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The Power of Data



Business Analytics with Microsoft SQL Server 2012 and the PI System

Presented by Curt Hertler

Marketing Manager, OSIsoft, LLC

Overview

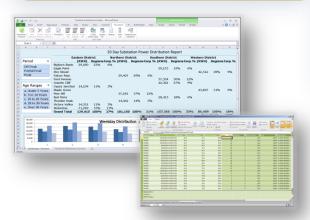
- Business Analytics Toolkit
- Example: "Substation Power Distribution Profile"
 - Business Context Pl Asset Framework (Pl AF)
 - Data Access PI OLEDB Enterprise
 - Analytic Reporting PowerPivot for Excel 2010
 - Ad Hoc Analytics and Reporting Power View
- Power View Integration with PowerPoint
- Additional Resources

Business Analytics Toolkit









PowerPivot for Excel 2010





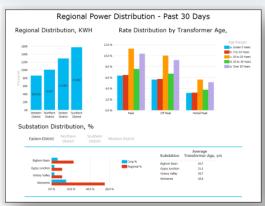












Power View

Example: Substation Power Distribution Profile

Northern District Thunder Peak Pine Hill Victory Valley Falcon Pass Elm Street Wolverine Maple Grove Gypsy Ford Junction Avenue Bighorn Basin Red River Eagle Point Granite Cliff Southern District

My Objectives

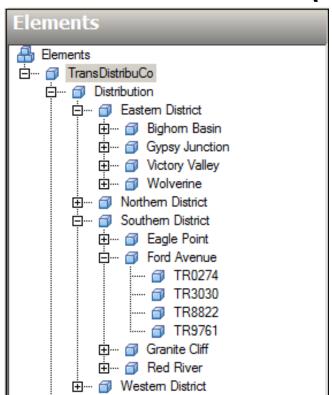
- Regional and Rate iod Power tribution **District**
- Aging Asset Risk Assessment
- Want to do it myself!

Western **District**

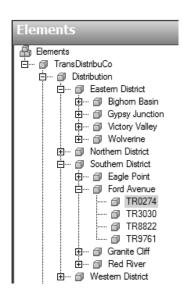
PI Server – PI Asset Framework (PI AF)

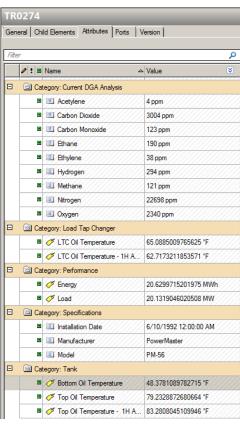
Asset Hierarchy

- District
- Substation
- Transformer



PI Server – PI Asset Framework (PI AF)





