

Using OSIsoft to Become Compliant

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Business Application Systems Developer



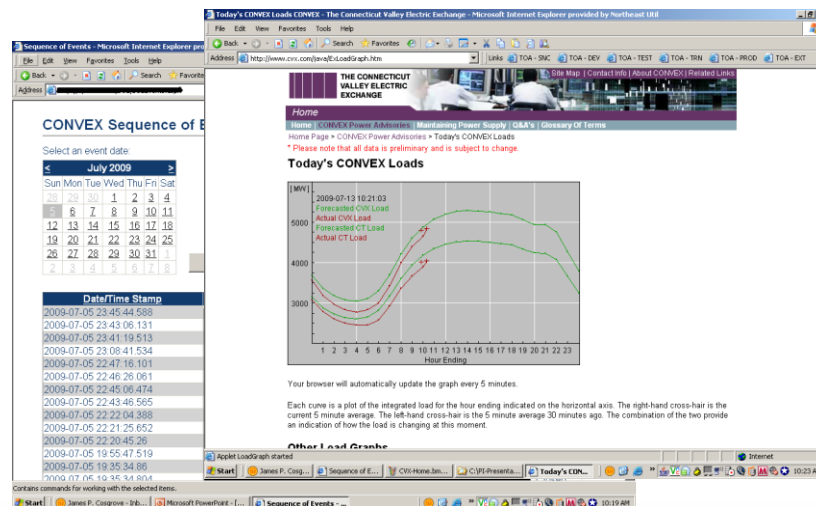
NU: Operational Data Protected

“We needed to protect our critical data and system but be able to share it with key support groups, this provides an important business benefits. Without the use of the PI System, it would have taken us several months to gather and analyze the information.”



Northeast
Utilities System

Bill McEvoy, NU CIP Program Manager



Customer Business Challenge

- Providing the highest reliability for the Bulk Power System
- Securing the Transmission Energy Management Systems while providing need data to support groups
- Implementing a strong IT Health Monitoring System for critical EMS

Solution

- Implemented PI system to provide critical secure data to non-operations support groups
- Provided focused view into data using multiple Portals.
- Provides EMS Health monitoring to meet various NERC standards

Customer Results / Benefits

- Strong positive audit results in this area
- Focused operational data on needed targets for key support groups
- Secured and strong EMS performance

Northeast Utilities - Background

- Fortune 500 diversified energy company located in Connecticut with operations throughout the Northeast
- Serving customers Connecticut, Western Massachusetts, and New Hampshire



Electrical Distribution Service Areas

- Generation, Transmission / Distribution, and Natural Gas subsidiaries

Northeast Utilities - Statistics

- Service Territory
 - 11,000+ square miles
 - 2 million+ customers
- Transmission & Distribution
 - 3,000 miles of transmission lines
 - 32,000 miles of distribution lines
 - 513 substations

History with OSIsoft

- PI Project - '03 / '04
 - AREVA Energy Management Systems (EMS)
 - CONVEX Control Center in Connecticut
 - PSNH Control Center in New Hampshire
 - 150 miles apart
 - Both with backup operation and data centers
 - Implemented PI at each location to replace legacy historians, backfilling 5 years of data to new PI systems
 - Also implement PI for Transmission Business Unit “centralized” server to support planning and operations support
 - 300,000 licensed data streams amongst 6 servers

