NV Energy and how they use the PI System

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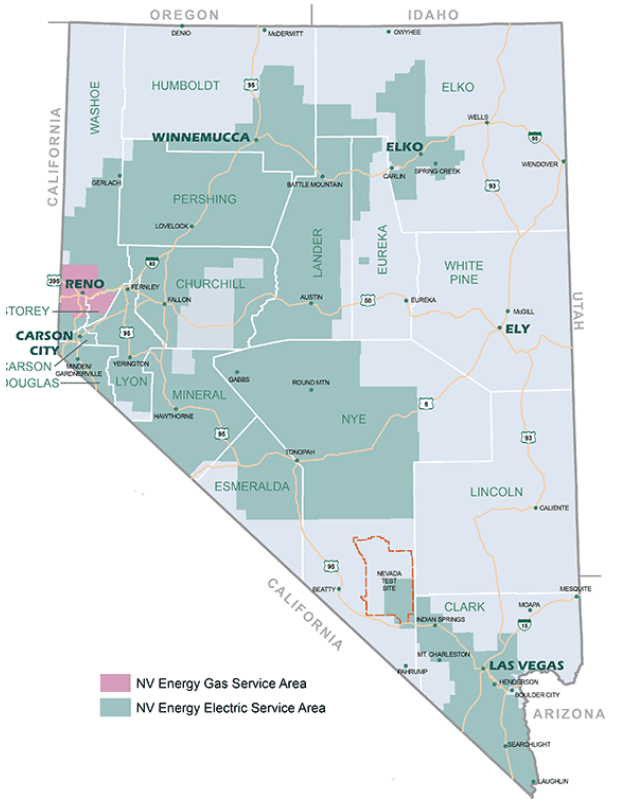
OSIsoft.

NV Energy Overview

- Acquired by Berkshire Hathaway Energy (formerly MidAmerican Energy Holding Company) in December 2013
- Serves 1.3 Million Nevadans (more than 90 percent)
- Serves 40 Million tourists annually
- Parent of two operating electrical utility companies
  - Nevada Power Company (NVE – South) - Las Vegas
  - Sierra Pacific Power Company (NVE – North) - Reno
  - Operated as two separate load control areas until 2014
- Peak loads:
  - 5,860 MW in southern Nevada
  - 1,750 MW in northern Nevada



Saving Corporate Knowledge

- In 2010, the Generation leadership team assessed a major risk facing the fleet was the aging workforce
- “Workforce 2020” initiative was created to develop a strategy to help reduce the impact of the knowledge exodus
- Many alternatives evaluated, and one possible solution identified: Technology
  - Advanced Pattern Recognition Software
  - Industry Monitoring Centers Benchmarked (SRP, Luminant, Duke, NextEra….)

The solution … the NVE Monitoring and Diagnostic Center.

Center went fully “live” in early 2014

MDC – Gap Analysis

- Starting condition:
  - Each site managed own PI server, EtaPro, System1
  - Various configurations and levels of utilization

- Goal
  - Using the OSISoft PI infrastructure - servers, interfaces, applications
    - Bring the real time plant to corporate location
    - Use the PI data to feed analytical software tools
    - Build consolidated fleet monitoring displays
    - Maintain a secure Industrial Control System network

MDC – Build Out

- Staff a central location with tools, skills and knowledge to support all plants
  - 2 Technical Analysts, 2 Engineers, 1 Manager
  - GE Smart Signal Software – Pattern Recognition
  - EtaPRO – First Principles Model
  - Ovation/EDS – Real time control screen and logic process review
  - System 1 – Vibration Monitoring
  - Processbook – Trending and Monitoring Displays