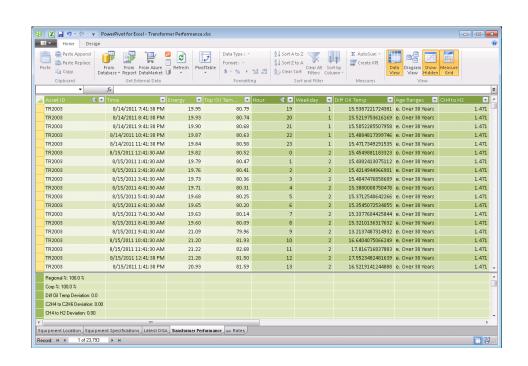
Transformer Attributes

- PI System Data
- Equipment
 Specifications
- DGA analysis

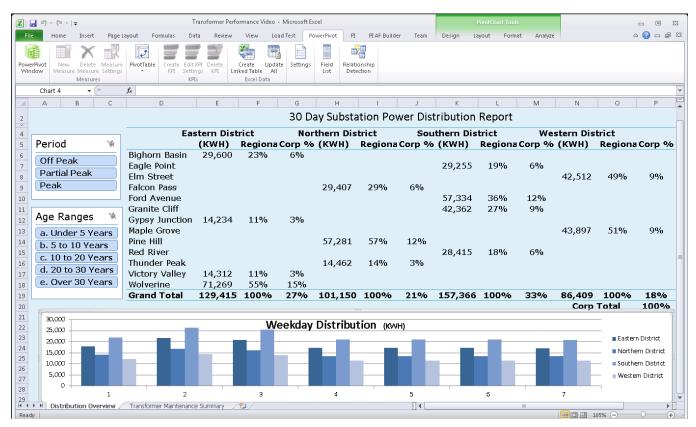
PI OLEDB Enterprise

Important Considerations

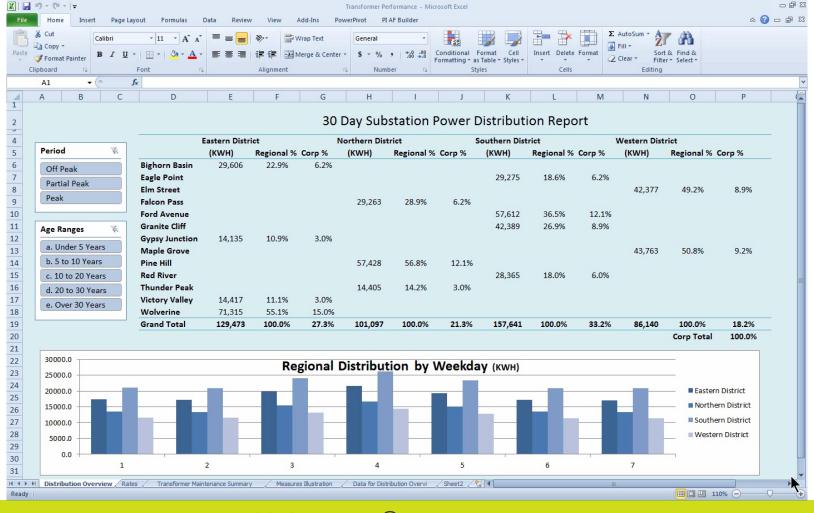
- Leverage structure used throughout your PI System infrastructure
- Insure accurate aggregation of real-time events
- Scale-up by adding PI AF Structure
- Access PI Event Frames in next release



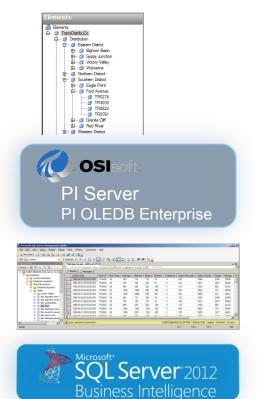
PowerPivot for Excel 2010

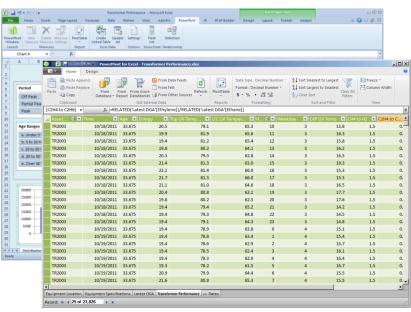


Power Distribution Report

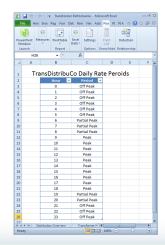


PowerPivot Enables Data Integration



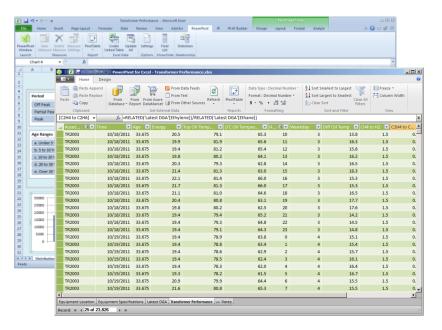








PowerPivot Enables Data Integration



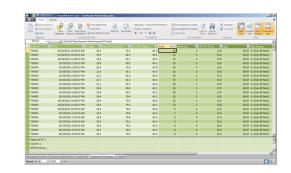
Can I use DataLink?

- Manual refresh step required to copy and paste values
- Limited to ~1 million rows
- No support for upsizing to SQL Analysis Services 2012



PowerPivot Enables Extended Analysis

DAX – Data Analysis Expression Language



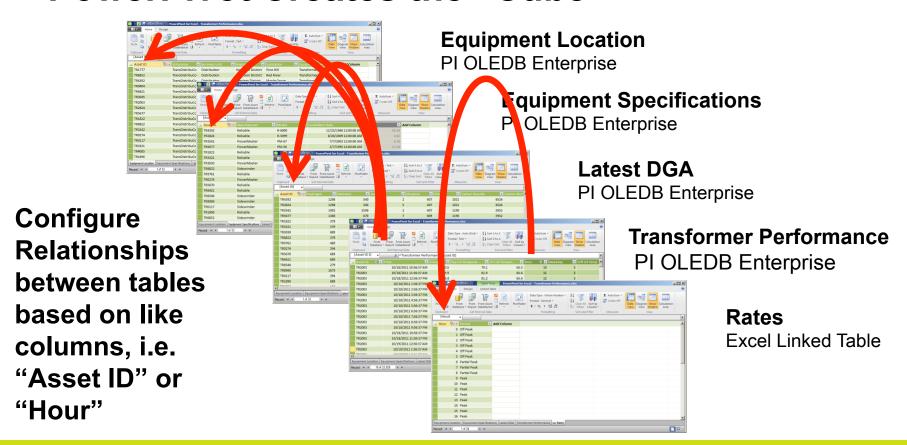
Transformer Age Column

=YEARFRAC('Equipment Specifications'[Installation Date],NOW())