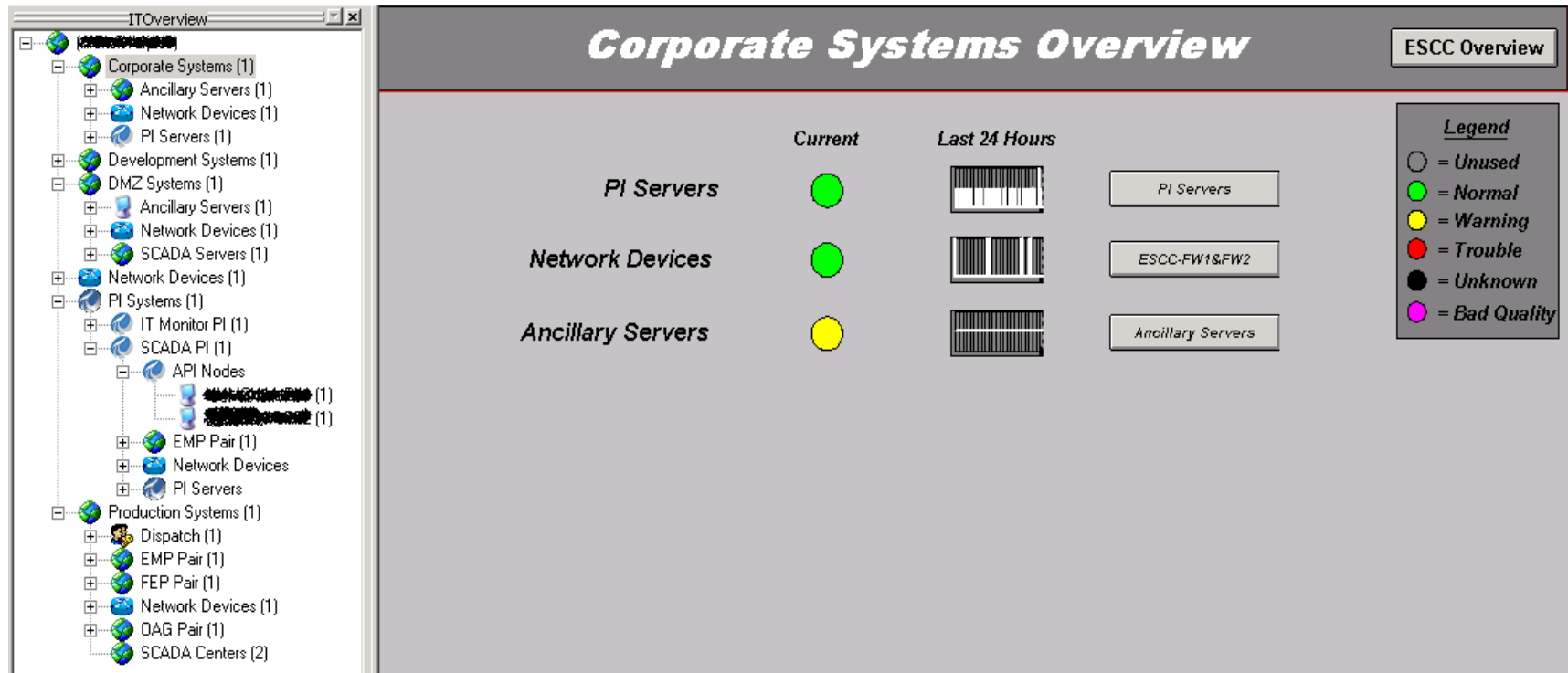
Redundancy and Availability

- EMS Redundancy is required for secure operations of the Bulk Power System
- EMS System Availability Statistics are critical to the management of these systems
 - EMS Availability commitment is 99.9%
- Parallel PI servers and API nodes at each site with an additional set of servers for Disaster Recovery
- NERC CIP Standards has increased access controls

What About Compliance?

