

From Paper-Based Processes to a Digital & Connected Utility

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City of Riverside, Public Utilities

Conference Theme & Keywords

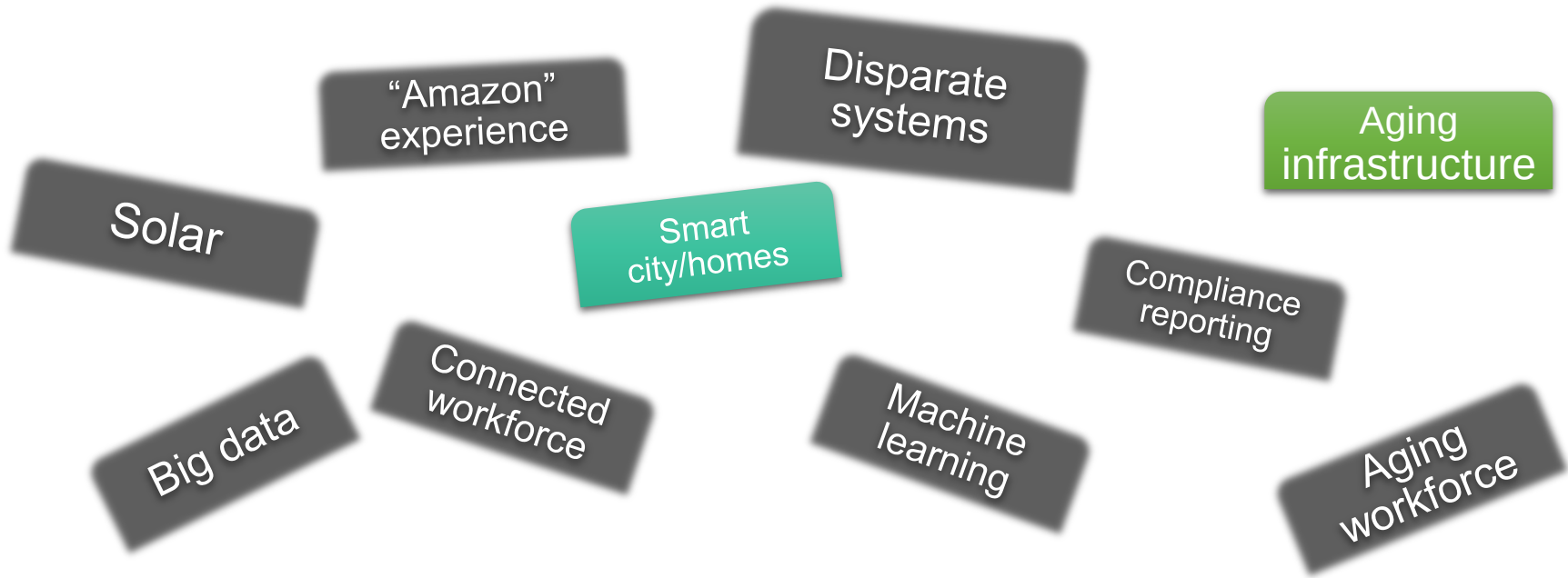


About Riverside Public Utilities

- Riverside Public Utilities is a consumer-owned water and electric utility
- Established in 1895
- Southern California
- Approximately 120,00 Customers

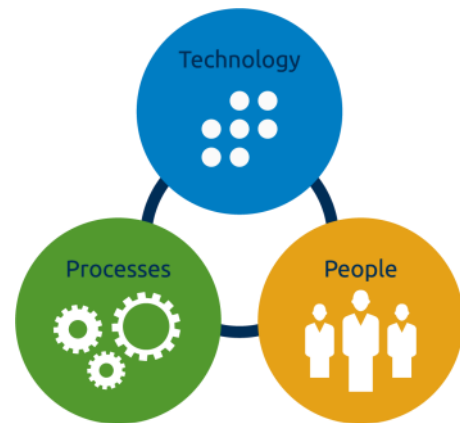


Business Challenge

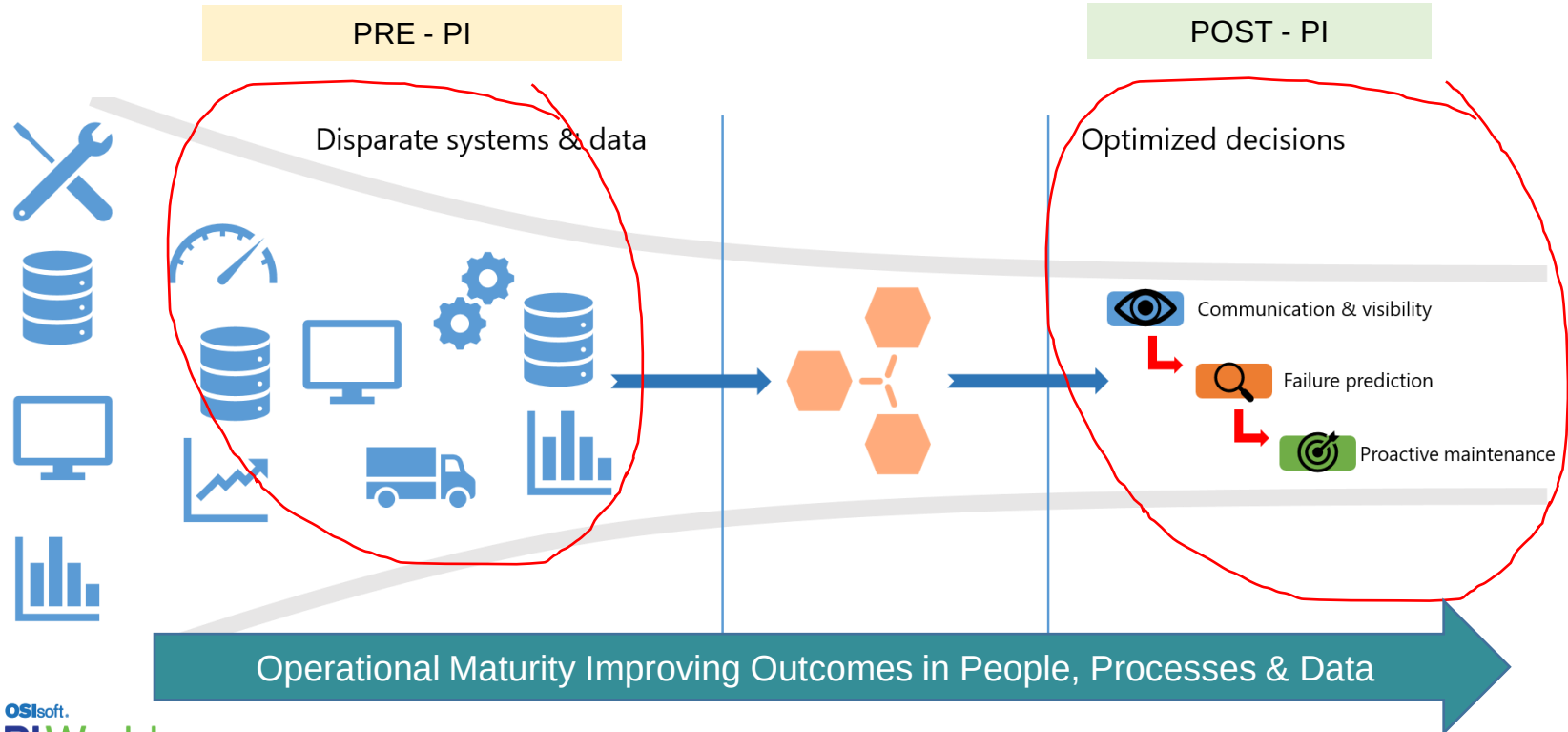


Our Goals

1. Digital and **connected** utility
 - Connect people, processes and data across the utility
2. More **visibility** into our system
 - Transform data into **information**
3. **Actionable** intelligence
 - Empower the business units through technology to make better business decisions

