



Regional Seminar Series

Detroit, Michigan



## Effective ways Small Utilities can maximize their investment in the PI System

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Empowering Business in Real-time.

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## Who is “Wyandotte Municipal Service”



- A Department of the City of Wyandotte which Provides Water, Electric, Cable, Internet, & VOIP services to the citizens of Wyandotte

**WYANDOTTE**  
**MUNICIPAL SERVICES**

- **Water Utility**
  - Formed in 1889
  - Approx 11,000 customers
  - \$3.8 Million in Annual Revenue
- **Electric Utility**
  - Formed in 1892
  - Approx 13,000 customers
  - \$38.8 Million in Annual Revenue
- **Cable Utility**
  - Formed in 1981
  - Approx 8,500 customers
  - \$8.2 Million Annual Revenue



## Three primary sources of Power Supply:

- 70 MW municipal power plant
- 98 MVA 120kV interconnection
- 28 MVA 40kV interconnection

## Municipal power plant:

- Three boilers
- Four generators
- Fuels include
  - Coal,
  - natural gas
  - tire-derived fuel(TDF)



- Power Plant Control Systems
  - Bailey Net90 system installed in early 90's
  - No Data Historian
  - Many remotely operated stand alone systems
    - Both old rely logic and dated PLC systems

## Needed Migration Plan

- Solution is a Phased Approach
  - GET A HISTORIAN - PI System
  - Install Ethernet fiber network throughout plant for control communication backbone
  - Standardize on a PLC Based System
  - Centralize all Control Systems into new Control Network