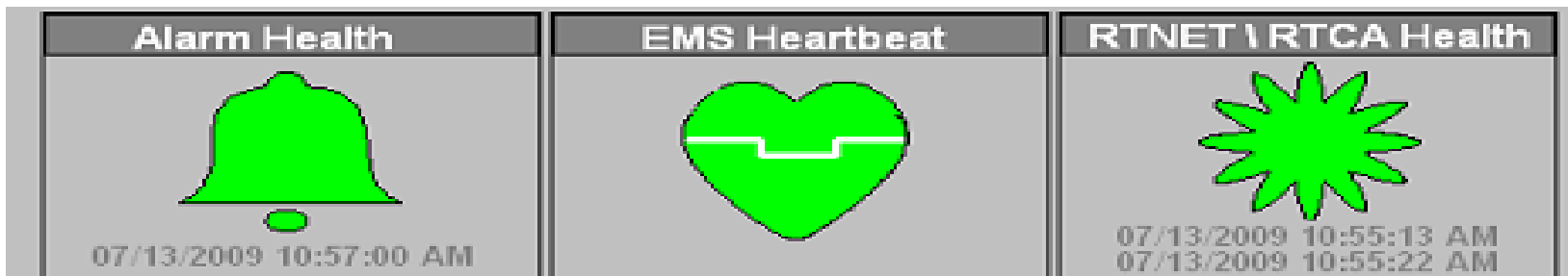
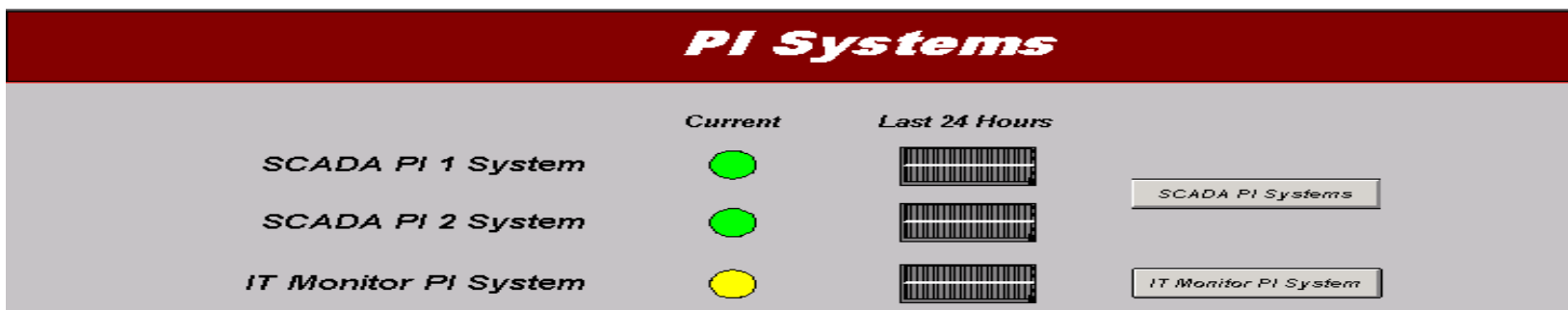
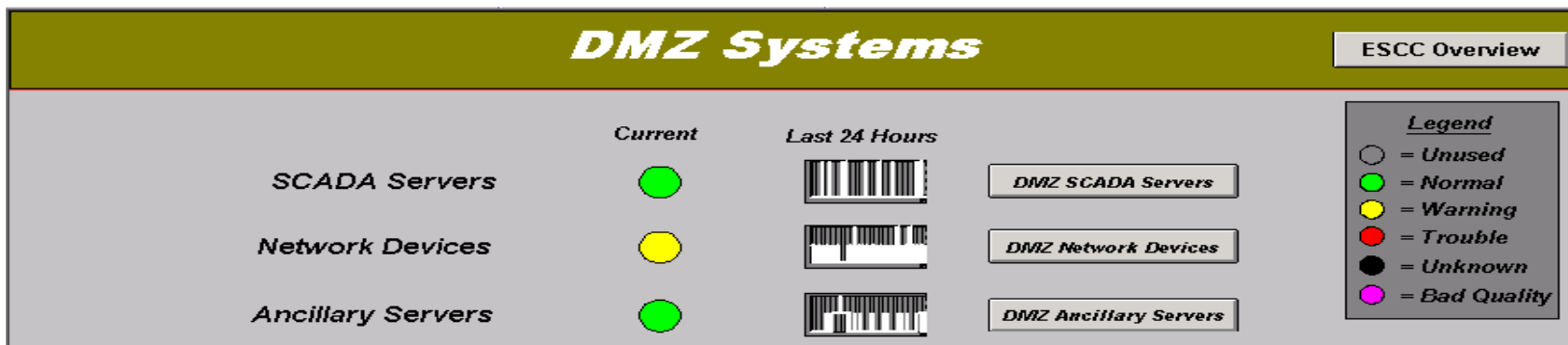
- NU's approach was to:
 - ❑ Meet current requirements to provide strong EMS Availability Reporting to meet ISO-NE requirements
 - ❑ Develop a solid baseline Critical Cyber Asset Monitoring System to be used within our control centers and with the ability to expand to field critical cyber assets.
 - ❑ Provide a separate secured environment to provide operational data to non operations personnel