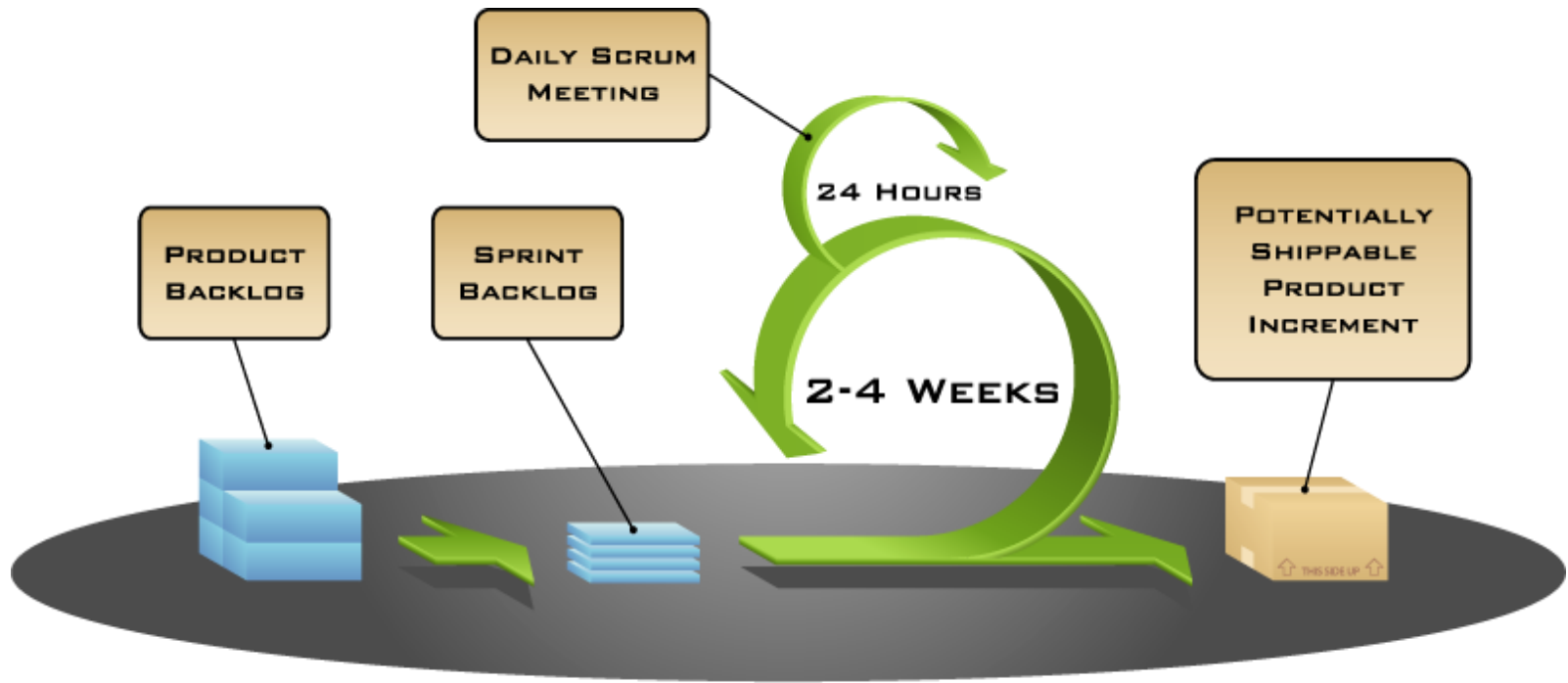


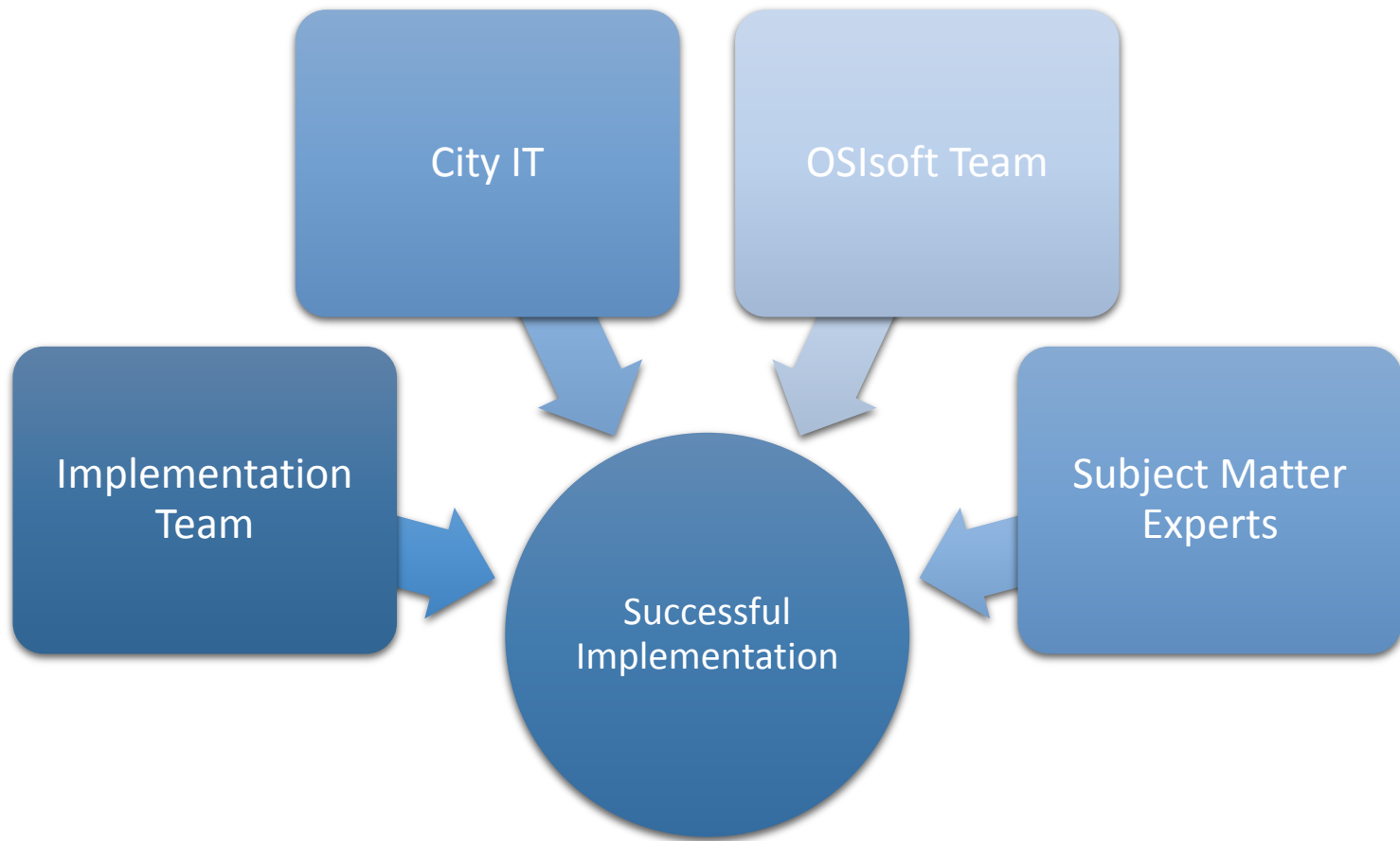
Current State vs. Future State



Implementation Details

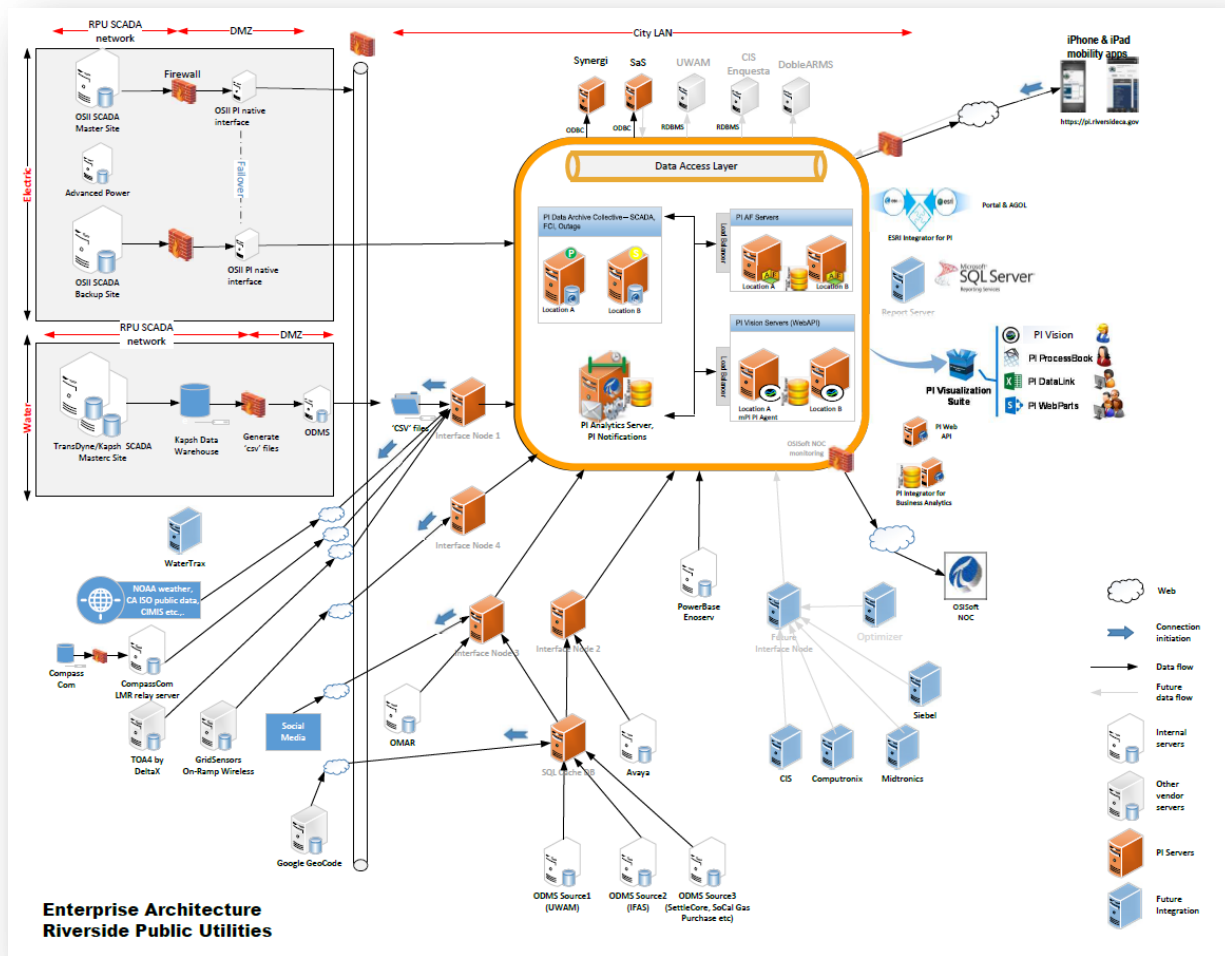
- Enterprise Agreement July 2016
- System implementation October 2016
- Utilized an Agile Project Management approach
- Delivered a product/solution every 4-6 weeks (sprint methodology)
- Coordinated sprint schedule with subject matter experts
- OSIsoft's Network Operations Center (NOC)
- Internal monitoring
- Strong relationship and partnership with IT







- Significant planning up front
- Buy-in and engagement
- Change management
- Strategic partnership with OSI and IT





IFAS

- Financial data



SAS & Synergi

- Planning analytics tool



Oracle UWAM

- Work order and asset management data



GIS

- Changing the way our field crews work
- Enhancing decision-making



Grid Sensors

- More visibility into outages
- Faster response times



Other

- Weather, CAISO & spreadsheets

PI SYSTEM



Outage Mgmt

- Outage data
- Automated analytics & reports



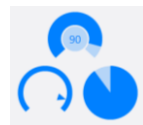
Substation Data

- Equipment alarms