Transformer Age Ranges Column

=IF('Transformer Performance'[Age]>30,"e. Over 30 Years", IF('Transformer Performance'[Age]>20,"d. 20 to 30 Years", IF('Transformer Performance'[Age]>10,"c. 10 to 20 Years", IF('Transformer Performance'[Age]>5,"b. 5 to 10 Years", "a. Under 5 Years"))))

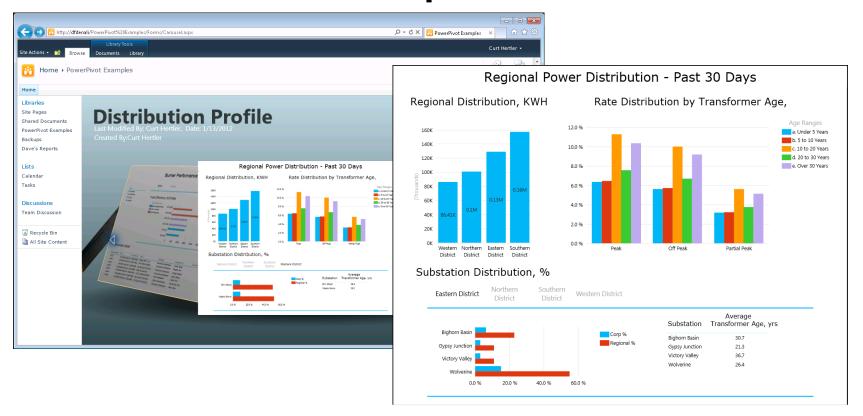
PowerPivot Creates the "Cube"

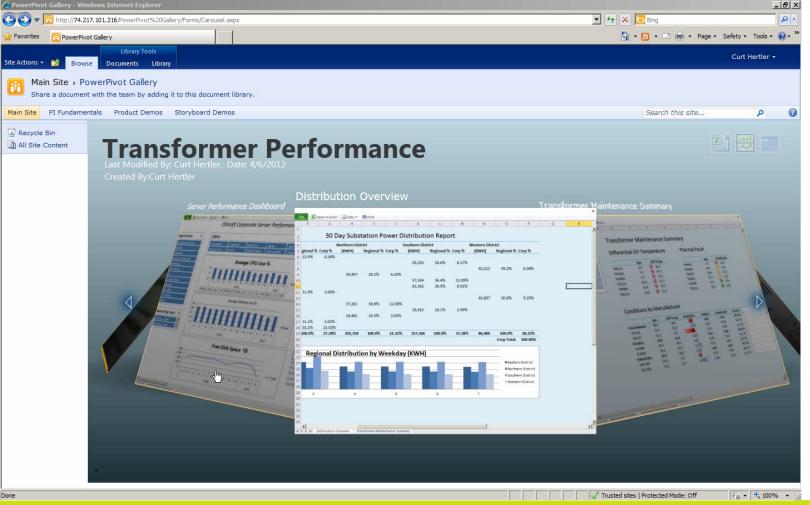


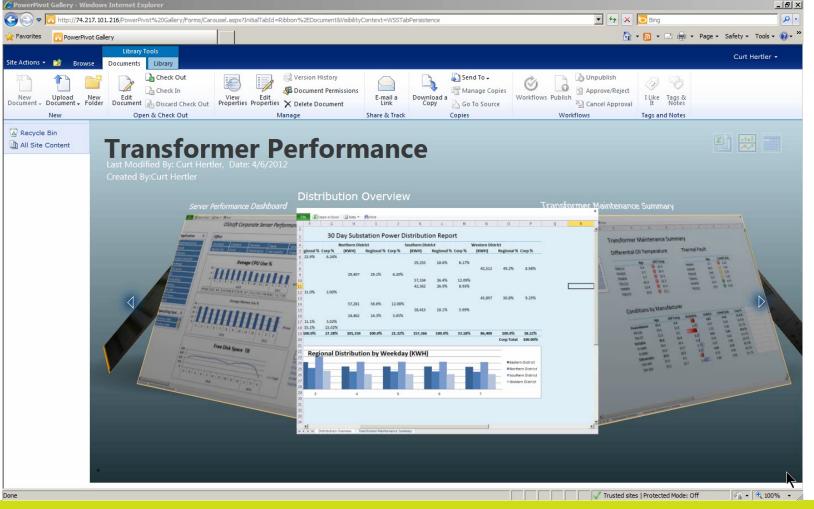
SharePoint 2010 Enterprise – PowerPivot Gallery



