



Customer Showcases: The Latest Products and Upcoming Releases

Ray Hall
VP, Development
OSIsoft, LLC

Up Next: Apollo 13: A Successful Operational Failure

Captain Jim Lovell & Gene Kranz



The slide features a light blue background with several decorative elements. In the top left, there is a circle containing a white logo of three overlapping circles. To its right is a large, solid blue circle. In the bottom left, there is a small blue circle. In the bottom right, there are two overlapping blue circles. The central text is in a dark blue, sans-serif font.

We believe People with Data can Transform their world.

How are we helping you transform your world?

Mobility

Geospatial Insights

Actionable
Information

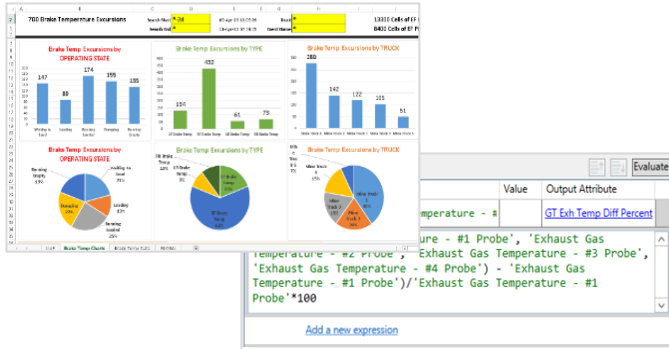
Cross Company
Collaboration

Forecasting

Enabling Analytics
Systems

Showcasing our Latest and Upcoming Product Releases

PI Server 2014 R2



Actionable
Information

PI Integrator for Esri ArcGIS



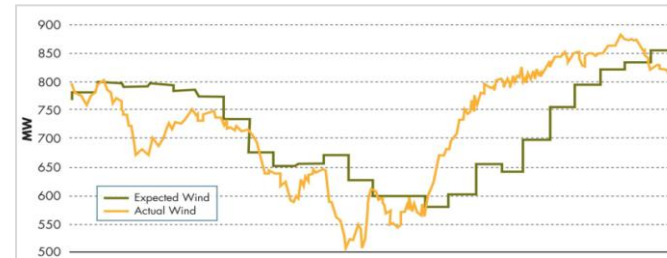
Geospatial
Insights

PI Coresight



Mobility

Future Data



Forecasting

Customer Showcases



Jeff Parker, P.E.

Senior Operations Engineer



Rick Howell

Real Time Data Supervisor



Ted Beglin

Lead Engineer



Tim Willenberg

*Senior EMS Engineering
Specialist and Senior PI Admin*



Featuring PI Server 2014 R2



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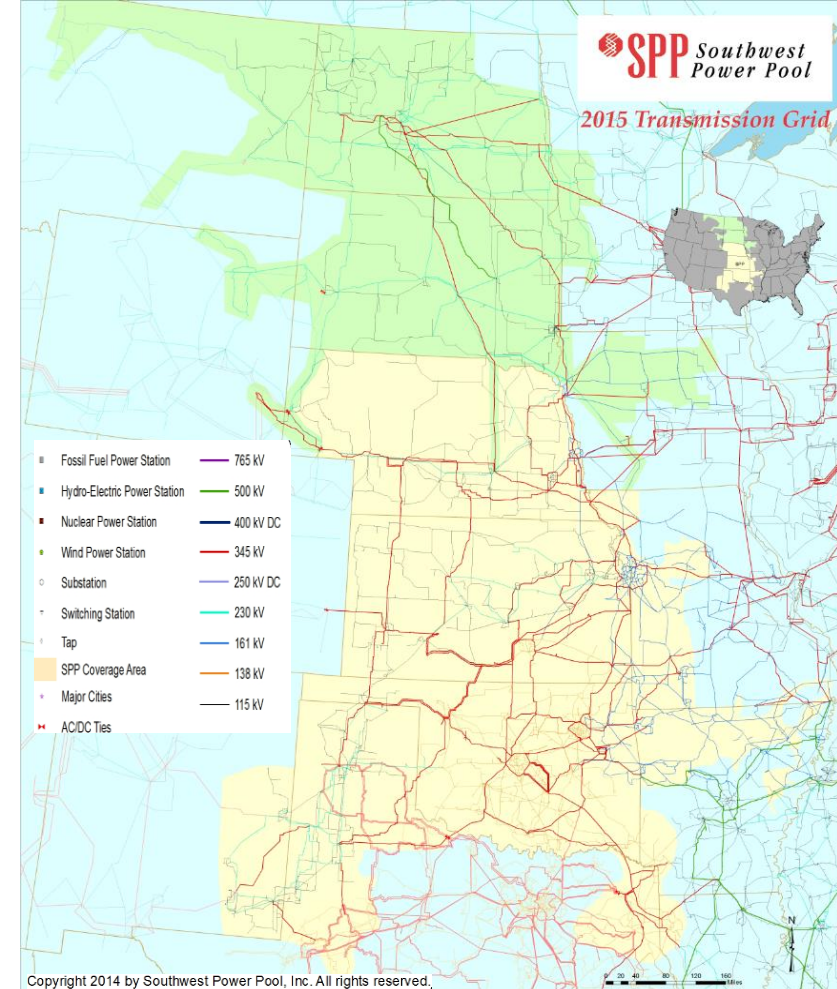
SPP at a Glance

- Located in Little Rock
- About 600 employees
- Primary jobs —
electrical engineering,
operations, settlements and IT
- 24 x 7 operation
- Full redundancy and backup site



Operating Region

- 370,000 sq. miles of service territory
- More than 15 million people
- 627 generating plants
- 4,103 substations
- 48,930 miles transmission:
 - 69 kV — 12,569 miles
 - 115 kV — 10,239 miles
 - 138 kV — 9,691 miles
 - 161 kV — 5,049 miles
 - 230 kV — 3,889 miles
 - 345 kV — 7,401 miles
 - 500 kV — 93 miles

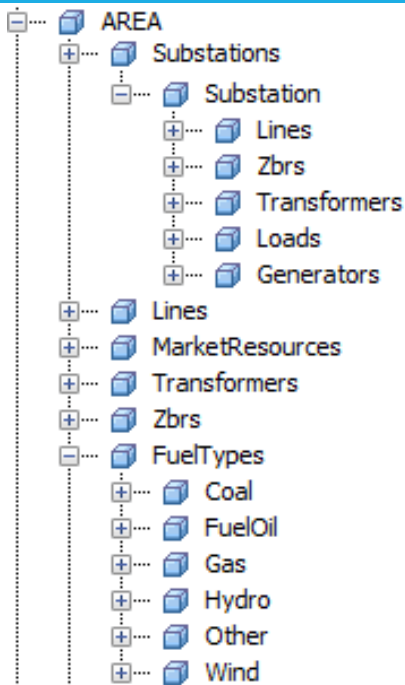


PI AF Model: Making data accessible and easy to use

Network Model

- 12k Substations
- 16k Lines
- 3.5k Transformers
- 2.7k Generators
- 3k Capacitors and Reactors
- 15k Loads
- 70k Circuit Breakers
- 130k SCADA Measurements

