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comprehensive cost-effective objective experi



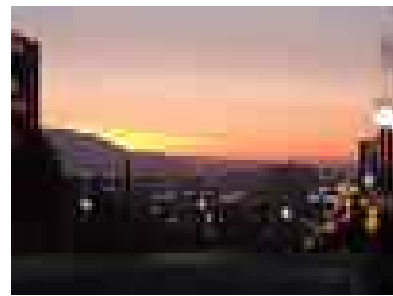
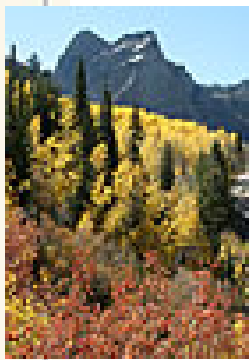
Providing consulting services in the regulatory,
telecommunications, and energy sectors



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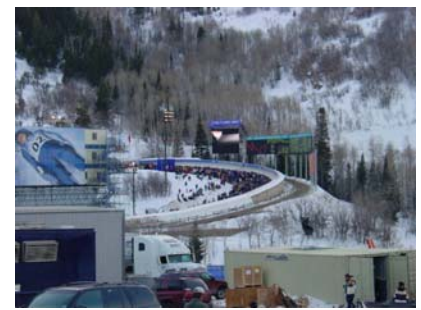
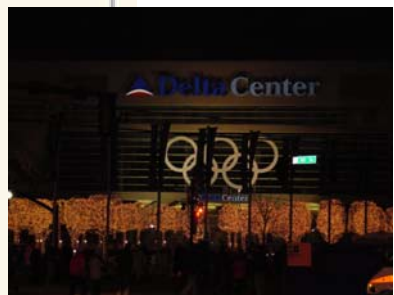
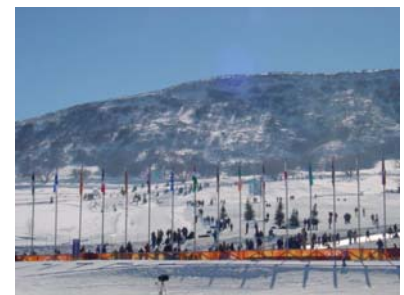
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Reliability Standards/Performance Benchmarks


Staff Committee on Executive Management

NARUC Summer Committee Meetings

July 12, 2004

Salt Lake City, Utah

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Pressures on Service Quality/Reliability

- Rate case avoidance
 - Prolonged absence of inflation
 - Low financing costs
- Restructuring
 - Reduced opportunities after divestiture
 - Rate freezes
- Non-utility resource drains
- Pre-sale spruce-ups
- Leveraged buy-outs





Regulatory Response to Service Quality Concerns

- Preventive: management and operations audits
 - Not so common any more
- Reactive: response to service disruptions
 - ComEd Chicago
 - Major storms
 - Recent blackout
- Incentive: Performance rewards and penalties
 - Wholesale Telecom
 - Retail Telecom
 - Electricity





Liberty's Service Reliability Work

- Illinois: ComEd management review and rate case adjustments
- Maine: Four-utility, statewide review of T&D reliability
- NJ: Gas LDC (NUI/ETG) with distressed parent
- Arizona: Buyout of distressed electric utility (TEP)
- NH: Service quality post-restructuring/rate freeze at NU/PSNH
- Two Southern Company States: Internal review of T&D reliability
- MT: T&D reliability at electric utility in bankruptcy (Northwestern)
- OR: Buyout of Enron's electric utility subsidiary (PGE)
- CO: Review of PS of Col. T&D action plans
- 13 Western States: Wholesale telecom PMA
- NJ, VA, MD, WV, DC: 5 separate VZ wholesale telecom PMAs
- OH: Post-SBC merger service quality declines)



Types of Standards/Benchmarks

- “Good” or “Best” Utility Practice
 - Industry experience
 - Judgment of evaluators
- Peer benchmarking (external)
 - “Caution” not “Checkered flags
 - Limited usefulness to root cause identification
- Performance trending (internal)
- Analytical balancing of cost vs. reliability
 - Quantified methods/approaches
- Consideration of infrastructure age/condition
 - Frequency/completeness of inspections
 - Preventive maintenance schedules/scope





Traditional Broad Measures

- System Average Frequency and Duration Indices
 - (SAIFI, SAIDI)
- Customer Average Duration Index
 - (CAIDI)
- Customer satisfaction surveys
- Commission complaint levels





More Focused Measures

- Number of interruptions
- Momentary interruptions
- Number of customers with multiple interruptions
- “Hot spot” response resources
- SAIFI, SAIDI, CAIDI by division, by feeder, by cause, etc.
- Repeats on worst performing list
- Number, nature of outages on transmission system
- Call-response times
- Installation/repair intervals
- Kept appointments and commitments
- Billing accuracy



The ComEd T&D Systems Review

- Major 1999 and 2000 Outages
 - Major equipment failures
 - Extended outages during oppressive summer weather
 - Massive capital/O&M recovery program
 - In a test year
- Commission-ordered baseline review
 - Describe T&D and related systems as of 1999
 - Identify “Good Utility Practice
 - Report any areas of deficiency
- Subsequent three--year, quarterly review program





Comprehensive Organization and Structure Review

- Division of responsibilities
- Budgeting and expenditure levels
- Assembly, reporting, and use of reliability information
- Staffing
- Work management and personnel planning practices
- Customer service
- Communications (emergency responses, internal, customer)





Examination of all Major Work Activities

- System Planning
- System Design
- Construction Standards and Practices
- System Protection
- Lightning Protection
- System Operations and Maintenance
- Systems Condition (“State of the Network”)
- Substations
- Vegetation Clearance Management and Practices
- Animal Protection Standards and Practices





The Test-Year Problem

- Long-term trends
 - Utility spending
 - Financial conditions
- Marginal differences in test year
 - Deferred capital spending
 - Recovery expenditures in O&M
- Measurements of work performed over time
- Pro forma adjustments to revenue requirements
- Comprehensive settlement





Broad Observations

- Service quality outputs generally are lagging measures
- Outputs measures useful for transactional activities
- Inputs more meaningful in evaluating sustaining work
- Effects of expenditure dislocation on rates
- Encouraging infrastructure investment





Major Variables - Generating Measurements

- Quality of internal measurement/analysis
- Measurement consistency/accuracy
- Accounting changes
- Management versus FERC accounting
- Closeness of finance/operations correlation
- Quality of non-utility financial performance






Major Variables – Using Measurements

- Cycle Lengths
 - Inspection
 - Preventive Maintenance
 - Tree-trimming
- Percent of work accomplished each year vs. cycle requirements
- Maintenance backlogs
- Pre-outage warning signs
 - Number of transmission system device operations
 - Number and duration of equipment overloads
- Number of restoration crews
- Efficiency Improvements
 - Crew travel time
 - Dispatch efficiency



Potential Alarms

- Changing conservatism in design criteria
 - Changes in capacity/reserve margins
 - Attention to changes in load/usage forecasts
 - Root cause classification and analysis
 - Maintenance backlogs
 - Maintenance prioritization methods
 - Testing and inspection planning and performance
 - Correlation between changes in staff/productivity
 - Vegetation management expenditures
 - Growth in real-time equipment monitoring/control
- 



Metrics Design

- Incent the correct behavior
- Don't assume the pain exceeds the gain
- Make the measures clear and objective
- Define the exclusions carefully
- Assure consistent measurement across divisions
- Check the computer code
- Audit, audit, audit