## Challenges of Small-Mid Sized Municipal Generators

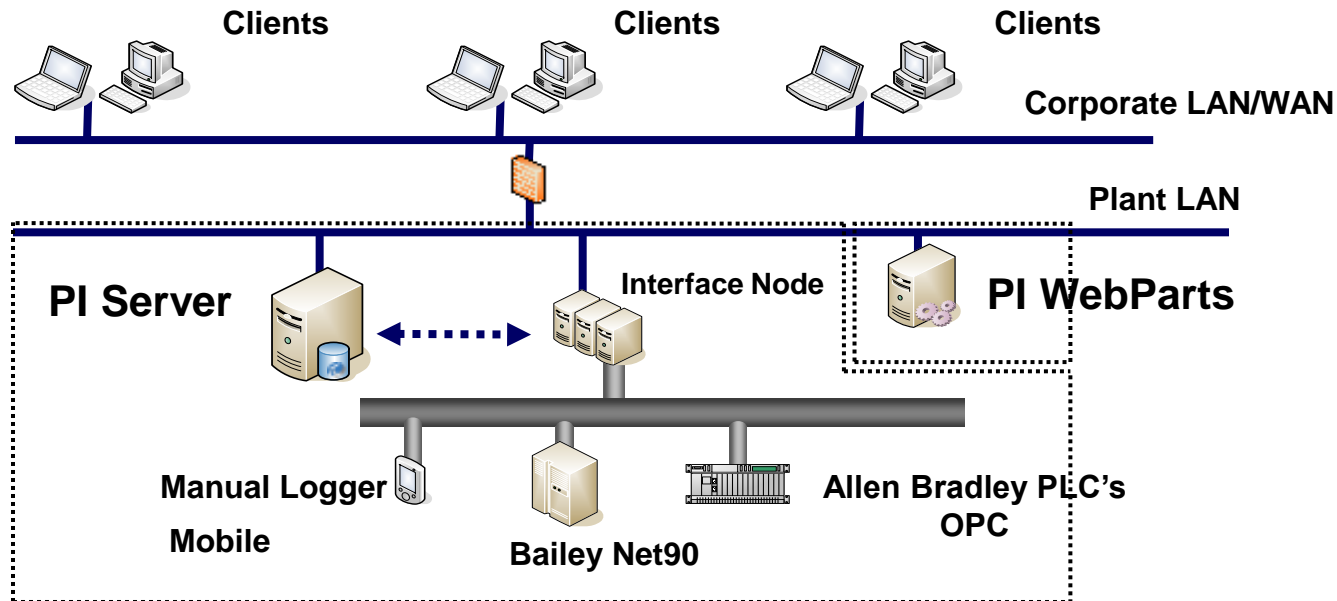


- Aging Equipment
- Limited Time/Staffing
- Retirement of Experienced Operations / Maintenance Staff
- Increasing Fuel & Power Costs
- Increasing Environmental Complexity
- Lack of Infrastructure, Field Instrumentation
- Difficulty in Consistently Measuring/Tracking Performance

# How the Wyandotte PI System Was Used to Address Challenges



- Using PI System to interface a Monitor & Diagnostic Program
- Using PI System applications to report and track electric reliability and transmission operation data



# Monitor & Diagnostic Program Solutions Considered



- Reviewed what other Utilities were doing
  - DTE, Xcel Energy, AEP
  - Lansing BPU, Holland, Kansas City BPU
- Hire & Develop Staff w/ necessary expertise
  - Expensive, Time Consuming, Knowledge base Limited
- Contract for services at the Plant
  - Still costly, Only as good as the people on site,
- Leverage our investment in the PI System infrastructure in a Proven M&D Solution
  - Least Costly, Large Experience Base, Tailored to the WMS Plant & Budget



- Many Large Fleets Have Justified M&D Centers to...
  - Provide System-Wide Efficiency and Reliability Improvement
- 50% of Power Generators (~100% of APPA Generators) are Too Small to Justify a Center
- B&V PowerPlantMD Solution Proven...but at 150+ MW Stations
- **Can We Leverage our PI System with PowerPlantMD to Achieve Much of the Same Benefits?**