PI AF Model

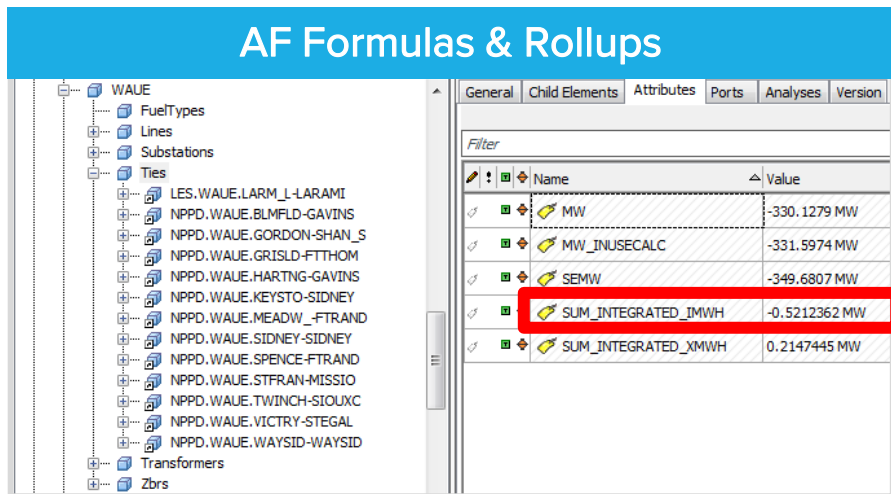


Benefits

- Provides situational awareness of the grid to all of our users
- Backbone for our PI System to organize real time and historical data around the EMS model

Asset Analytics: Quickly enables Tie Line display

AF Formulas & Rollups

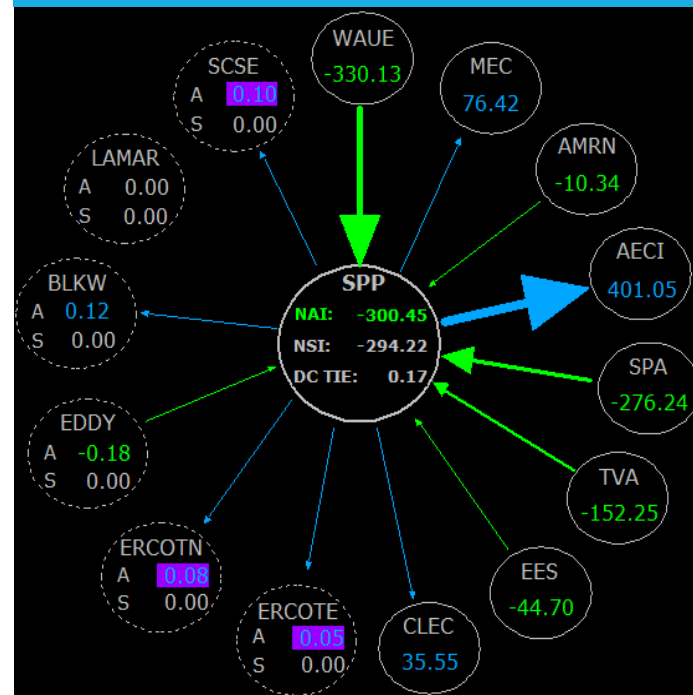


Name	Value
MW	-330.1279 MW
MW_INUSECALC	-331.5974 MW
SEMW	-349.6807 MW
SUM_INTEGRATED_IMWH	-0.5212362 MW
SUM_INTEGRATED_XMWH	0.2147445 MW

- Easy to configure
- Based upon EMS model



Tie Line display



Quick view of direction & magnitude of flow

PI Event Frames: Tracking tripping events

- Used by operators for situational awareness
- Operators prevent small tripped events from cascading to larger catastrophic events

Easily Configured Rules

BalancingOperatingArea

General Attribute Templates Ports Analysis Templates

Name	Configuration	Schedule	Output(s)
BAAL Event	Template: Not configure...	Natural	Event frame
BAAL In Range	FTLLow := 'FrequencySch...' Frequency=4	FTLLow:FTLHigh:BAALA...	
Generation vs. Setpoint	GenSetpointDiffCalc := 'G...	Frequency=4	GenSetpointDiff: GenSet...
Historical SPP Max Wind	if (GenMWWind > 'Hist...	Frequency=60	HistoricalMaxWind

Example Element: OperatingAreaSPP

Name	Expression	Value	Output Attribute
FTLLow	'FrequencyScheduled' - 3*'Epsilon1'		FTLLow
FTLHigh	'FrequencyScheduled' + 3*'Epsilon1'		FTLHigh
FTL	if ('Frequency' < 'FrequencyScheduled') then 'FTLHigh' else 'FTLLow'		Click to map
BaalAceTarget	((10.0 * 'FrequencyBias' * (FTL - 'FrequencyScheduled')) / ('Frequency' - 'FrequencyS...		BaalAceTarget
IsBaalInRange	if ('Frequency' < 'FrequencyScheduled') then 'ACE' > BaalAceTarget else if ('Frequency' > 'FrequencyScheduled'...		BaalInRange

Add a new expression

Complete Event History

Event Frame Search 1

Filter

Name	Duration	Start Time	End Time
Category: <None>			
Category: Reliability			
BAAL-SPP2015-03-10 20:59:44.000	0.3 Minutes	3/10/2015 8:59:44 PM	3/10/2015 9:00:00 PM
BAAL Root Cause	5 Minutes	3/10/2015 8:54:44 PM	3/10/2015 8:59:44 PM
BAAL-SPP2015-03-11 05:02:08.000	0.3 Minutes	3/11/2015 5:02:08 AM	3/11/2015 5:02:28 AM
BAAL-SPP2015-03-11 06:01:08.000	0.6 Minutes	3/11/2015 6:01:08 AM	3/11/2015 6:01:44 AM
BAAL-SPP2015-03-11 07:01:20.000	1.9 Minutes	3/11/2015 7:01:20 AM	3/11/2015 7:03:16 AM
BAAL-SPP2015-03-11 20:57:48.000	0.6 Minutes	3/11/2015 8:57:48 PM	3/11/2015 8:58:24 PM
BAAL-SPP2015-03-11 20:58:28.000	0.2 Minutes	3/11/2015 8:58:28 PM	3/11/2015 8:58:40 PM
BAAL Root Cause	5 Minutes	3/11/2015 8:53:28 PM	3/11/2015 8:58:28 PM
BAAL-SPP2015-03-11 21:36:56.000	0.2 Minutes	3/11/2015 9:36:56 PM	3/11/2015 9:37:08 PM