SharePoint 2010 Enterprise – *Power View*

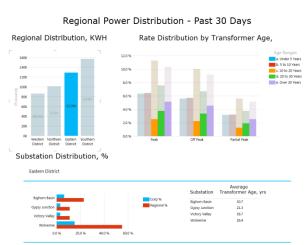




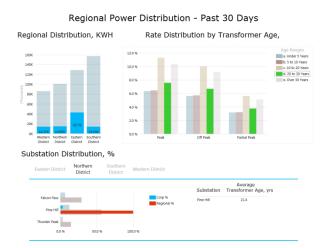


Microsoft SQL 2012 Power View

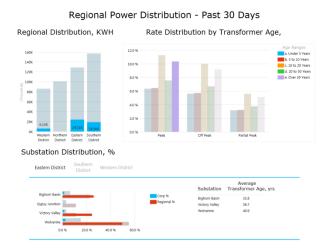
Interactive Analysis



Distribution by District



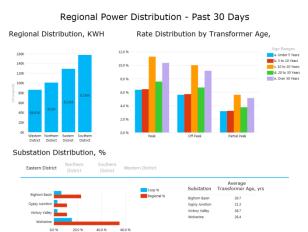
Distribution by Transformer Age

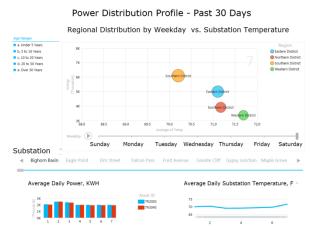


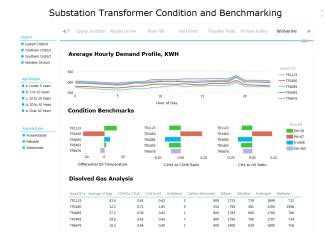
Distribution by Age and Rate

Microsoft SQL 2012 Power View

Multiple Views \ Pages





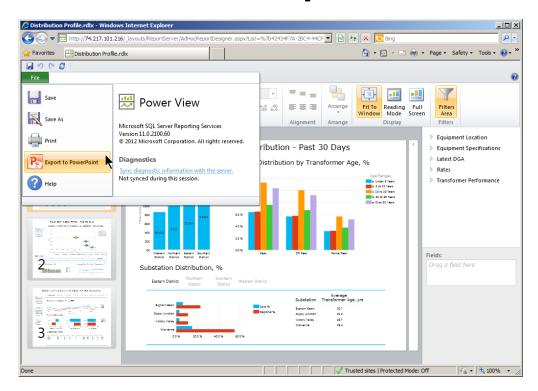


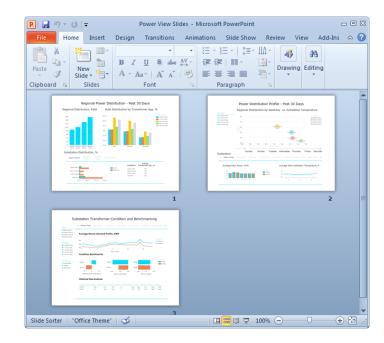
Aging Asset Risk Assessment

Weekday Distribution Profile

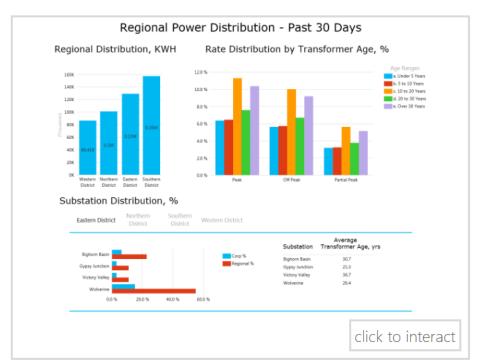
Equipment Condition Benchmarking

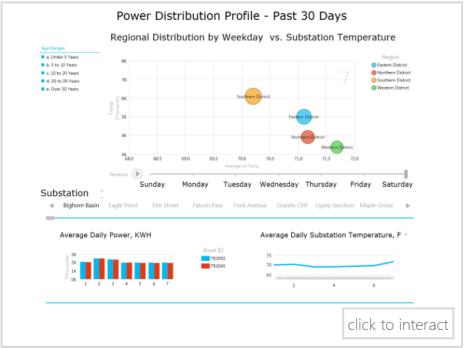
Power View Reports in *PowerPoint*





Power View Reports in *PowerPoint*





Additional Information

Coming up next!

 "Insightful Reporting with the PI System", Todd Brown and Chris Nelson

OSIsoft Resources

- "Business Analytics with your PI System Data using Microsoft PowerPivot"
- PI T&D Users Group Site <u>extranet.osisoft.com</u>
- OSIsoft vCampus <u>vcampus.osisoft.com</u>

Microsoft Resources

www.microsoft.com/en-us/bi/powerpivot.aspx

Helpful Books

- "PowerPivot for the Data Analyst", Bill Jelen
- "Practical PowerPivot & DAX Formulas for Excel 2010", Art Tennick



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http://vCampus.osisoft.com vCampus@osisoft.com



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