- Ability to prevent equipment failure
- Condition-based maintenance



Electric & Water SCADA

- System alarms
- Events



Land Mobile Radio

- Vehicle location



Product Suite Overview

- PI Data Archive
- PI Asset Framework
- PI Vision – Primary visualization tool
- PI DataLink
- PI Analytics
- PI Event Frames
- PI Notifications
- PI Interfaces & PI Connectors
- PI Integrator for Esri 1.0 (now 2.0)
- Custom landing page / gallery style launch page (ASP. NET web application)

The Results



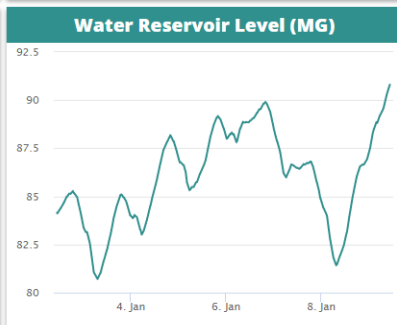
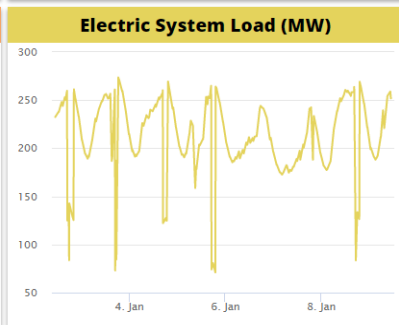
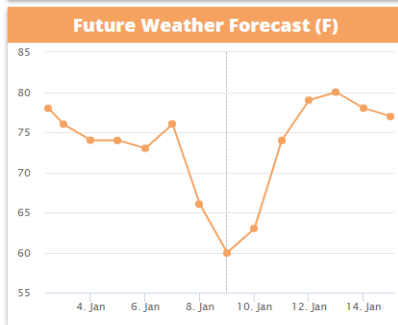
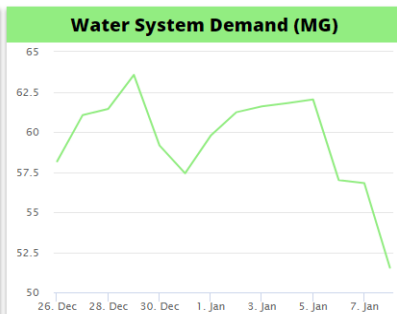
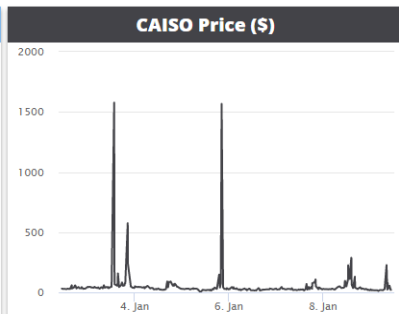
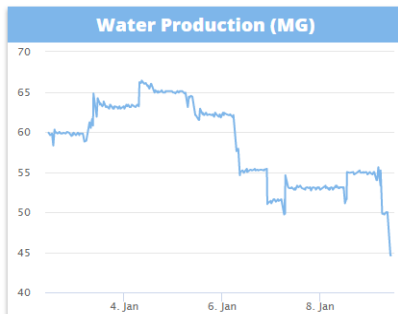
RPU PI

Water | Energy | Life

- Home
- All
- Most Popular
- Utility KPIs
- Division
 - Customer Relations
 - Electric
 - Finance
 - Operational Technology
 - Power Resources
 - Water
- Popular Tags
 - Map
 - Repairs
 - Work Order
 - Field
- Links
 - Utility 2.0
 - Riverside 2.0
 - Create PI Display

- RPU Website
- RPU Intranet
- City Website
- City Intranet
- Map Gallery
- Search PI
- OMAR
- Help
- Admin