Featuring PI Integrator for Esri ArcGIS



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Senior Operations Engineer



Ted Beglin

Lead Engineer



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About Devon



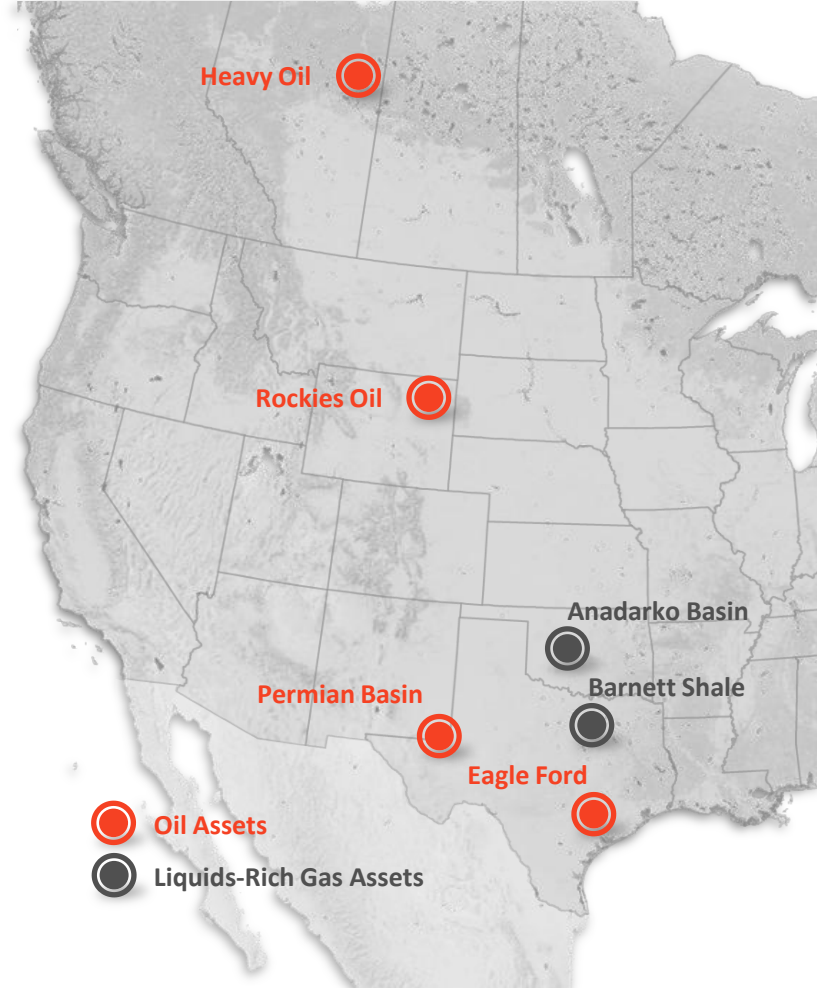
- One of North America's leading independent producers of natural gas and oil
- Engaged in exploration and production
- Corporate headquarters in Oklahoma City
- More than 5,500 employees
- Member of the S&P 500
- On Fortune magazine's 100 Best Companies to Work For list each year since 2008
- New to PI in 2013 and enjoying the benefits of EA



A Leading North American E&P

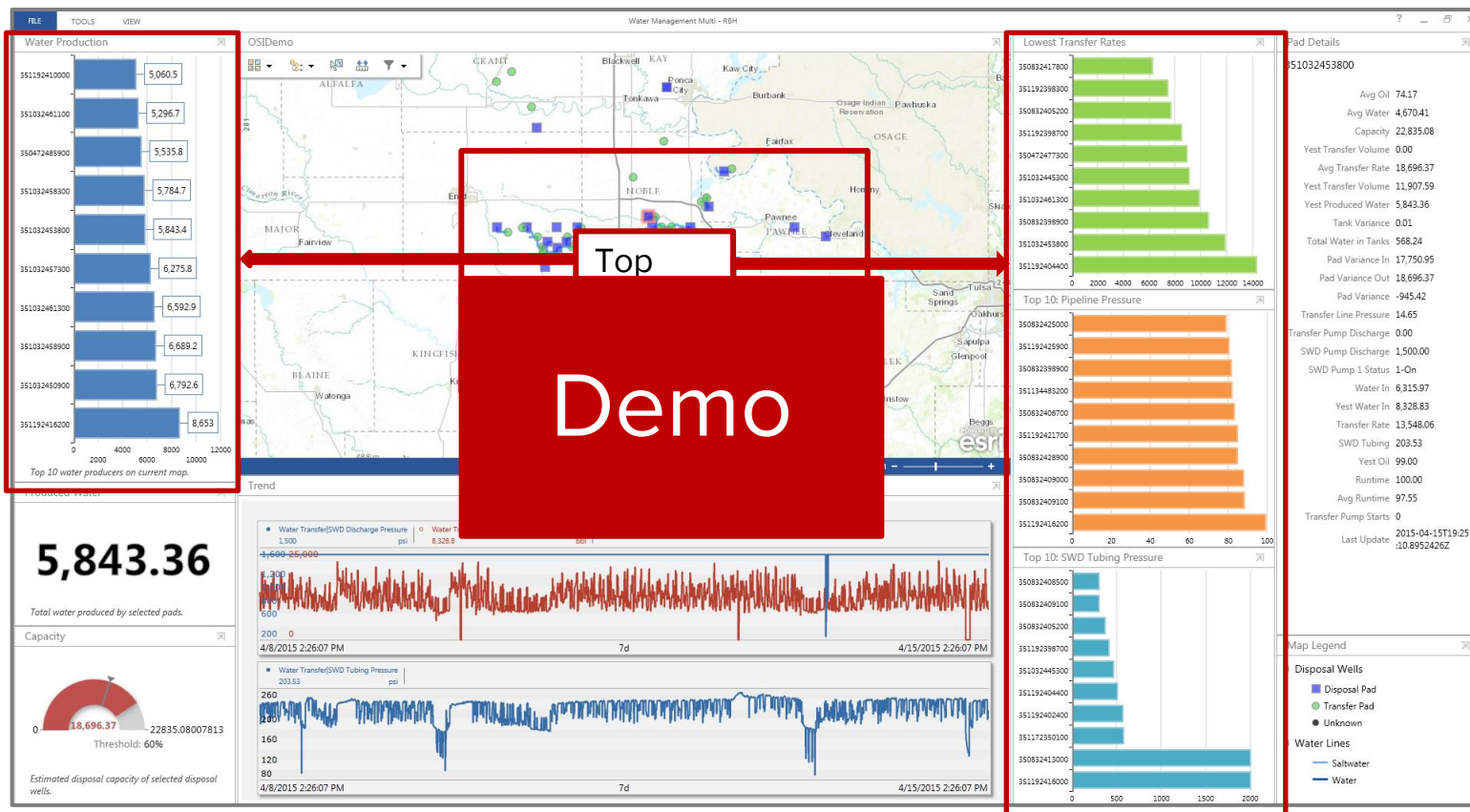
- Focused and balanced asset portfolio
 - Proved reserves: 2.8 billion BOE
 - Net production: 664 MBOED
 - Upstream revenue: 60% oil
- Deep inventory of opportunities
 - Prolific Eagle Ford assets
 - High-quality Permian Basin position
 - World-class heavy oil projects
 - Top-tier liquids-rich gas plays
- Positioned to deliver visible, low-risk production growth

Note: All figures represent Devon's retained asset portfolio.

