
Production	2,256
Loss	1,185

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6





# Pilot Study

Building the case





## Meter Testing

$\frac{3}{4}$  & 1" Meters

Manufacturers:  
Sensus, Badger, Neptune, etc.

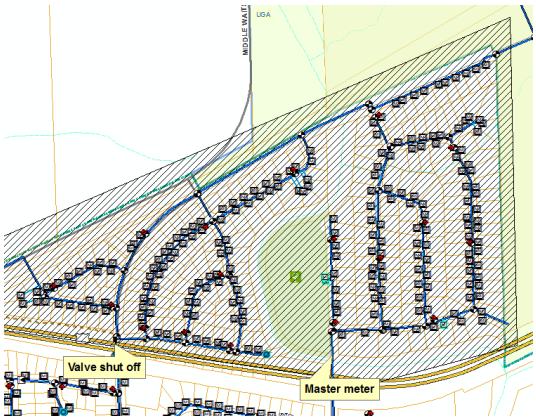
BenchTest: Will they perform  
as advertised?



What do we need to accomplish?

Tasks to be completed

- Identify Study Area
- Meter installation
- Leak detection process
- Leak detection Equipment
- Meter accuracy testing
- Master meter
- Meter box lid evaluation
- Leak repair



Project Study Area

222 meters  
3/4" to 1.5"  
8" Master meter





## Leak Detection & Repair

- Evaluation of leak detection procedures
- General survey
- Correlation of leaks
- Accuracy of equipment
- Pin pointing leaks
- Repair
- Rate of leaks reoccurring



sensus  
reach18

## Meter Replacement

- Replaced all meters in a 3 day period
- Plastic meter threads evaluation



sensus  
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# Meter Box Lid Evaluation

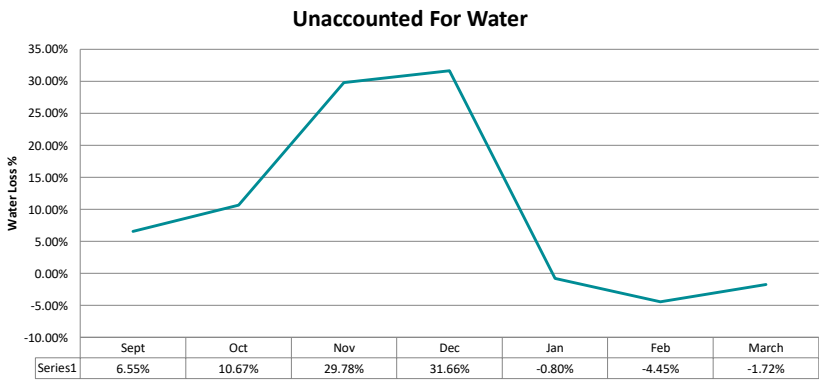
Will SmartPoints operate normally  
in all meter box lid materials?



Concrete  
Plastic  
Aluminum  
Cast Iron  
Steel



# Proof of Concept



## Towers

Lattice Tower



Wood Pole



sensus  
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## Lessons Learned

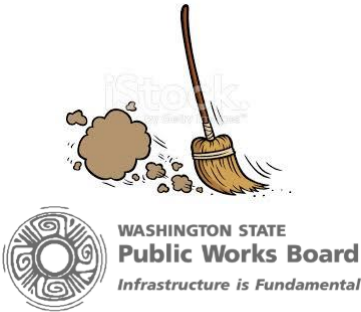
- Converted units of measure from CF to gallons
- SmartPoints did not fit all lids (concrete)
- Recreational grade GPS was not sufficient
- ESCO contract
- Adequate staffing
- System administrator in place day one

sensus  
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CITY OF WALLA WALLA – PROJECT HISTORY

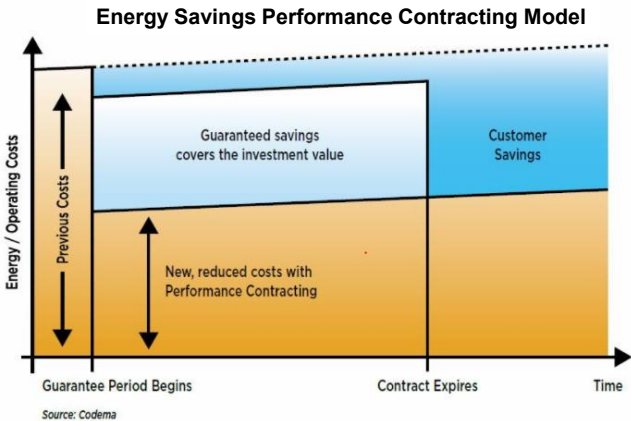
- 2006-2010 - City documented pervasive water loss problem
- 2011 – Bench testing of mechanical meters performed
- 2012 – Pilot study of solid state meters installed
- **2014 – Funding application to Public Works Trust**
  - Qualified #1 for funding of \$5,962,746
- **2015 July – PWTF is swept, project on hold**
- **2015 Aug – City reconsiders as efficiency project**