ProcessBook and IT Overview

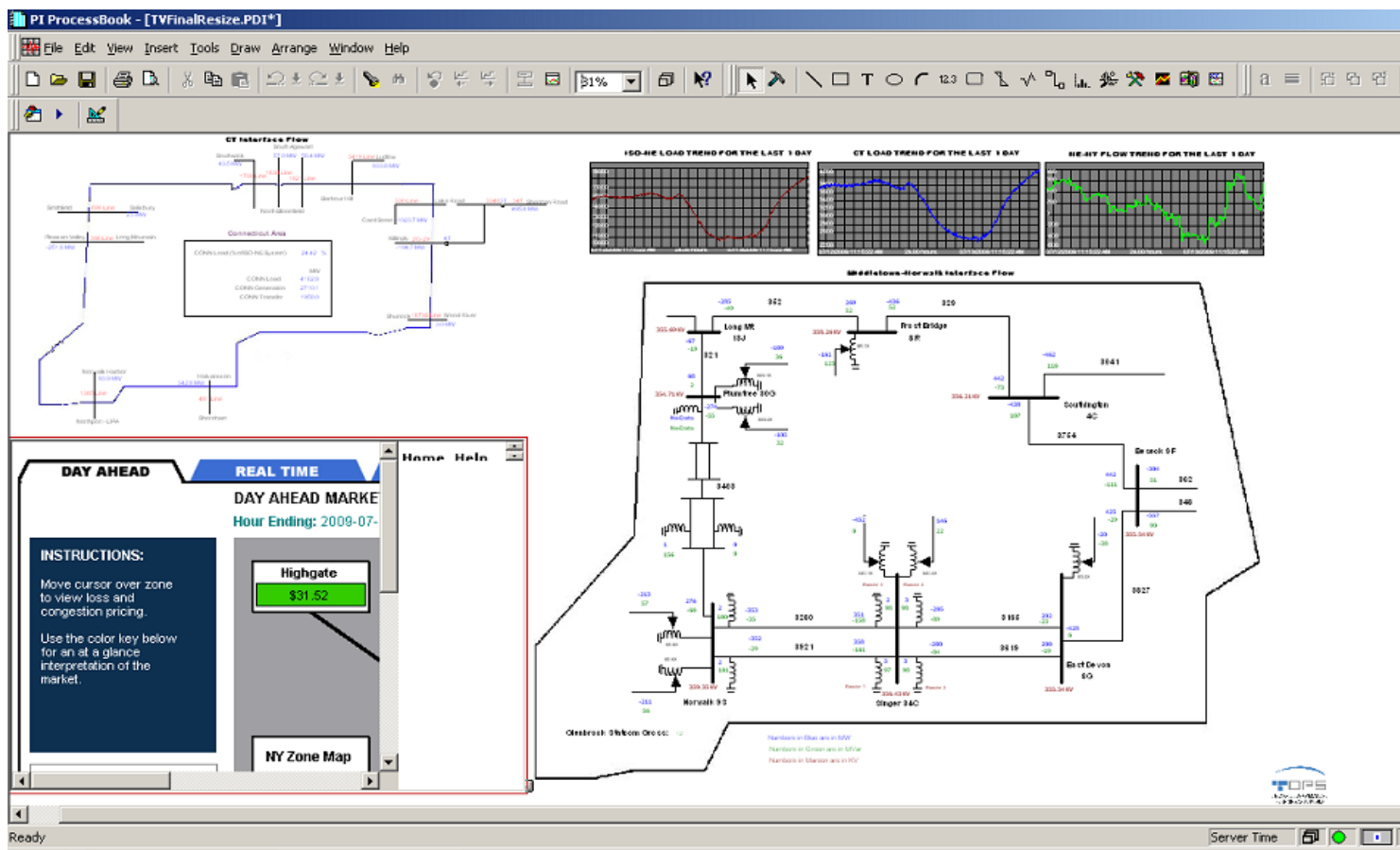


- Links displays to network elements, greatly simplifying navigation and access to contextual information

Health Monitoring Overview Screens



Transmission Operations Planning & Studies (TOPS) Display



Asset Management / Protection & Controls Web Portal

Sequence of Events - Microsoft Internet Explorer provided by Northeast Utilities

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites

Address [\[Redacted\]](#) Links TOA - SNC TOA - DEV TOA - TEST TOA - TRN TOA - PROD TOA - EXT

CONVEX Sequence of Events (Pi Server = [Redacted])

Select an event date:

July 2009						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

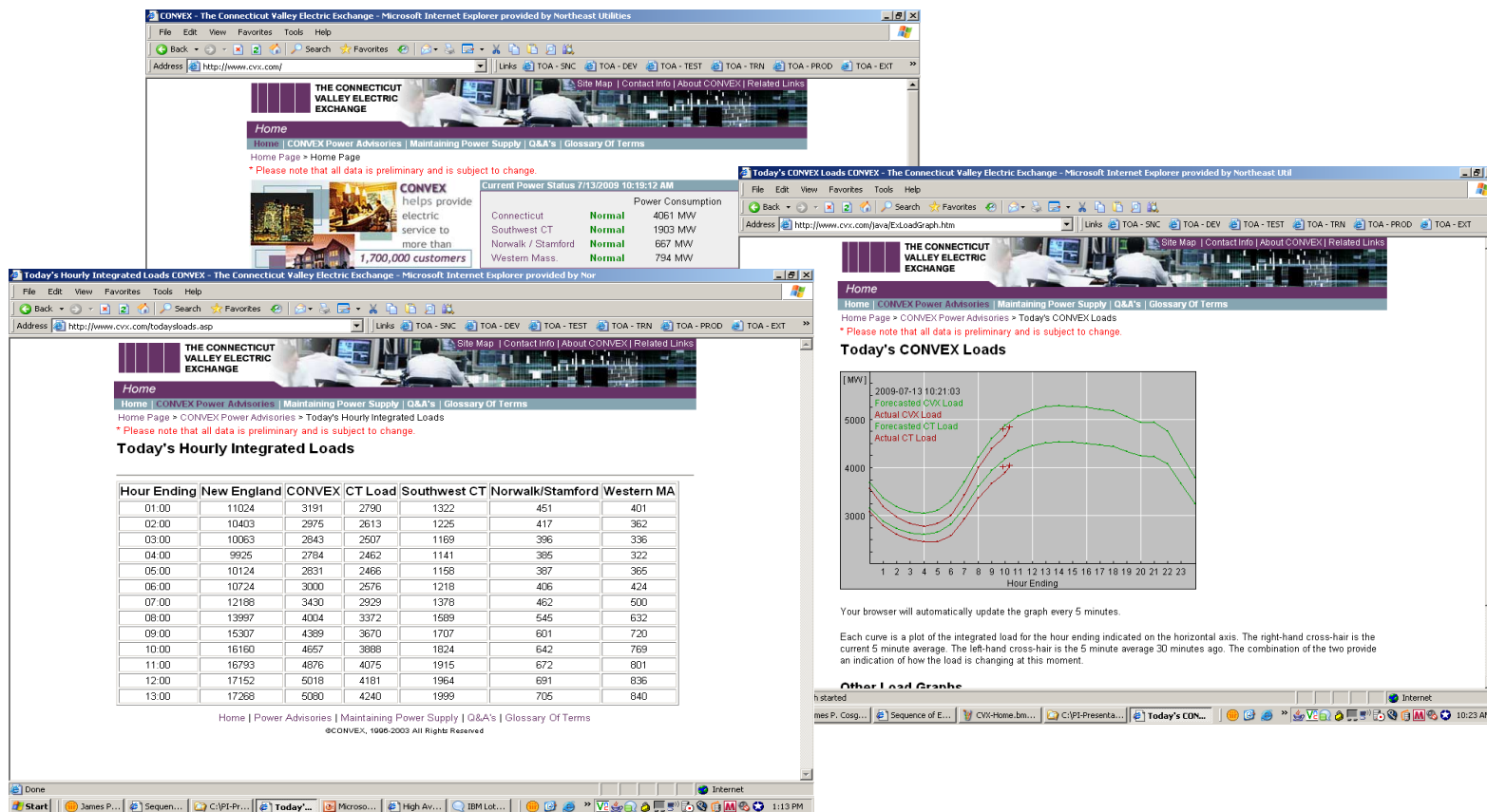
Refresh ☐ Refresh automatically every 60 seconds (Only available on current day)

Date/Time Stamp	Substation Name	Substation ID	Device	Status
2009-07-05 23:45:44.588				Open
2009-07-05 23:43:06.131				Open
2009-07-05 23:41:19.513				Open
2009-07-05 23:08:41.534				Open
2009-07-05 22:47:16.101				Open
2009-07-05 22:46:26.061				Open
2009-07-05 22:45:06.474				Open
2009-07-05 22:43:46.565				Open
2009-07-05 22:22:04.388				Open
2009-07-05 22:21:25.652				Open
2009-07-05 22:20:45.26				Open
2009-07-05 19:55:47.519				Open
2009-07-05 19:35:34.86				Open
2009-07-05 19:35:34.804				Closed