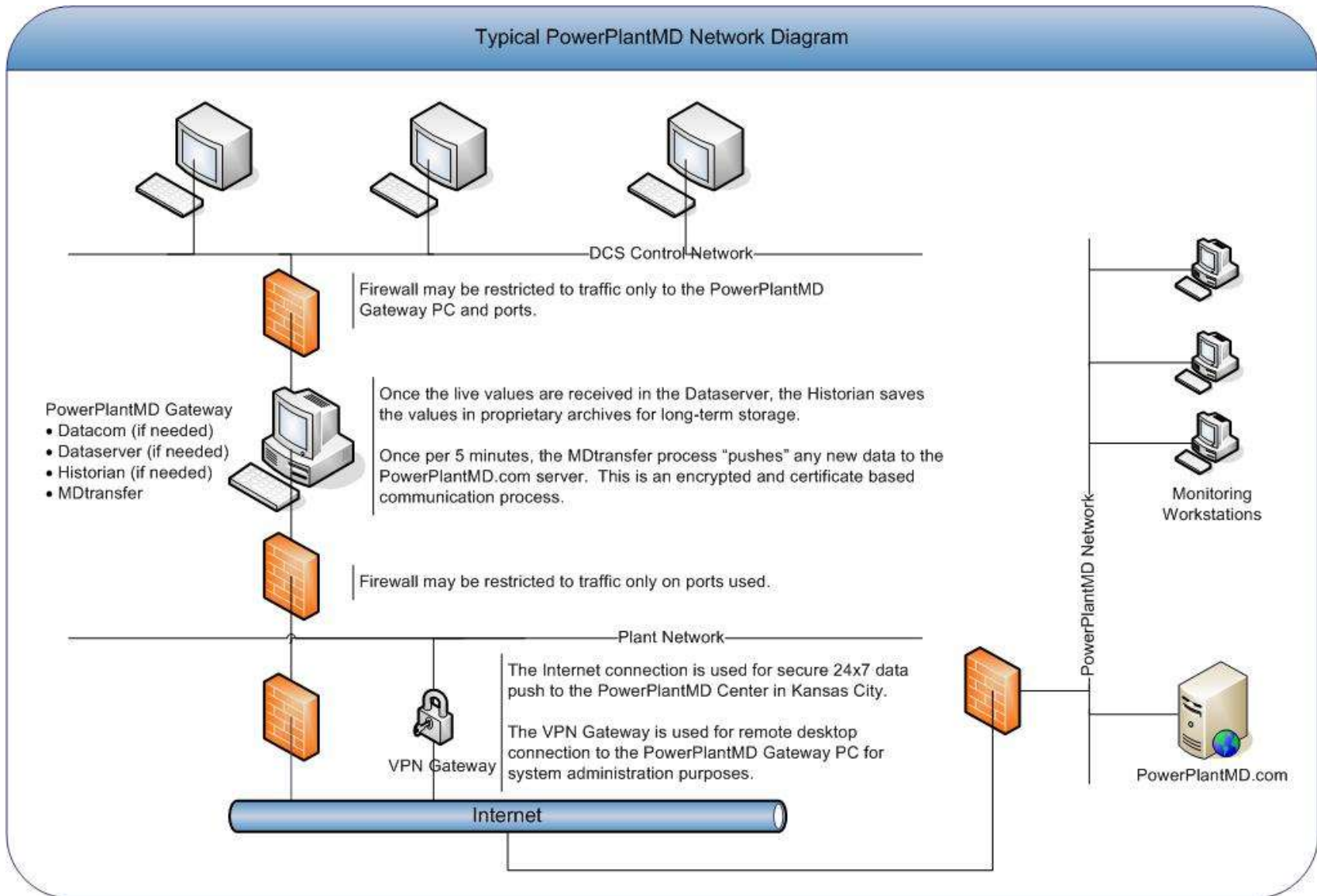
- Problem Detection Including Both Anomalies and Long-Term Trends
- Simultaneous Monitoring of Performance and Equipment Condition
- Routine Diagnostic Process
  - Detection, Ruling Out False Alarm
  - Determining Root Cause
  - Prioritized Corrective Action Plans
  - Capturing the Knowledge



- Integrated Plant Operations and Maintenance Team
- Integration with Existing Plant Processes
  - Shift/Production Reports
  - Manually Collected Data
  - Predictive Maintenance Program
  - Short and Long Term Maintenance Planning



# PI System Interface to PowerPlantMD



## With the PI System in the Wyandotte M&D Program we have achieved



- Proactive Data Monitoring
  - Anomaly Detection & Diagnosis Process
  - Trend Analysis Process & Heat Rate Improvements
  - Outage/Overhaul Analysis Process
- DCS Information Systems Modernization
- On Demand Access to Domain Expertise
- Training & Education, Plant Performance Classes
- Searchable Diagnostic Knowledge Base

# Leveraging the PI System for Generation & Load Data Reporting



- Michigan Public Power Agency (MPPA)
  - 18 Municipal Electric System Members - Joint Action Agency
  - Power Supply Project Based
  - WMS is part of the Dispatch Service Project
- MISO - Midwest Independent System Operator
  - Operates the bulk electric transmission grid in the Midwest
  - Provides the real time pricing on wholesale power on the grid
  - Requires hourly reporting of all transactions into or out of the grid
- FERC/NERC/RFC
  - Develops & Enforces Electric Reliability Standards
  - WMS registered as a DP - distribution Provider
  - MPPA registered as WMS's LSE -Load Serving Entity

# Using the PI System to Get Data to MPPA for all required Reporting



- In 2009 began by using PI DataLink
  - Very effective and accurate solution
  - Required active participation by WMS employees
  - Not always timely
  - Limited to only post-operational information
- In early 2010 switched to PI WebParts
  - Provides the same quality of information
  - Access to both real time and historical data
  - Able to provide data across WMS management
  - No need for capital investment in communication or infrastructure



Thank you

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