ESPC – PAYING FOR PROJECTS FROM SAVINGS

Develop cash-flow neutral projects  
Seek comprehensive deep energy retrofits  
Many funding sources available:

- Energy and water savings
- Maintenance cost savings
- Utility incentive programs
- Government grant programs
- Financing programs



## Legislative Authority

### RCW 39.04.170

- This chapter shall not apply to performance-based contracts

### RCW 39.35C.020(2)

- The department shall assist state agencies and school districts in identifying, evaluating, and implementing cost-effective conservation projects at their facilities (to include) providing technical and analytical support, including procurement of performance-based contracting services

### RCW 39.35A.040

- If a municipality chooses, by resolution or other appropriate mechanism, to negotiate a performance-based contract under this chapter, no otherwise applicable statutory procurement requirement applies



## ESPC Benefits

- Facility owner involved with subcontractor and equipment selection
- Low bid acceptance is not required
- Maintenance costs are reduced
- Positive cash flow over the measure life
- Funding available through the State Treasurer
- DES has over 30 years of successful performance contracting experience



## ESPC Guarantees

- **Maximum project cost** – not to exceed cost unless owner directed scope addition
- **Minimum resource savings** – Measurement and Verification of savings is included in the contracting
- **Equipment performance** – Measures must provide the comfort and utility expected



## Qualifying Project Types

### Energy, Water and Sewer saving projects such as:

- ▶ Lighting projects – lamps, ballasts & fixtures
- ▶ HVAC modifications
- ▶ System metering
- ▶ Boiler & chiller systems
- ▶ Energy management control systems
- ▶ Buildings and grounds water conservation
- ▶ Street and highway lighting
- ▶ Solar installations



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- 2015 July – PWTF is swept, project on hold
- 2015 Aug – City reconsiders as efficiency project
- **2015 Nov – City engages *Energy Savings Performance Contract (ESPC)* process through DES**
  - **Water conservation is a qualifying efficiency measure**
  - **Investment Grade Audit begins**
  - **Energy Services Proposal developed**

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### ESPC COLLABORATIVE APPROACH (ESCO MODEL)

Single source accountability of ESCO  
Turn-key projects with Owner control  
DES oversight & contract administration  
Open book pricing & prescribed soft costs  
Investment Grade Audit required  
Client selects preferred solutions  
Public procurement rules fulfilled  
Commissioning and operator training included  
Measurement & Verification of savings

**ESCO *guarantees* project costs, resource savings and systems performance**

**ESPC is nimble, transparent, cost effective & very low risk**

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### AMI CAN RESOLVE MANY PROBLEMS



#### OPERATIONAL EFFICIENCY

- Optimized & efficient meter reading
- Prioritize workload
- Reduce unnecessary truck rolls
- Remote connect/disconnect
- Diminish need for rate increases



#### CUSTOMER ENGAGEMENT

- Provide data to CSRs to improve customer service
- Reduce call times
- Deploy customer web portal
- Customer leak notifications
- Improved billing & collections



#### COST CONTAINMENT

- Reduce unauthorized use, theft & tampering
- Lower leak adjustments and bad debt
- Continuous monitoring to prevent future occurrences
- Identify, prioritize & take action



#### WATER EFFICIENCY

- Reduce non-revenue water
- Enhanced distribution leak detection
- Identify "stopped" meters or inaccurate meters for replacement
- Manage and measure conservation program
- Theft



#### METERING SERVICES


- Improve water meter accuracy
- Eliminate unbilled consumption
- Manage and maintain metering assets
- Manage growth

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25


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### KEY PROJECT DRIVERS FOR WALLA WALLA




#### OPERATIONAL EFFICIENCY

- **Optimized & efficient meter reading**
- Prioritize workload
- Reduce unnecessary truck rolls
- Remote connect/disconnect
- Diminish need for rate increases




#### CUSTOMER ENGAGEMENT

- Provide data to CSRs to improve customer service
- Reduce call times
- Deploy customer web portal
- **Customer leak notifications**
- **Improved billing & collections**




#### COST CONTAINMENT

- Reduce unauthorized use, theft & tampering
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- Continuous monitoring to prevent future occurrences
- **Identify, prioritize & take action**



#### WATER EFFICIENCY

- **Reduce non-revenue water**
- **Enhanced distribution leak detection**
- Identify "stopped" meters or inaccurate meters for replacement
- **Manage and measure conservation program**
- Theft