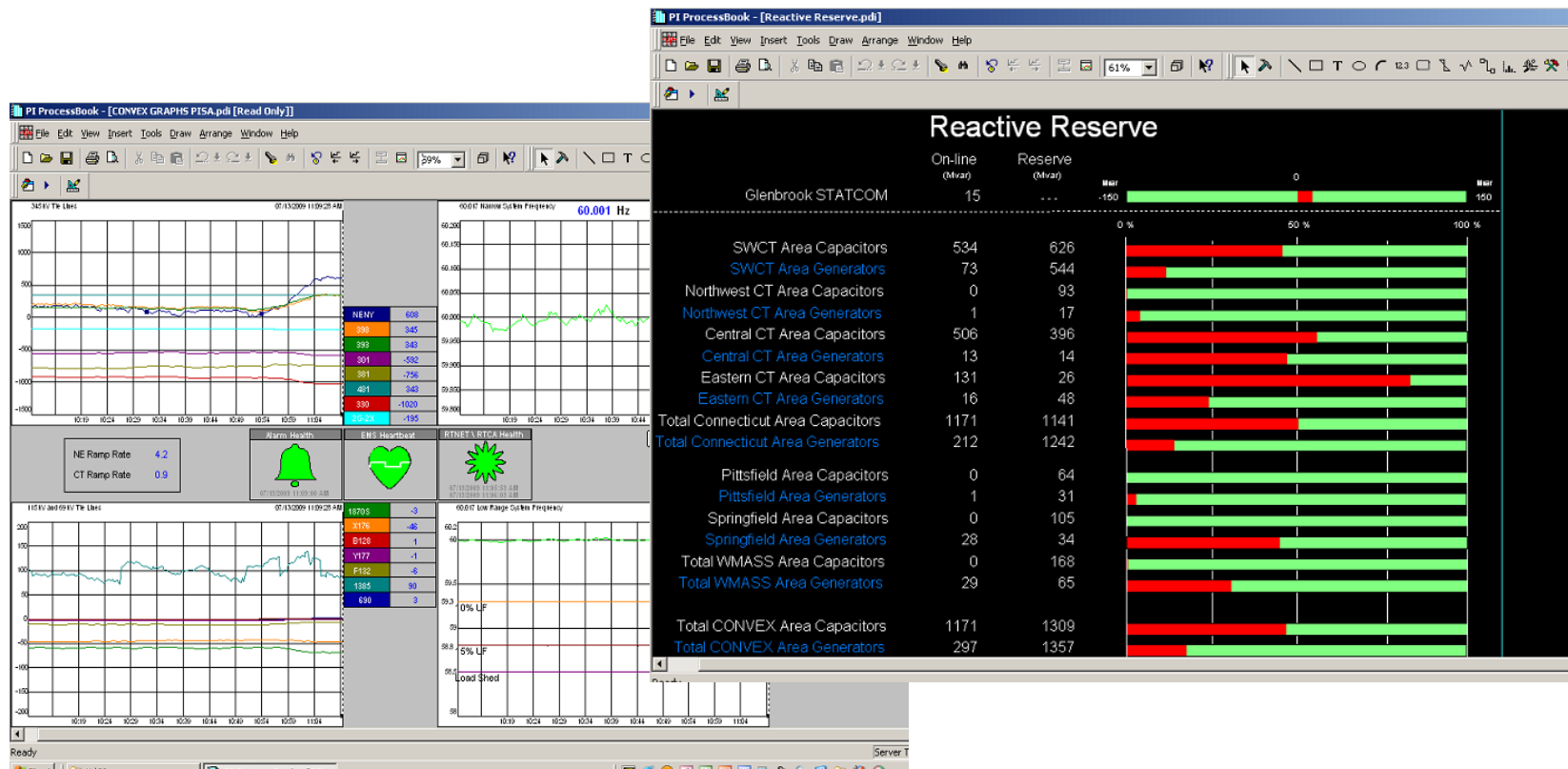
Contains commands for working with the selected items.

Start | James P. Cosgrove - Inb... | Microsoft PowerPoint - [... | Sequence of Events - ... | 10:19 AM

www.cvx.com – Real-time & Historical data available to the public



Transmission Control Center (CONVEX) Displays



Next Steps

- Continue to expand the use of PI within the operational support groups
- Provide a secure, centralized web portal, using OSIsoft's RtPortal and RtWebParts
- Upgrade to PI HA and replace old hardware
- Move to OSIsoft Enterprise System Agreement this year
- Continue to build IT EMS Health Monitoring tools to improve situational awareness of these critical systems