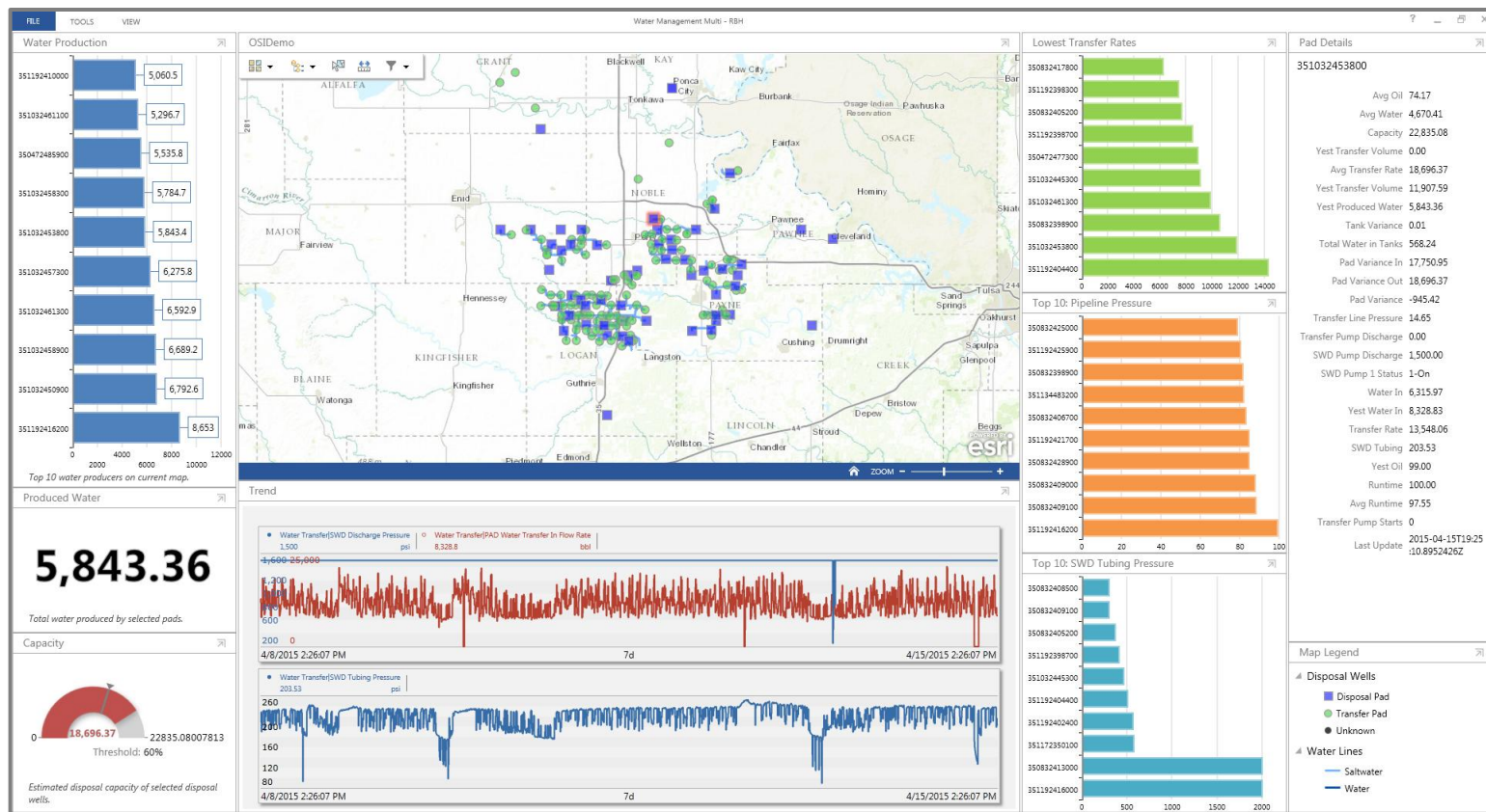




Operations Dashboard with PI Integrator and PI Coresight



Operations Dashboard with PI Integrator and PI Coresight



Featuring PI Coresight



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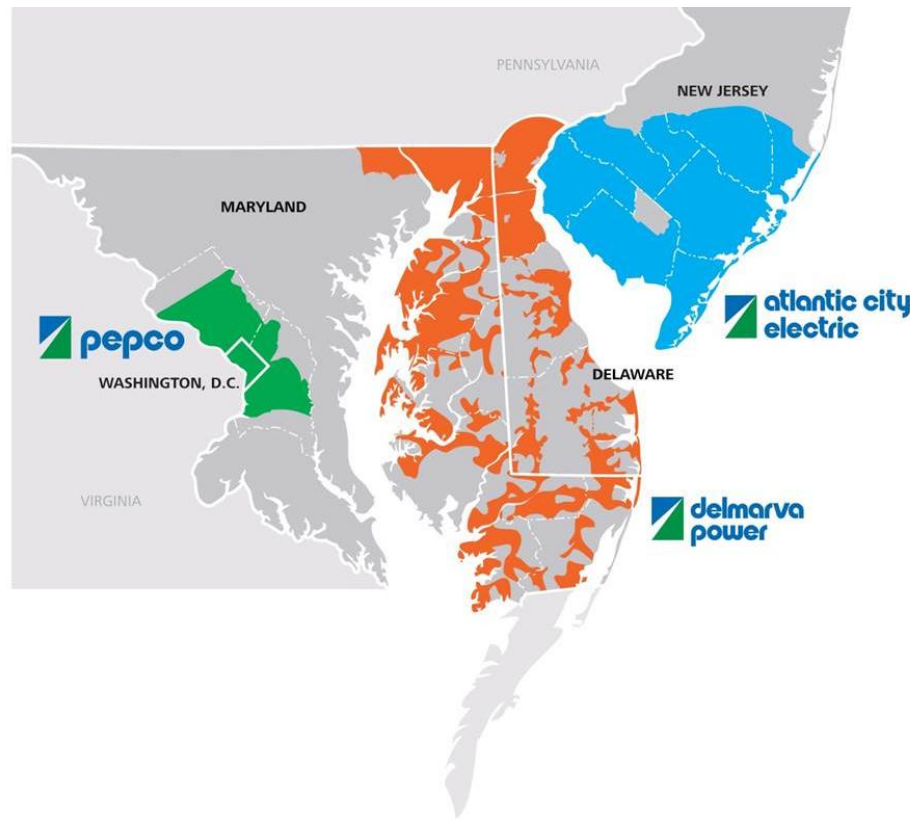
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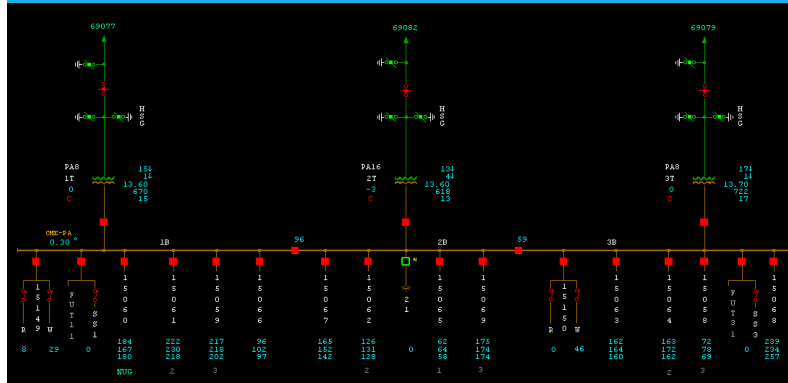
Pepco Holdings, Inc. Quick Facts