January 9, 2018



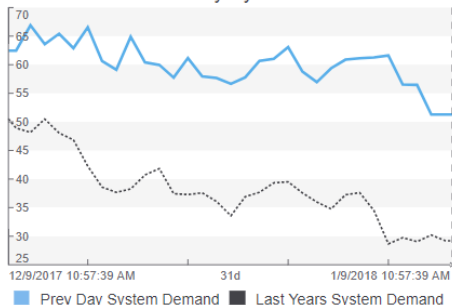
New Water Services 441 December 2017	New Electric Services 1,378 December 2017
Electric Outages 0	Current Weather 54 °F
Social Media Feeds	
RT @riversidecagov: Fire at the Santa Ana Riverbottom near Mission Inn Avenue. Mandatory evacuations are in place. The evacuation center is... by @RPUnews on 12/21 at 12:58 PM	
RT @rpueducation: Here's a quick tip: If you have a furnace, fireplace or gas heater, have them serviced regularly to prevent deadly fumes... by @RPUnews on 12/21 at 12:57 PM	
Todd Jorgenson Named Interim General Manager at Riverside Public Utilities. Full Press Release: Link Link by @RPUnews on 12/14 at 4:14 PM	
View More >	



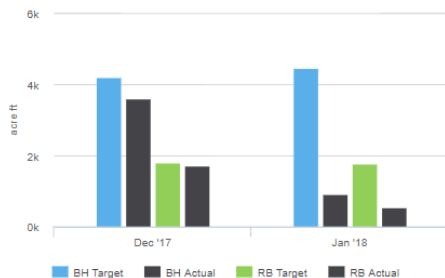
Water Operations Dashboard

Home / Water / Water Operations

Cumulative Daily System Demand



Monthly Bunker Hill & Riverside Groundwater Production Target vs Actual (AF)



Today's High Temp Forecast

60 F

Today's Current Temperature

54 F

Current Water Production

44.5MGD

YTD Prod. Potable Water 2018

492.7 MG
% Diff 76.0▲

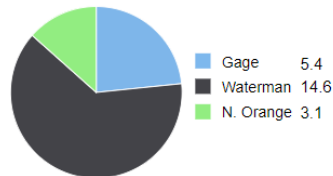
2017

279.9 MG

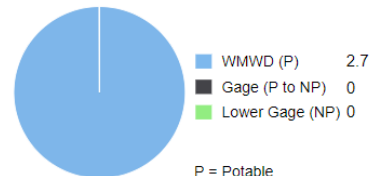
Total 2017

23.4 BG

Production (MG) by Transmission Line

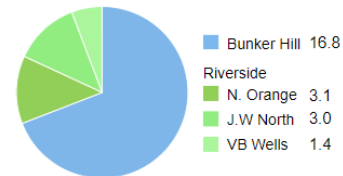


Water Delivery (MG) Potable & Non Potable

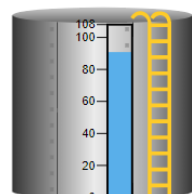


P = Potable
NP = Non Potable

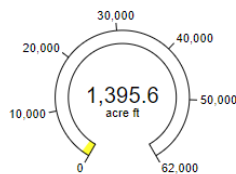
Potable Production (MG) by Basin



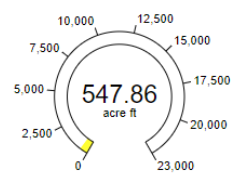
Reservoir Level 90.8 MG



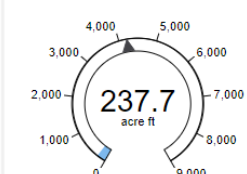
Bunker Hill Production Target = 61,898 acre feet



Riverside Production Target = 22,245 acre feet



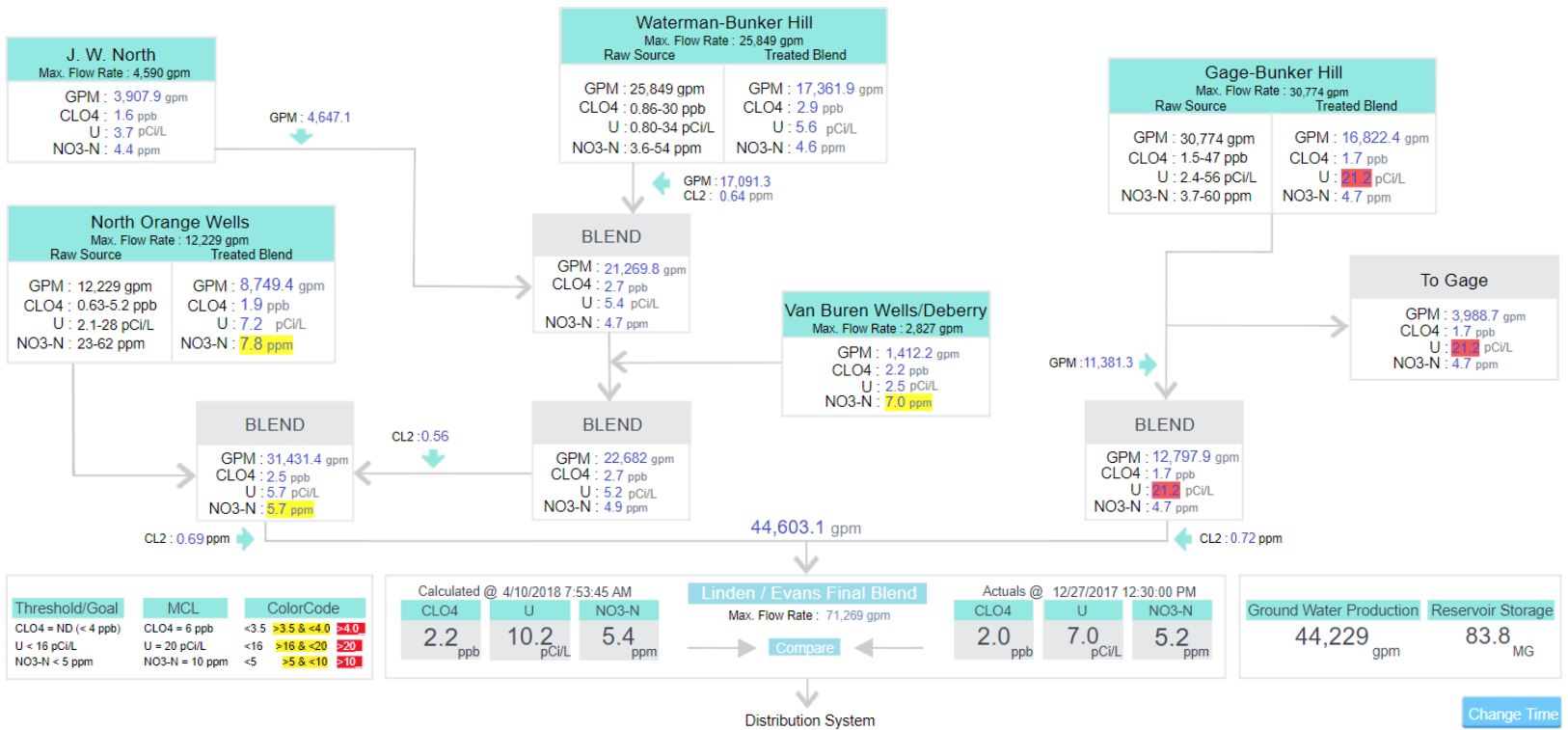
WMWD Potable Delivery Target = 8,008 acre feet



■ Wheeled Water: 4208 Rolling Total: 0

Real-Time Blend Summary Dashboard

[Home](#) / [Water](#) / [Blend](#)



Real-Time Blend Summary Dashboard

Home / Water / Blend

J. W. North
Max. Flow Rate : 4,590 gpm

GPM : 3,907.9 gpm
CLO4 : 1.6 ppb
U : 3.7 pCi/L
NO3-N : 4.4 ppm

North Orange Wells
Max. Flow Rate : 12,229 gpm

Raw Source	Treated Blend
GPM : 12,229 gpm	GPM : 8,749.4 gpm
CLO4 : 0.63-5.2 ppb	CLO4 : 1.9 ppb
U : 2.1-28 pCi/L	U : 7.2 pCi/L
NO3-N : 23-62 ppm	NO3-N : 7.8 ppm

BLEND

GPM : 31,431.4
CLO4 : 2.5 ppb
U : 5.7 pCi/L
NO3-N : 5.7 ppm

CL2 : 0.69 ppm

Threshold/Goal	MCL	ColorCode
CLO4 = ND (< 4 ppb)	CLO4 = 6 ppb	<3.5 >3.5 & <4.0 >4.0
U < 16 pCi/L	U = 20 pCi/L	<16 >16 & <20 >20
NO3-N < 5 ppm	NO3-N = 10 ppm	<5 >5 & <10 >10

Flow Rates(gpm) within the rectangular boxes are sum of production at well sites.

