

*Arts & Innovation*

## The Operational Data Management System (ODMS) Project

Board of Public Utilities  
May 9, 2016

[RiversidePublicUtilities.com](http://RiversidePublicUtilities.com)

## Presentation Overview

1. Background
2. Related Board Actions
3. Project Overview
4. Fiscal Impact
5. Board Action

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## Board Action

- Approve the Enterprise Agreement with OSISOFT, LLC and authorize the City Manager or his designee to execute the agreement in the amount of \$2,079,832;
- Approve the Professional Services Agreement with Industrial Evolution and authorize the City Manager or his designee to execute the agreement in the amount of \$698,000;
- Approve Work Order No. 1619634 in the amount of \$3,556,307; and
- Reduce Work Order No. 1424073 from \$4,430,427 to \$2,530,400.

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# 1. Background

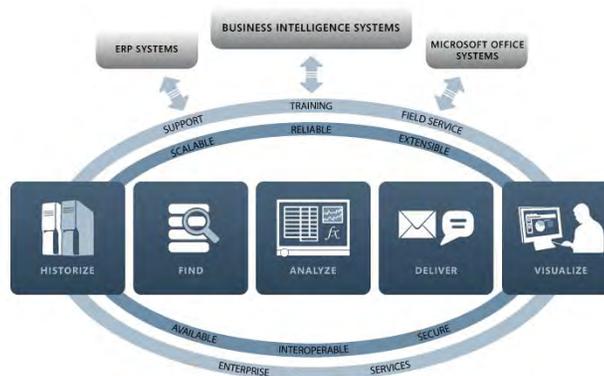
## Current State

- All divisions within Riverside Public Utilities (RPU) rely on data to make operational and fiscal decisions.
- Thousands of data points are collected daily.
- The data is stored in various formats, such as spreadsheets, Microsoft Access databases, and various systems.
- Systems are not currently integrated with one another.
- Generating reports and analyzing data is cumbersome and inefficient.

5

## Operational Data Management System (ODMS)

A warehouse of enterprise information that integrates “siloes” data and supports historical archiving and retrieval of information.



6

# Why ODMS?

- ODMS is foundational for Utility 2.0
- It is the backbone of future operational technologies
  - Distribution automation
  - Outage management system
  - Smart metering
  - Meter data management system, and asset management.
- Transforms data into meaningful information that can be displayed and consumed through visual tools such as dashboards and reports.
- Makes data from disparate systems readily available and easy to consume
- Provides an enhanced analytics platform that RPU can leverage to improve operational performance

7

# Strategic Technology Plan (2015)

## Strategic Technology Plan



Link to Strategic Technology Plan:  
[http://www.riversideca.gov/utilities/pdf/2015/RPU-StratTechPlanFinalReport\\_20150819%20FINAL.pdf](http://www.riversideca.gov/utilities/pdf/2015/RPU-StratTechPlanFinalReport_20150819%20FINAL.pdf)

Riverside, California



<b>CUSTOMER-FOCUSED</b>	<b>Directly influence customer experience and provide customer interaction.</b>
<ol style="list-style-type: none"> <li>1. Customer Information System (CIS)</li> <li>2. Customer Relationship Management (CRM)</li> </ol>	<ol style="list-style-type: none"> <li>3. Interactive Voice Response (IVR)</li> <li>4. Customer Web Portal (CWP)</li> </ol>
<b>INFORMATION-BASED</b>	<b>Provide decision and analysis, data management, and process implementation (primarily large databases).</b>
<ol style="list-style-type: none"> <li>5. Asset Management System (AMS)</li> <li>6. Work Management System (WMS)</li> <li>7. Warehouse Inventory System (WIS)</li> </ol>	<ol style="list-style-type: none"> <li>8. Geographic Information System (GIS)</li> <li>9. Mobile Applications (Mobile Apps)</li> <li>10. Operational Data Management System (ODMS)</li> </ol>
<b>OPERATIONAL</b>	<b>Provide real-time operation and control of water and energy delivery systems.</b>
<ol style="list-style-type: none"> <li>11. Network Communications System (NCS)</li> <li>12. Land Mobile Radio (LMR)</li> <li>13. Advanced Metering Infrastructure (AMI)</li> <li>14. Meter Data Management System (MDMS)</li> <li>15. Automatic Vehicle Location (AVL)</li> </ol>	<ol style="list-style-type: none"> <li>16. Distribution Automation (DA)</li> <li>17. Substation Automation (SA)</li> <li>18. Outage Management System (OMS)</li> <li>19. Supervisory Control and Data Acquisition (SCADA) and Advanced Distribution Management System (ADMS)</li> </ol>