- Incorporated in 2002
- Service territory:
8,340 square miles
- Customers served
 - Atlantic City Electric:
 - 545,000 – electric
 - Delmarva Power:
 - 503,000 – electric
 - 125,000 – natural gas
 - Pepco:
 - 793,000 – electric
- Total population served: 5.6 million

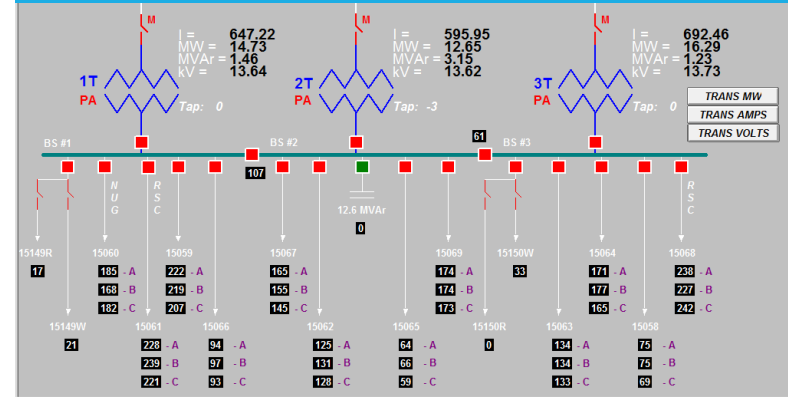


The Challenge: Manually Creating PI ProcessBook Displays

EMS Display

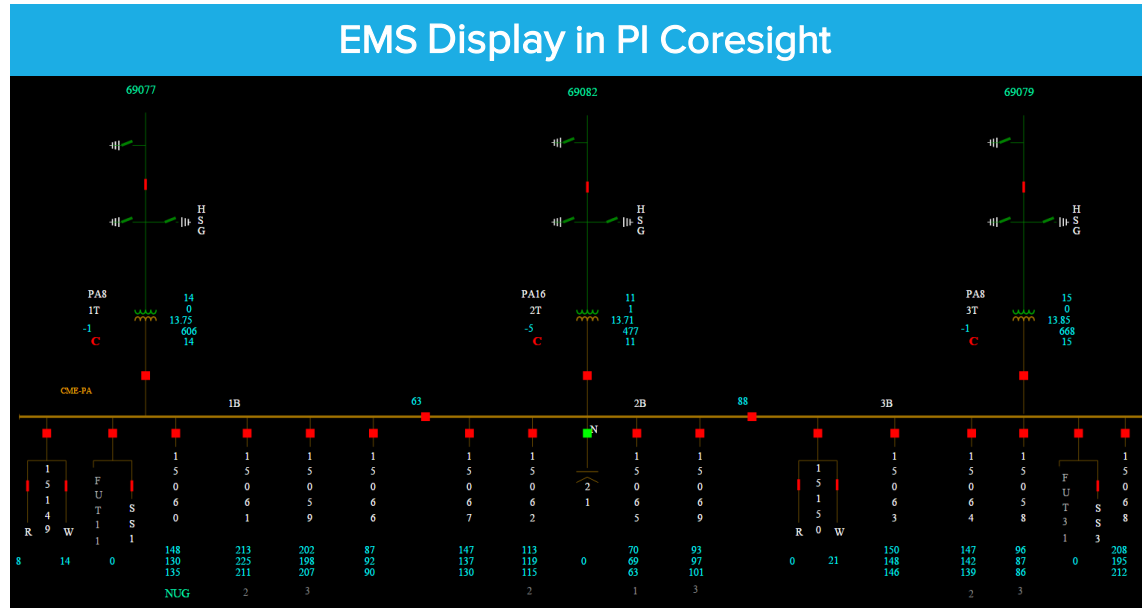


Manual PI ProcessBook Display



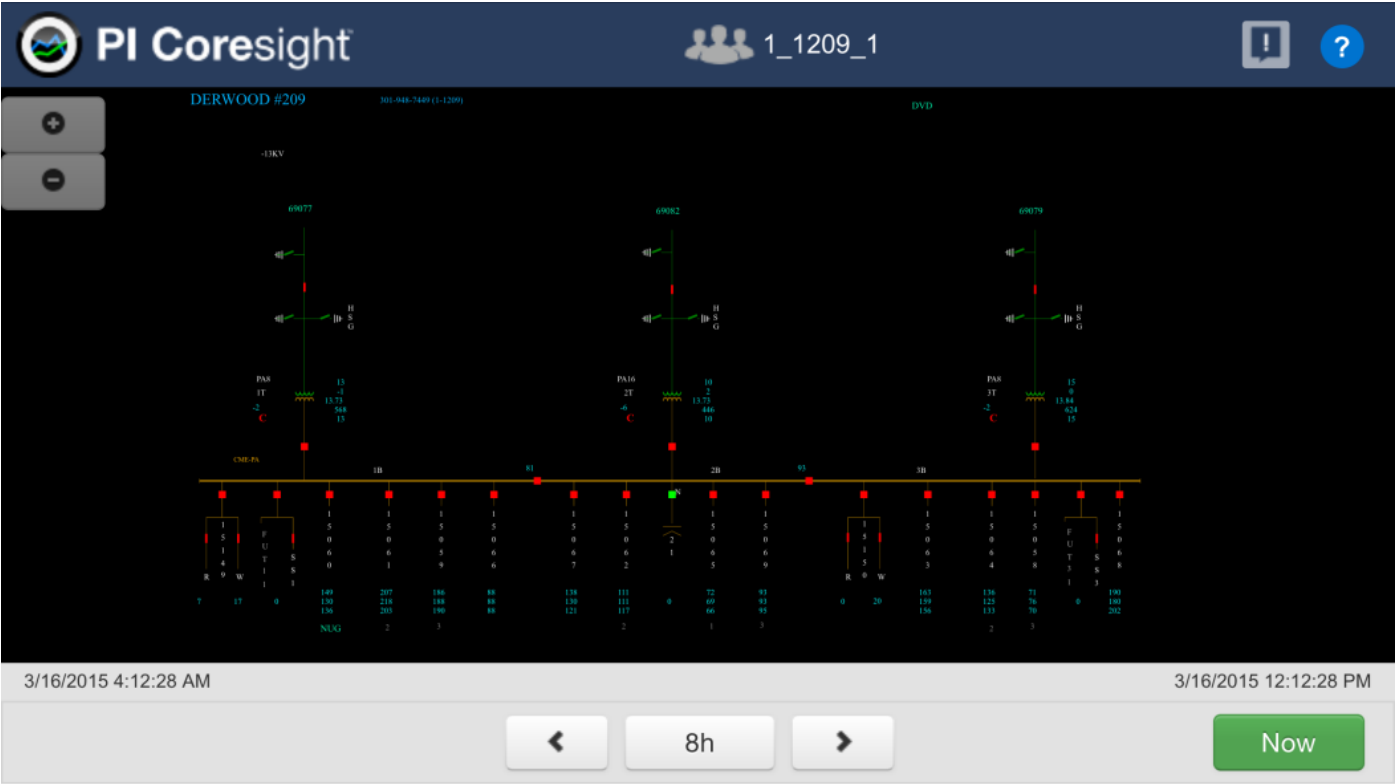
- Previously maintained manually in PI ProcessBook
 - Tedious
 - Error prone
 - New equipment and data was delayed
 - No quality tags