U – Uranium
NO3 – Nitrate
CLO4 – Perchlorate

GPM - Gallons per minute
ppb - parts per billion
ppm - parts per million
pCi/L - Picocuries per liter (The curie (Ci) unit is the activity of 1 gram of pure radium 226)

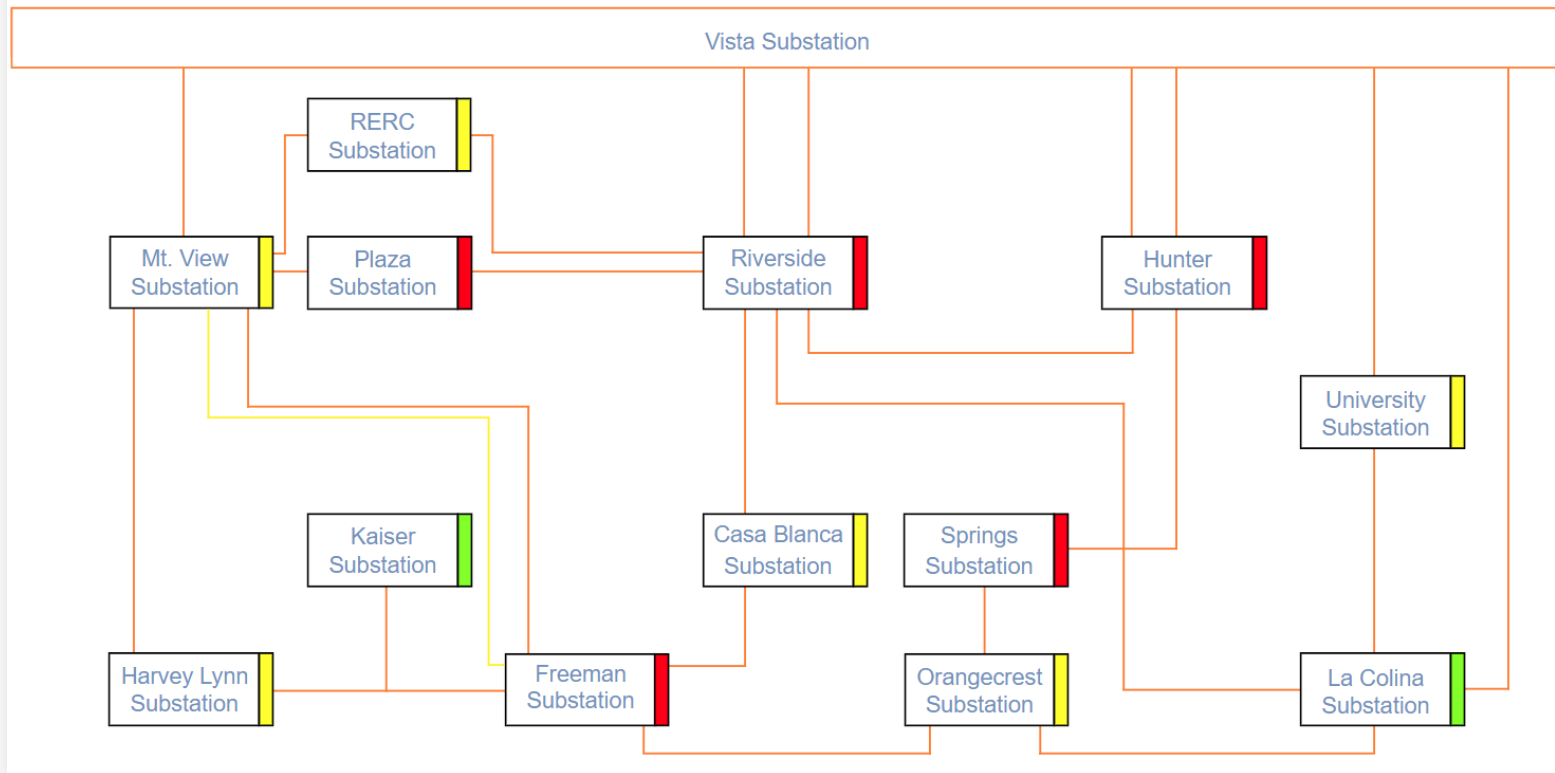
If you have any questions or concerns, please email PIsupport@RiversideCA.gov

CLO4	U	NO3-N	Max. Flow Rate	CLO4	U	NO3-N
2.2 ppb	10.2 pCi/L	5.4 ppm	71,269 gpm	2.0 ppb	7.0 pCi/L	5.2 ppm

Distribution System

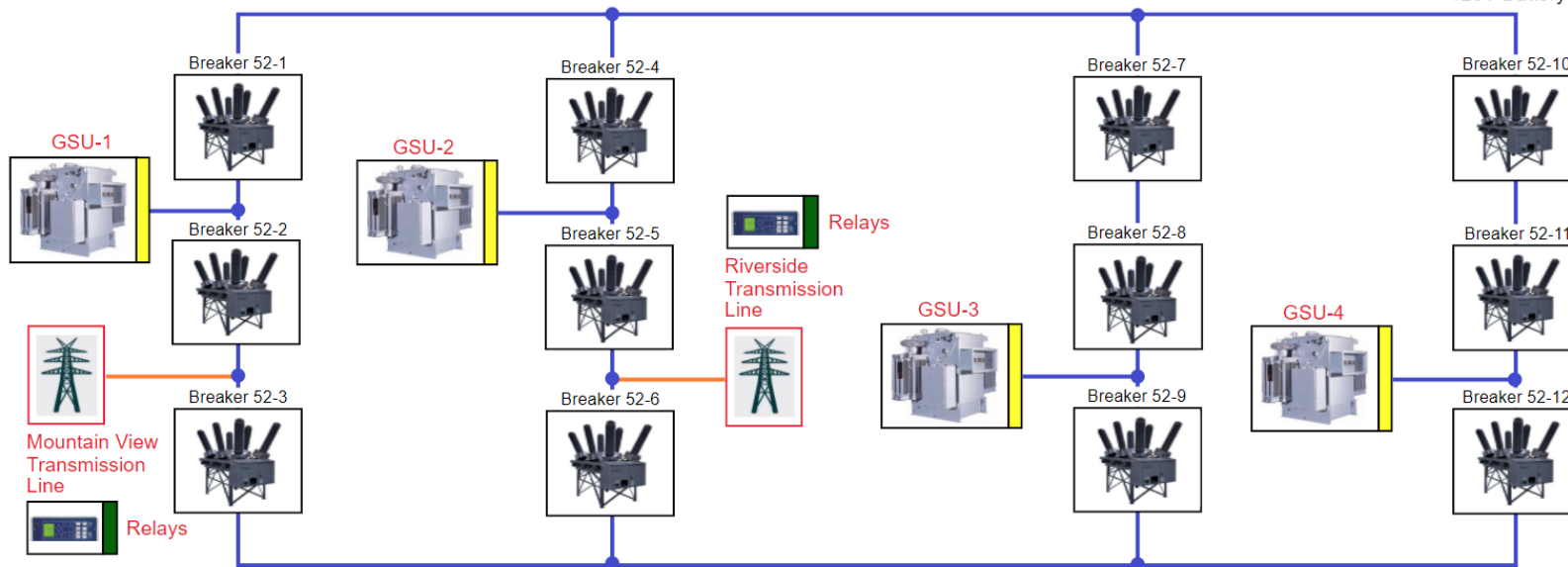
Ground Water Production	Reservoir Storage
44,229 gpm	83.8 MG