## Key Benefits of ODMS

- ✓ Improves performance and production via increase visibility, better enterprise-wide decision-making with real-time key performance indicator information
- ✓ Better alignment of operations with overall business goals
- ✓ Increases regulatory and environmental reporting and compliance
- ✓ Reduces risks and costs of potential equipment failures
- ✓ Optimizes operational processes
- ✓ Improves asset maintenance and field workforce management.

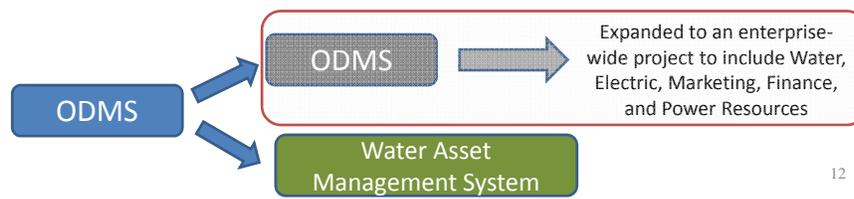
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## 2. Related Board Actions

### Related Board Actions

- **August 5, 2011** - Board approved a Professional Services Agreement (PSA) with Westin Engineering, Inc.
- **December 7, 2012** - Board approved the first amendment to the PSA with Westin
- **June 20, 2014** - Board approved Work Order No. 1424073, in the amount of \$4,430,500, for the ODMS project which included a second amendment with Westin and the purchase of PI software
- **October 2015** - Water ODMS project was split into two projects and the OT/IT Oversight Committee approved [Gate 0 Concept/Charter](#) for the new ODMS project.



12

# 3. Project Overview

## Key Project Objectives

Centralize data and information

Enhance operational efficiencies

Expand reporting capabilities

## Project Scope - Year 1

- Procure hardware and software to support PI
- Deploy PI system
- Integrate 10 data sets/systems
- Develop 25 dashboards
- User specific training (i.e. general user, super user, system administrator, executive user)



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## Initial Applications/Datasets

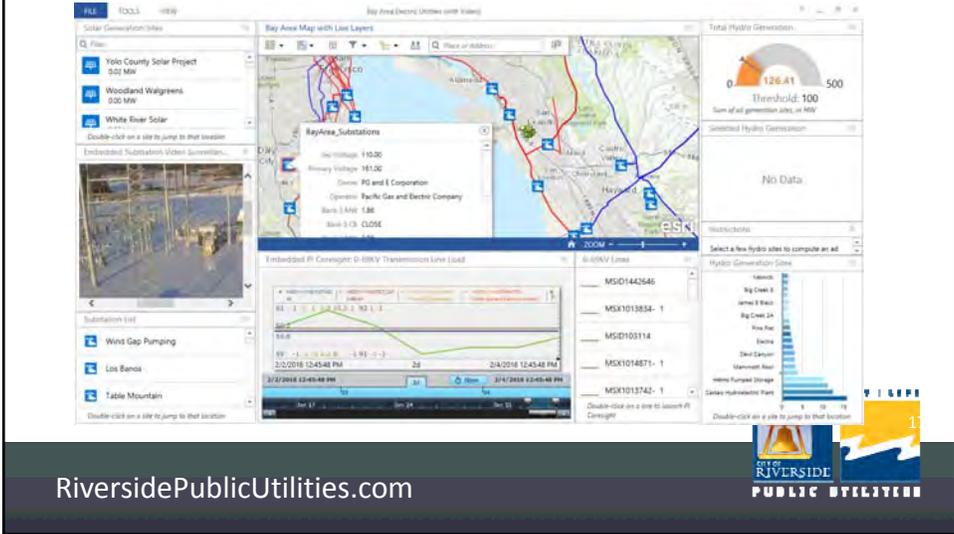
### Applications/Datasets

1. GIS (Electric and Water)
2. Synergi (Planning analysis tool)
3. SAS
4. Wireless Fault Circuit Indicators (FCI's)
5. SCADA Electric
6. SCADA Water
7. Outage Database
8. Substation Automation Data
9. Oracle UWAM
10. Web data (weather, CAISO, etc.)