A Simplified Approach: EMS Displays in PI Coresight



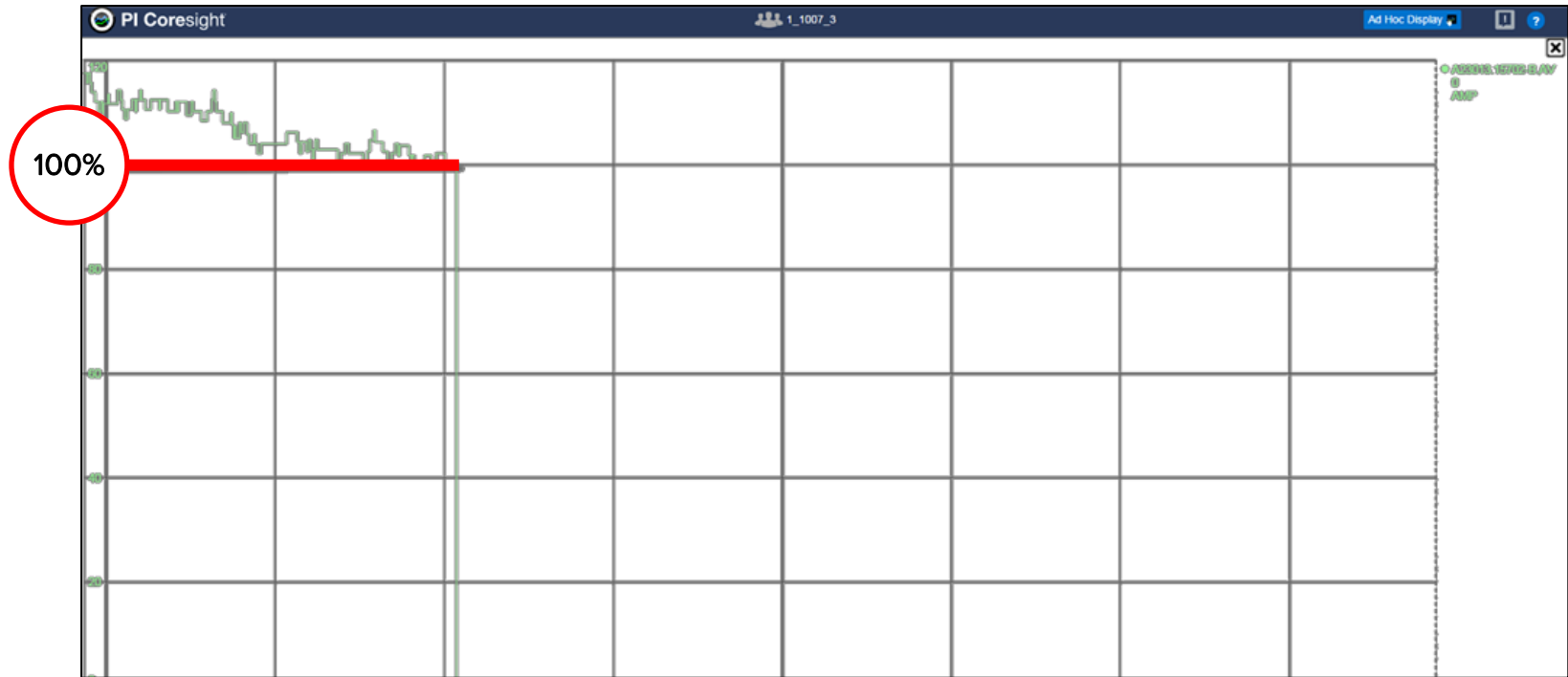
- Custom script to **automatically** convert EMS display to PI .svg display
- Look and feel is the **same** as EMS displays
- Now converting and publishing **3,000+** nightly to PI Coresight
- Major performance increase (**~6x faster**) with PI Coresight 2014