MDC - Deliverables

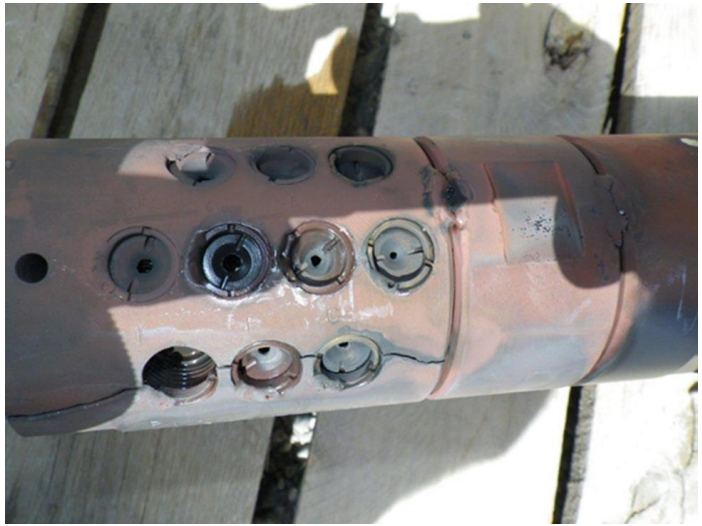
- Products
  - Reporting Chronic degradation and valuation
  - Performance tracking (Real time, Post Outage, Standard methods, etc.)
  - Process troubleshooting (Engineering support for plants)
- Benefits
  - Optimal dispatch and scheduling based on performance data
  - Maintenance Scheduling and Valuation
  - Forced Outage avoidance
  - Centralized Fleet-wide Process Engineering Competency and Standards including Root Cause Analysis

MDC – Support Coverage

- Ten generating sites monitored ~ 6700 MW monitored
- Monitoring ~60 turbines (steam and combustion) and associated Balance of Plant
- More than 150,000 PI tags fleet wide, about 25,000 used by MDC
- Approx 480 assets are currently monitored, 1250 active models
- Approximately 340 Actionable Advisories provided to the Fleet in 2014
  - Instrument Failures
  - Degrading Control Valve response
  - Leak through on isolation valve
  - Vibration signatures changes on rotating equipment

MDC – Results

- Harry Allen Attemperator Case Study
  - Advisory is estimated to have an avoidance cost of $900K



MDC – Results

- Clark Peakers, Gas Turbine Second stage air seal bolting failure
  - Net Catch Value: $2.6 M based on probability of discovery and extend of damage at discovery

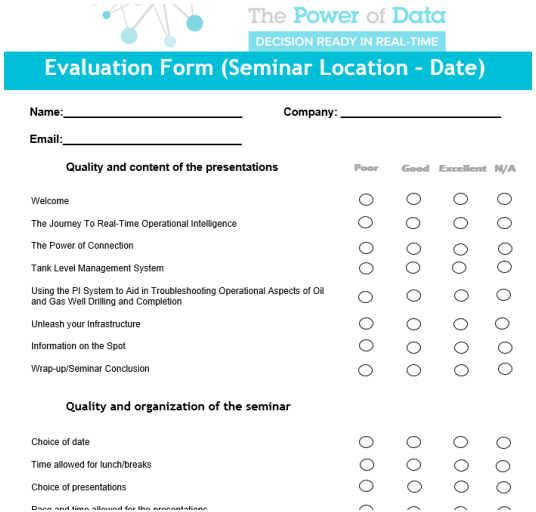
Questions

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

State your **name & company**

Please don't forget to…

Complete the Survey for this session



The Power of Data

DECISION READY IN REAL-TIME

Evaluation Form (Seminar Location - Date)

Name:_____ **Company:** _____

Email:_____

Quality and content of the presentations	Poor	Good	Excellent	N/A
Welcome	○	○	○	○
The Journey To Real-Time Operational Intelligence	○	○	○	○
The Power of Connection	○	○	○	○
Tank Level Management System	○	○	○	○
Using the PI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	○	○	○	○
Unleash your Infrastructure	○	○	○	○
Information on the Spot	○	○	○	○
Wrap-up/Seminar Conclusion	○	○	○	○
Quality and organization of the seminar				
Choice of date	○	○	○	○
Time allowed for lunch/breaks	○	○	○	○
Choice of presentations	○	○	○	○
Pace and time allowed for the presentations	○	○	○	○

Contact Information

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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

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Спасибо

Obrigado