Change Time



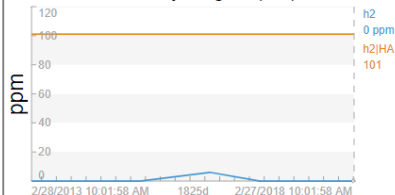


125V Battery

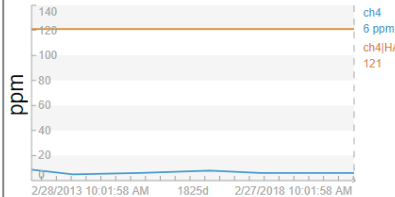


Disolved Gas Analysis

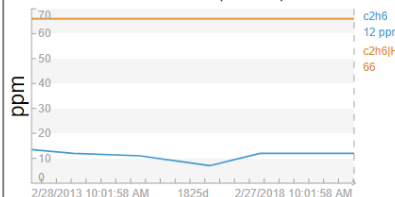
Hydrogen (H2)



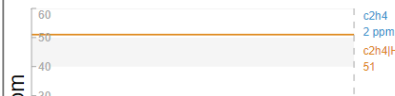
Methane (CH4)



Ethane (C2H6)

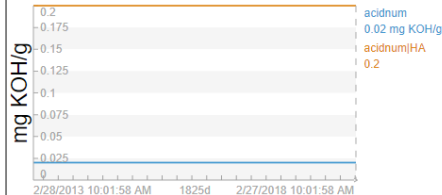


Ethylene (C2H4)

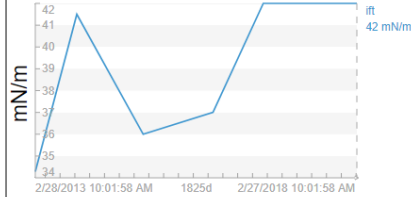


Oil Analysis

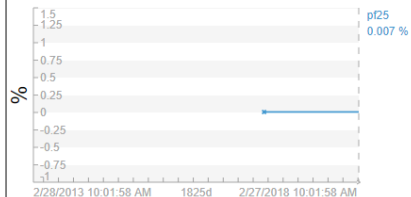
Acidnum



IFT



PF25

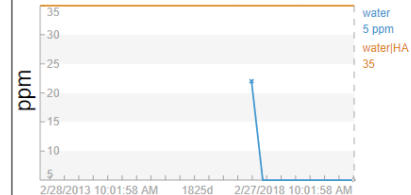


PF100

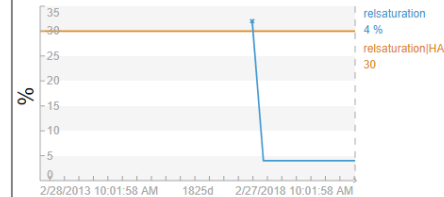


Moisture Analysis

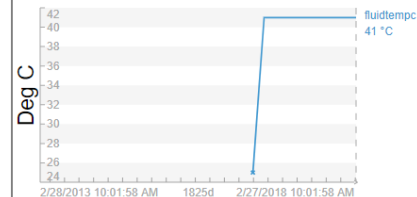
Moisture (Water)