Mobility: EMS Displays in PI Coresight Mobile



Screenshot from iPhone 6+

Real-time and Historical Data: Key information in seconds



Featuring PI Server 2015 and Future Data



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Senior Operations Engineer



Rick Howell

Real Time Data Supervisor



Ted Beglin

Lead Engineer



California ISO

Tim Willenberg

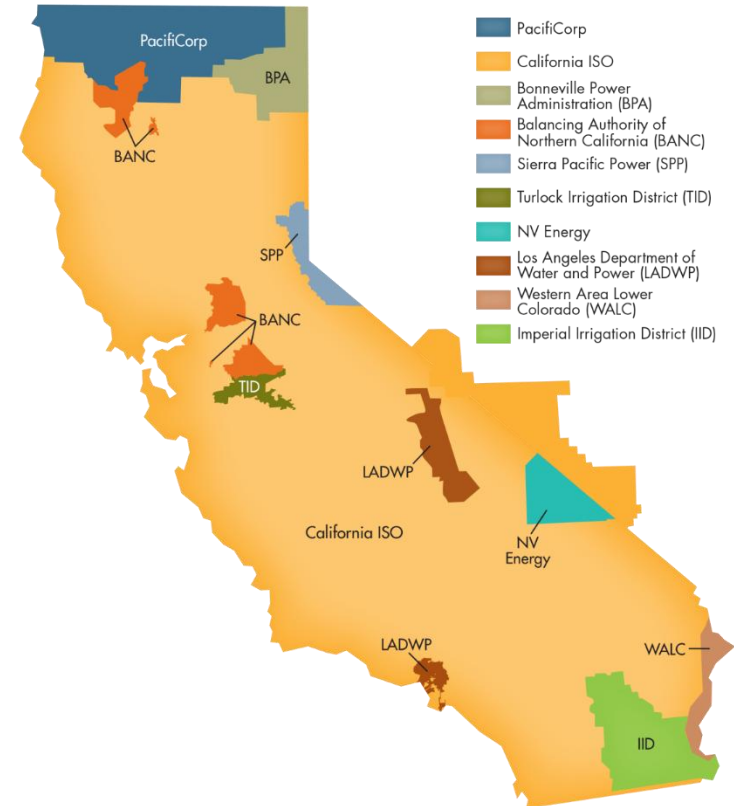
Senior EMS Engineering

Specialist and Senior PI Admin



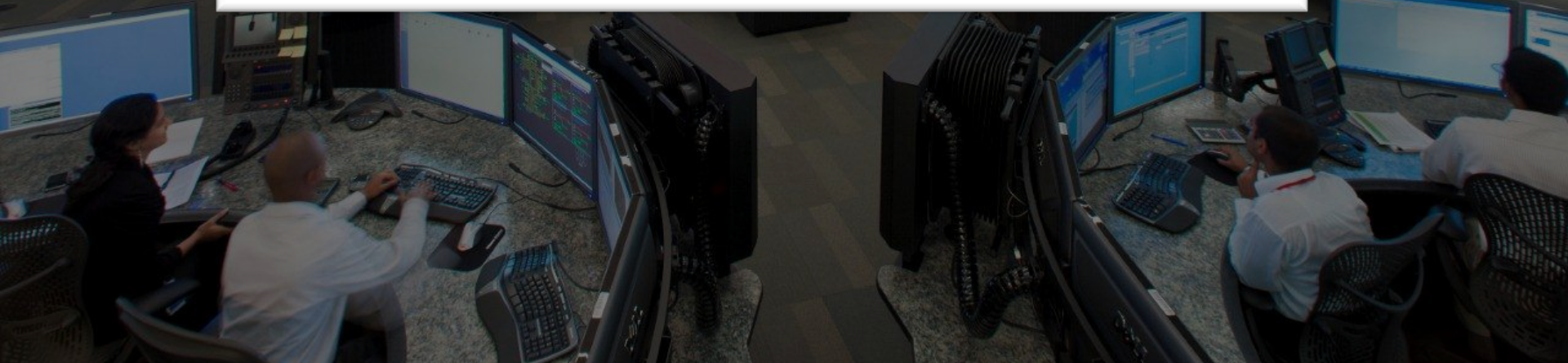
California ISO by the Numbers

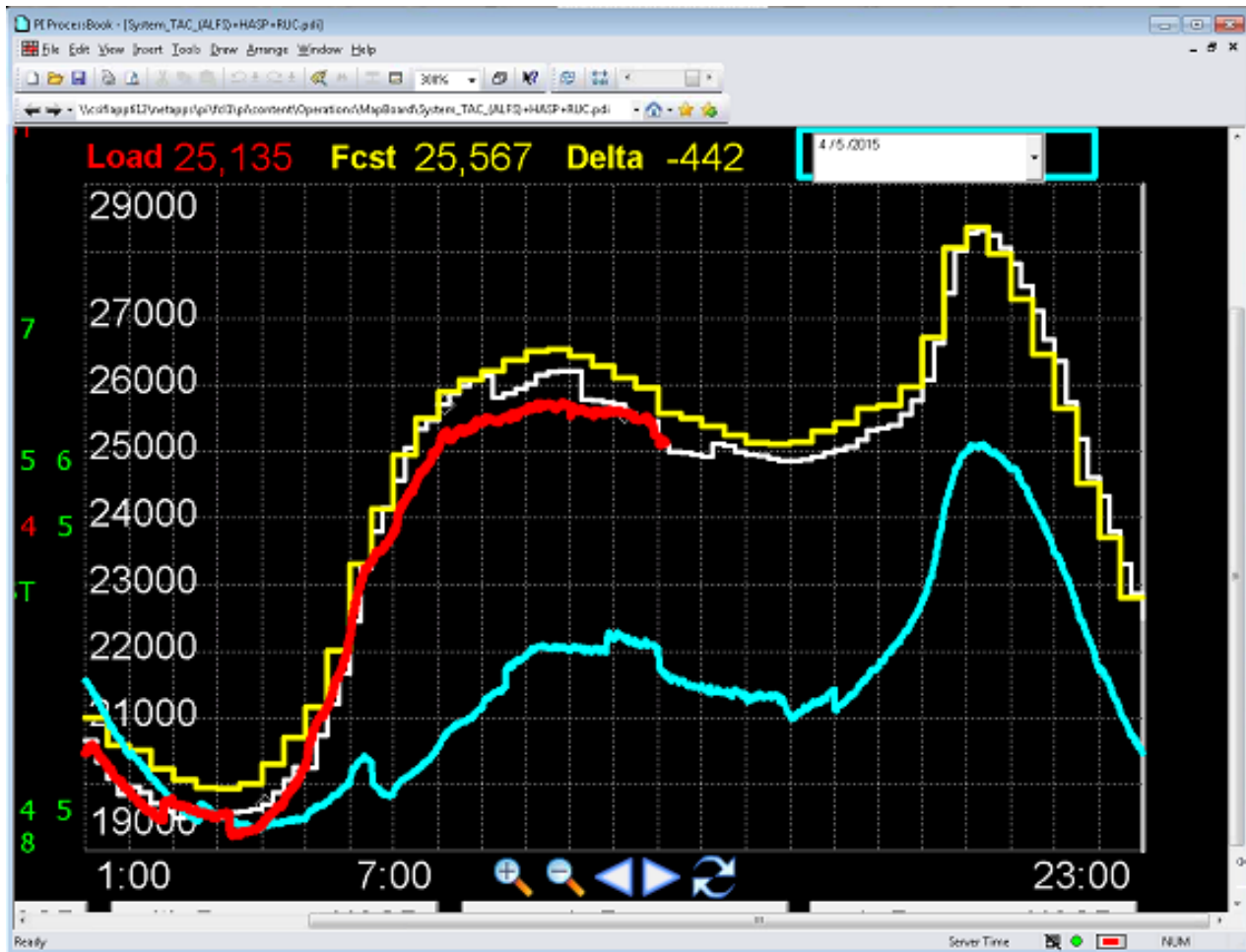
- **65,225** MW of power plant capacity (net dependable capacity)
- **50,270** MW record peak demand (July 24, 2006)
- **27,076** market transactions per day
- **26,024** circuit-miles of transmission lines
- **30 million** people served
- **244 million** megawatt-hours of electricity delivered annually