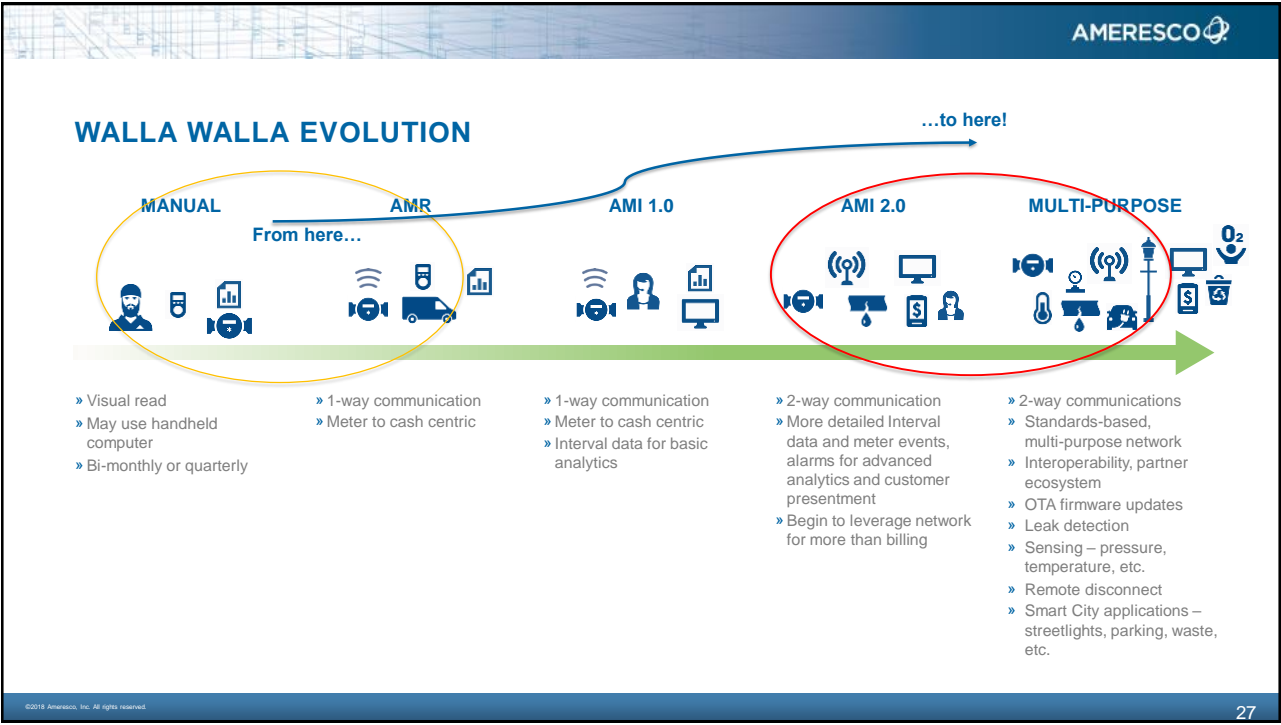


#### METERING SERVICES

- **Improve water meter accuracy**
- **Eliminate unbilled consumption**
- Manage and maintain metering assets
- **Future addition of LED Streetlight wireless controls**

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26






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- 2015 Nov – City engages ESPC process through DES
  - Investment Grade Audit begins
  - Energy Services Proposal developed
- **2016 June 21<sup>st</sup> – ESPC contract signed for Guaranteed Maximum of \$5,290,666**
  - **Lower price included same technology, similar scope, more services + ESPC guarantees**



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29

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### ESCO PROVIDES TURN-KEY SOLUTION

DESIGN

INSTALL

GUARANTEE



Proven project methodology

Collaborative Project Development

No Change-orders

Arrange Financing

Client Selects Preferred Vendors

DES Oversight

Expedite Resource Savings

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30

15

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- 2016 June 21<sup>st</sup> – ESPC contract signed for Guaranteed Maximum of \$5,290,666
  - Lower price included same technology & scope, more services + ESPC guarantees
- **2018 January 1 – Commencement of year 1 M&V begins**
  - **Project completed under budget**
  - **Deductive Change Order of \$25,718 returned to City**



BENEFITS TO CITY OF WALLA WALLA

- Improving non-revenue water loss
- Real time data enables leak detection and repair
- 2 FTE reassigned to leak detect & repair
- Working towards WAC 10% water loss requirement
- Reporting to improve efficiencies across the utility and reduce costs
- Improved customer service
- Proactive water management
- Advances city's environmental sustainability
- FlexNet is ready for streetlight controls
- ESPC contract and oversight by DES
- Firm project costs - NO change-orders to City
- Procured additional equipment *and* got Deductive C/O



Q&A DISCUSSION



THANK YOU



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