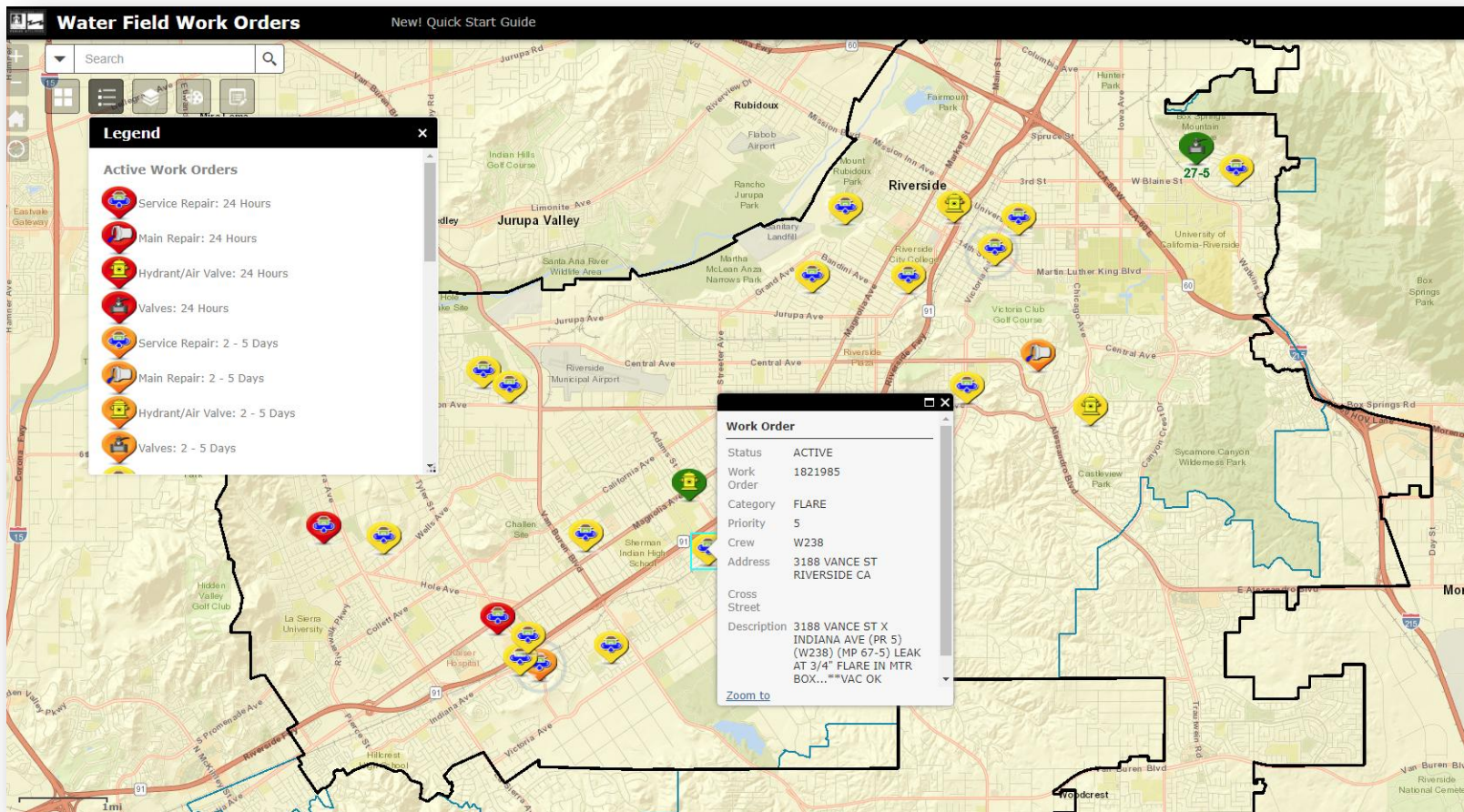


Relative Saturation



Fluid Temperature





Outage Map

Current Temp.
50

Forecasted Low
39

Forecasted High
53

Outages
0

Customers
0

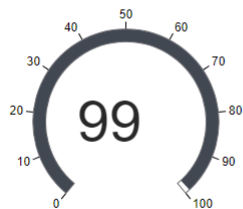
Customer Mins Out
0





Tuesday, Mar 13 2018 3:22 PM

Weather : 72 °F Overcast



% Calls
Answered

Calls In Queue

0

Agents Available

1

Total Calls

747

Oldest Call Waiting

00:00

Avg Handle Time

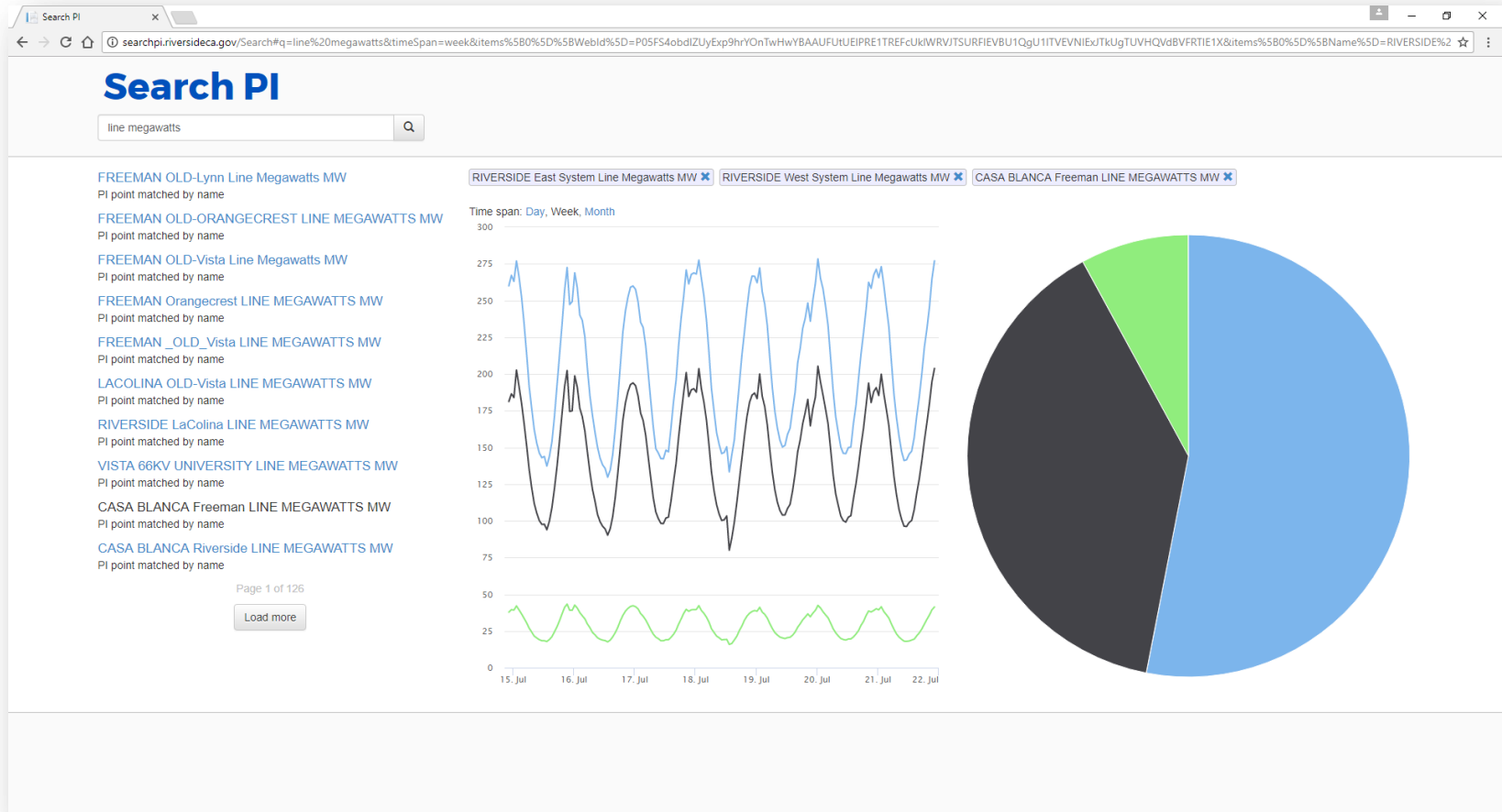
1:16

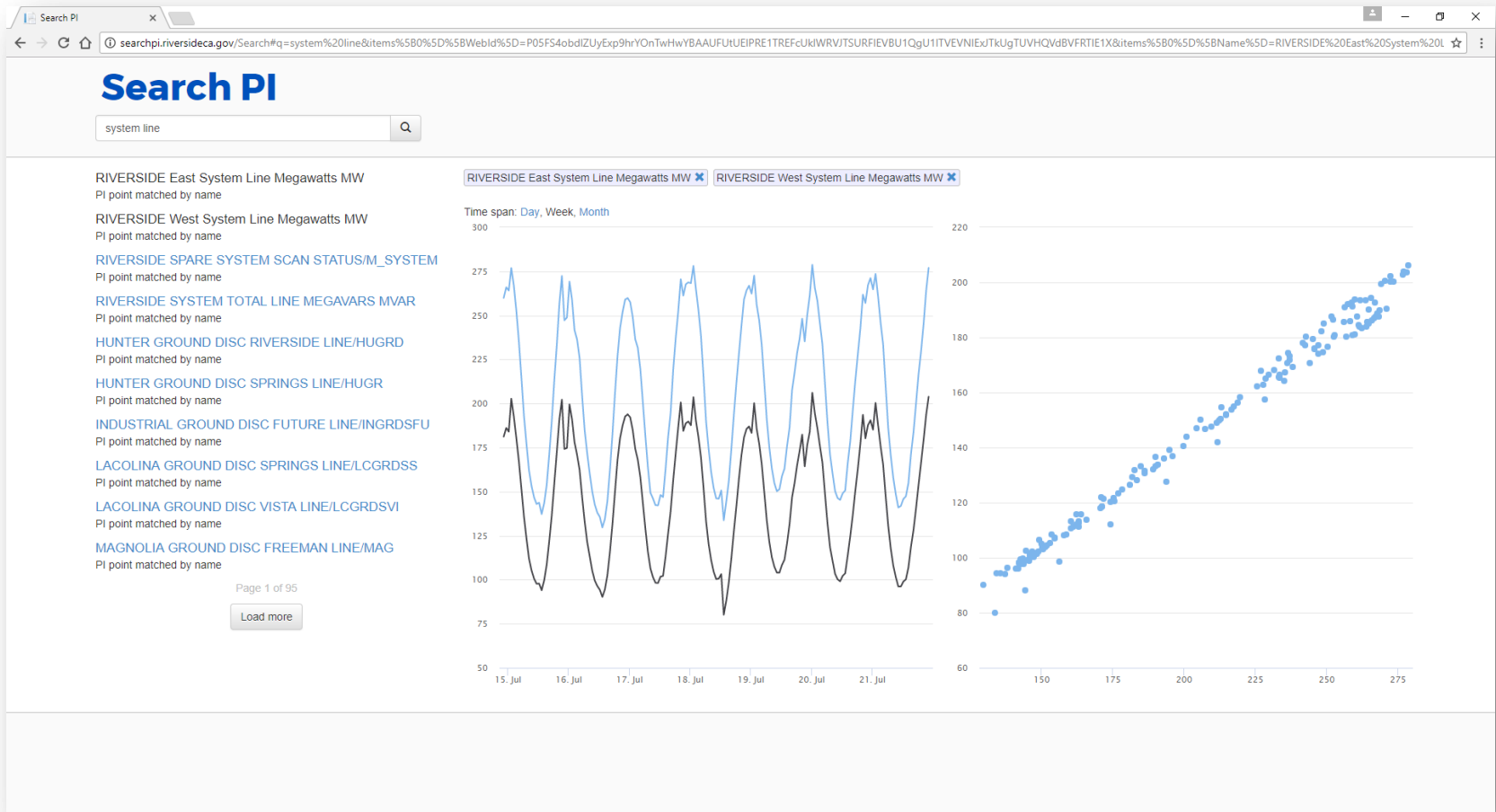
Team	CIQ	OCW	Staff	OnCall	Avail	UnAvail	AnsTime
Residential	0	:00	26	6	1	17	:01
Business	0	:00	22	0	1	14	:00
Spanish	0	:00	8	1	1	6	:19