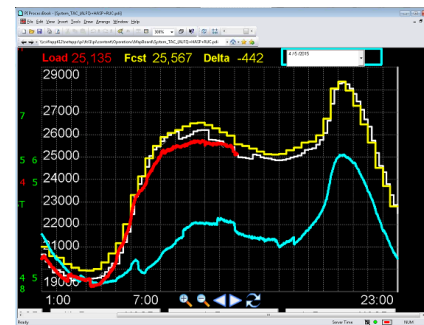
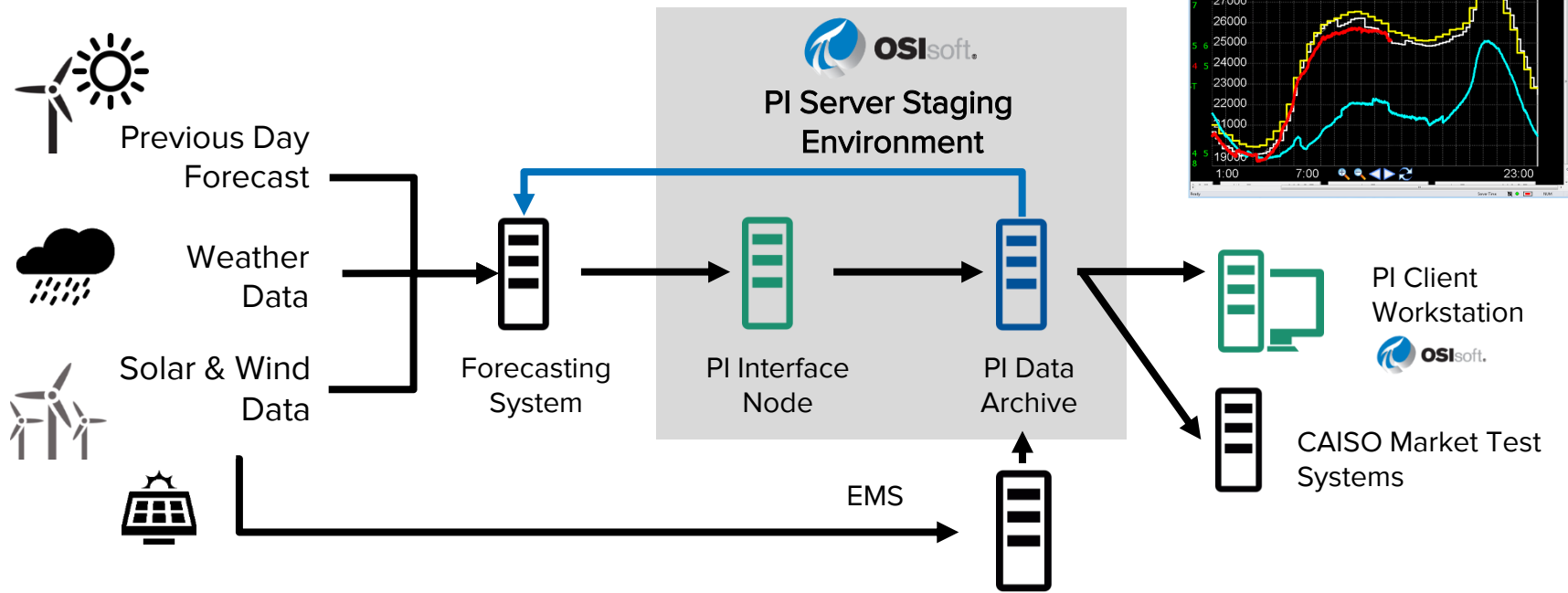
October 2014







PI System Beta Testing Environment



- PI Data Archive 2015 Beta3
- PI Asset Framework 2015 Beta
- PI Asset Analytics 2015 Beta

- PI ProcessBook 2015 Beta
 - PI DataLink 2014 (released)
 - PI RDBMS Interface (released)



How are we helping you transform your world?

Mobility

Geospatial Insights

Managing
Complexity

Cross Company
Collaboration

Forecasting

Enabling
Analytics Systems



PI Cloud Connect

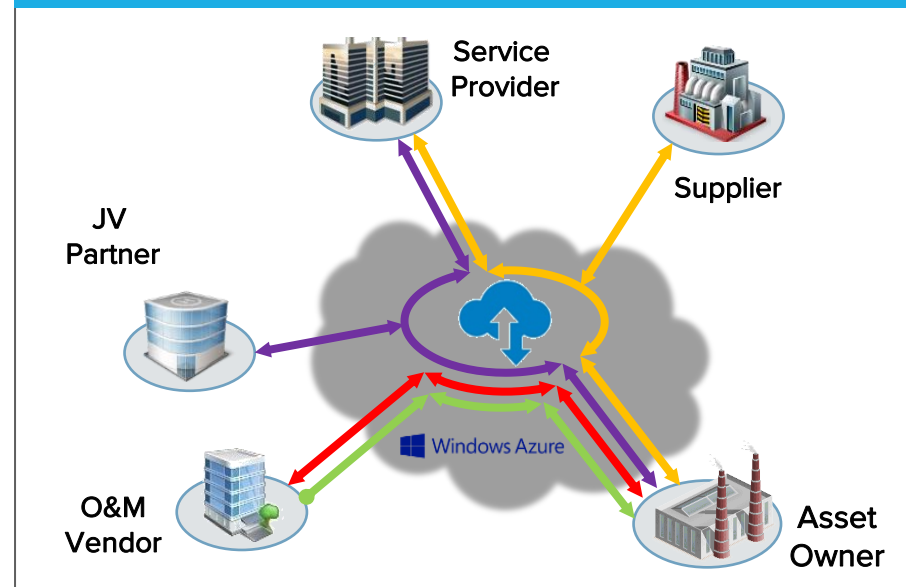
Securely Share PI System Data Across Geographic & Organizational Boundaries

Cross
Company
Collaboration

Simply Publish and Subscribe

The screenshot shows the 'Create Publication' window. At the top, a progress bar has three steps: 'Data Source' (green dot), 'Publication Scope' (green dot), and 'Publication Name' (grey dot). Below this, the text 'Browse your AF asset hierarchy to select the AF element that you want to publish' is followed by left and right arrow icons. On the left, a tree view shows the asset hierarchy: Anacortes Refinery, Baton Rouge Refinery, E&P, Gas, Compressor Stations, Blain River, Brunswick Station, Levis Station, Newport Station, Oxnard, Powder River Basin (highlighted), Transwestern Station, Viking Station, Gas Plants, and Key Performance Indicators. On the right, the 'Data source:' is 'DFPIAF.Petrolux' and the 'Selected AF element to publish:' is '\\DFPIAF\\Petrolux\\Gas\\Compressor Stations\\Powder River Basin'.

Supports Any Sharing Scenario



PI Integrators

Enabling
Analytics
Systems

- Reduce the Complexity of Analyzing **Real-World Industrial Data**
- PI data delivered to the **tools you use** and to the people that can make a difference



	Name	CASTKey	LocalTime	GMTTime
1	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 08:30:00.000	2014-1
2	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 08:45:00.000	2014-1
3	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 09:00:00.000	2014-1
4	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 09:15:00.000	2014-1
5	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 09:30:00.000	2014-1
6	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 09:45:00.000	2014-1
7	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 10:00:00.000	2014-1
8	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 10:15:00.000	2014-1
9	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 10:30:00.000	2014-1
10	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 10:45:00.000	2014-1
11	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 11:00:00.000	2014-1
12	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 11:15:00.000	2014-1
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15	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 12:00:00.000	2014-1
16	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 12:15:00.000	2014-1
17	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 12:30:00.000	2014-1
18	TCOS_174372_4PH	\\ODCMSAPSC101P\ESP_Sites\Entries\ESP\Gillette\...	2014-12-07 12:45:00.000	2014-1



What can you do to transform your world...

Mobility

Geospatial Insights

Actionable
Information

Cross Company
Collaboration

Forecasting

Enabling
Analytics Systems

When can you start...

Mobility

PI Coresight 2014



Geospatial Insights

PI Integrator for Esri



Actionable
Information

PI Server 2014 R2



Cross Company
Collaboration

PI Cloud Connect



Forecasting

PI System 2015

Enabling
Analytics Systems

PI Integrator for BI, Hana



The slide features five decorative blue circles of varying sizes and opacities. One circle in the top-left contains a white logo consisting of three overlapping circles. The text "We believe People with Data can Transform their world." is centered in a dark blue font.

We believe People with Data can Transform their world.



Thank you

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