16

# Example Dashboard (Key Project Deliverable)



# OSIsoft

OSIsoft is a leader in the data management field and is utilized by many local utilities including but not limited to California Independent System Operator, San Diego Gas & Electric, and Sacramento Municipal Utility District.



# What are Utilities saying?

“PI monitors the entire grid automatically behind the scenes”

“The alarming and notification system can even send an early warning before the problem occurs”

“We immediately saw major benefits in the Platform and wanted a full-scale implementation as soon as possible to get the data to the end-users”

“There was a real sense of urgency because the PI System could collect all the data we needed into one single location”

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# Return on Investment (T&D)



Condition-based monitoring targeted capital expenditures, resulting in eventual overall reductions, reduced asset failures, and decreases in corrective maintenance. **\$84 million saved over the life of the program.**



Improvement in capital budget allocation as a result of optimized asset utilization. **~\$700,000 saved.**



Customer load data was needed to assist with transformer sizing, which delayed capital expenditures. They regularly over-sized transformers; by right-sizing, they saved **5%**. Real-time data allowed strategically delaying or cancelling capital projects, **saving 0.5% of the total capital budget.**



Transformer monitoring discovered HI winding temps and HI hydrogen alarms (gassing was found under heavy loads). **\$500k saved, zero customer outages occurred.**

An increase in gassing was noticed from a 75/125 MVA, 230kV – 27.6kV transformer. A crimped “T” connector was found and repaired, thereby avoiding a failure that would have cost **\$2 million.**

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## Equipment Failure Scenario

### Example:

- Transformer equipment failure
- Interrupts over 2,000 customers
- Over \$3 million (for a repair that may only cost \$20K)
- Additional costs unknown (i.e. cost to customers)

### How ODMS is beneficial in this scenario:

- Proactive substation asset monitoring
  - Temperature
  - Load
  - Substation outages
- Trending/forecasting failures
- Significant cost savings from proactive replacement



21

## 4. Fiscal Impact

## Project Expenditures to Date

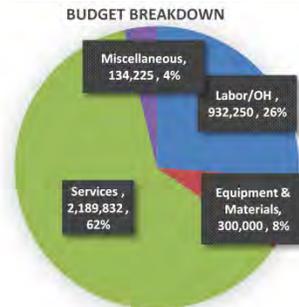
Category	Initial Budget	Spend to Date (3/2/2016)	Est. to Complete	Delta
OSI Soft PO (Software and Support)	\$480,427	\$452,928	\$0	\$27,500
Westin PO (Integration)	\$2,400,000	\$1,292,350	\$270,000	\$837,650
RPU Staff Support	\$850,000	\$169,626	\$95,000	\$585,374
City IT Support	\$600,000	\$82,209	\$85,000	\$432,791
Hardware (Servers)	\$100,000	\$45,288	\$38,000	\$16,712
<b>TOTAL PROJECT (as of 2/29/16):</b>	<b>\$4,430,427</b>	<b>\$2,042,401</b>	<b>\$488,000</b>	<b>\$1,900,027</b>
<b>TOTAL PROJECTED PROJECT SPEND (TO COMPLETE WATER AMS PROJECT):</b>			<b>\$2,530,400</b>	
<b>REMAINING BOARD APPROVED:</b>			<b>\$1,900,027</b>	

23

## Project Budget Breakdown

### RPU ODMS Project Breakdown

Software	1,893,194
Equipment	210,000
Prof. Services	1,453,113
<b>Total</b>	<b>3,556,307</b>
Transfer from previously approved WO	1,900,027
<b>Board Authorization Required</b>	<b>\$1,656,280</b>



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# Questions

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