Last updated : 3/13/2018 3:22:20 PM

Search PI

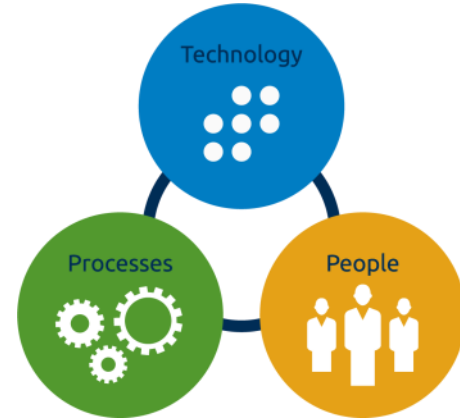






Accomplishments

1. Digital and **connected** utility
 - Connect people, processes and data across the utility
2. More **visibility** into our system
 - Transform data into **information**
3. **Actionable** intelligence
 - Empower the business units through technology to make better business decisions

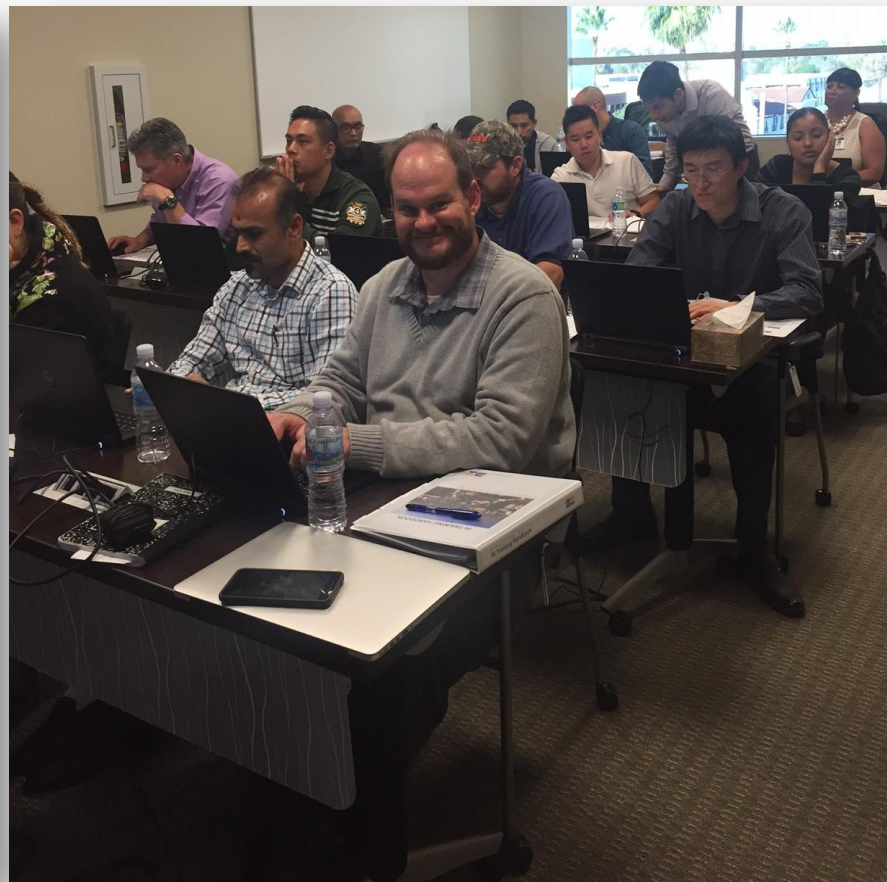


Change Management

- Make PI part of the “culture”
- Tone from the top (executive leadership and sponsorship)
- Tell them what you told them, tell them, tell them again
- Identify champions (managers and staff)
 - Let them spread the message for you
- Realize value as quick as possible
- Simplify the message
- Solicit feedback

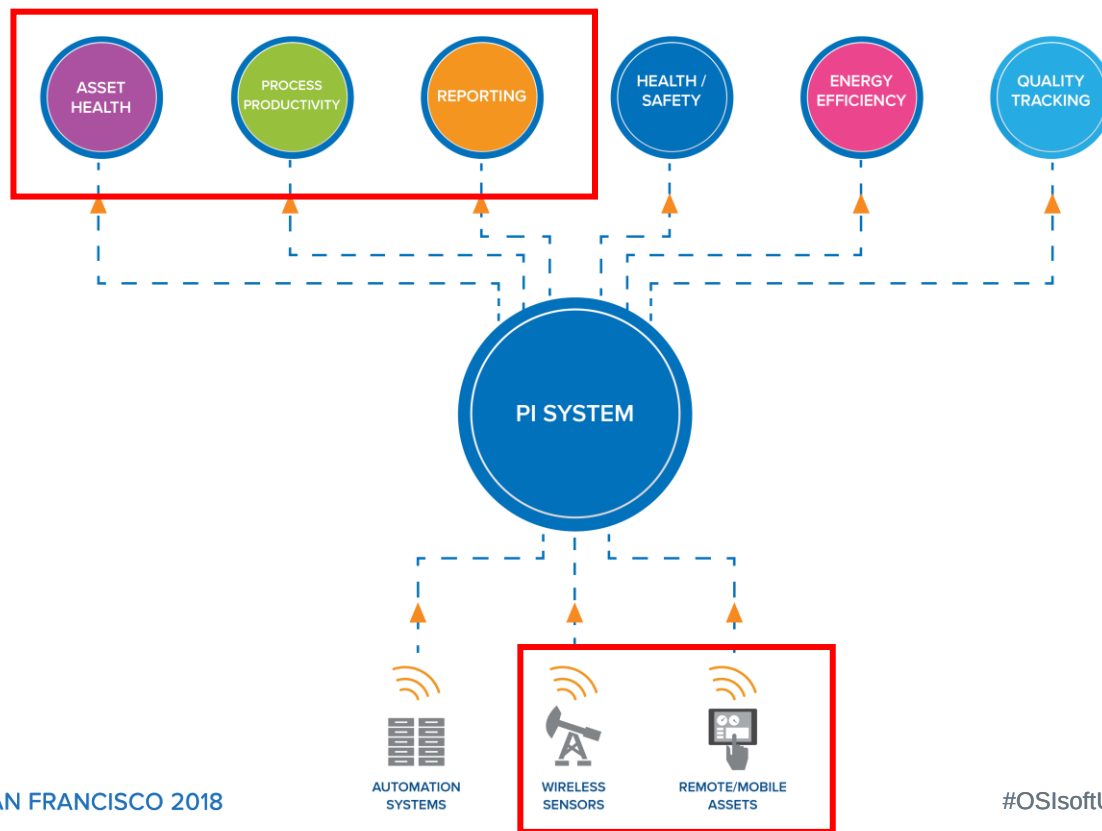








What's Next



What's Next



SMART
PARKING



WEATHER
SENSORS



DIGITAL
SIGNAGE



ACOUSTIC
SENSORS



WATER & GAS
METERING



TRAFFIC
LIGHTS &
CONTROLS



ELECTRIC
VEHICLE
CHARGING



SOLAR
INVERTERS



SECURITY AND
SURVEILLANCE



WASTE
MANAGEMENT

Summary



Company Goal:

Riverside Public Utilities is a consumer-owned water and electric utility established in 1895. Our goal was to create a **digital and connected utility** and turn data into **actionable intelligence**, ultimately *improving reliability and customer experience*.



CHALLENGE

Disparate systems, people-dependent processes, low visibility into systems and performance.

- It would take staff 8 or more hours per week to compile data and produce reports.
- Forcing management to be reactive and not allowing a proactive culture.

SOLUTION

The implementation of PI connected over 10 enterprise systems and applications, automated processes and streamlined reporting.

- Connected systems, people and processes.
- Turned data into actionable intelligence.

RESULTS

PI created a cultural shift within the organization – connected systems, people and processes. A digital and connected utility.

- Estimating a ROI of over \$3M in 3-5 years from process automation alone.
- Significant savings in staff time.
- Shifted to a data-driven and transparent utility.

City of Riverside, Public Utilities



CJ Smith, MPA, PMP

cjsmith@riversideca.gov

Project Manager

City of Riverside, Public Utilities

Questions

Please wait for the **microphone** before asking your questions

State your **name & company**



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search **OSISOFT** in the app store

Merci

谢谢

Спасибо

Danke

Gracias

Thank You

감사합니다

ありがとう

Grazie

Obrigado