

# Alternative Regulation - Benchmarking



NARUC Staff Subcommittee on Accounting and Finance

Oklahoma City, Oklahoma

April 21 -23, 2013

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# Presentation Outline

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- To discuss benchmarking and performance measures
- To discuss the steps in designing a benchmarking program
- Arguments for and against benchmarking a utility's performance
- To present an illustrative benchmarking scenario for review and comment



# What is Benchmarking

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- It is one of the family of analytical and regulatory tools that helps regulators to evaluate the performance of utilities in their states
- It relies on measuring the efficiency of the service of a population of utility firms and then compares these efficiencies to an individual firm to determine how the individual firms performance ranks with the “Best in Class” or “Best Practices”
- In order to have effective Benchmarking one needs to establish “Performance Measurements” also called “Performance Standards”



# What Does Performance Depend On

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Performance depends on two broad factors:

- Management behavior
- Market and business conditions and other factors beyond the control of a utility



# What Are Performance Measures

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- Performance refers to the outcomes of one or more utility actions resulting from management decisions
- These actions affect the various dimensions of a utility's operations and services including cost performance, reliability and service quality all of which affect consumer welfare
- Performance measures traditionally rely on historical data or on estimates derived from economic models and statistical techniques



# Some Different Perspectives of Performance Standards

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- From an engineering perspective, efficiency may take on a strictly physical form such as the ratio of person-hours of labor to kilowatt-hours of output
- From an economic perspective, efficiency reflects management behavior in minimizing costs over the long term
- From an accounting perspective, it can be the comparison of a utility's performance over time or with other utilities
- While performance evaluations often focus on cost, management also affects the non-cost aspect of utility performance
  - the effects of outages and service interruptions to customers
  - the responsiveness of utility personnel to customer complaints and service quality



# Applications of Benchmarking and Performance Measures

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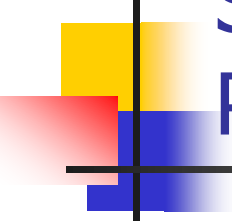
- Comparison of a utility's actual performance with a benchmark both in rate cases and other regulatory forums
- Evaluation of the reasonableness of "cost-of-service" components, adjustment of the rate of return on equity (ROE), and use of total factor productivity
  - Rate-of-return regulation
  - Price-and-revenue cap regulation
  - Riders and trackers
  - Regulatory incentive mechanisms
- Other non-rate case issues
  - Quality of service
  - Infrastructure investment programs
  - Energy efficiency such as renewables, demand side management, etc.
  - Special investigations



# Steps in Designing a Benchmarking Program

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- Step one: Identify the functional area to be benchmarked and establish the performance measure(s)
- Step two: Calculate the performance measure for each functional area being benchmarked
- Step three: Compare and assess the utility's performance against a predetermined benchmark
- Step four: Take action as required



# Steps in Designing a Benchmarking Program – Step 1

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Identify the functional area to be benchmarked and establish a performance measure

- What purposes would they serve in improving utility performance
- The effect of a functional area on a utility's total cost or consumer value from reliable and high-quality utility service
- The ease of measurement and reporting
- The influence of utility management in affecting performance

# Steps in Designing a Benchmarking Program

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<b>Benchmarking Program</b>	<b>Performance Measurement</b>
<b>System Reliability</b>	<ul style="list-style-type: none"> <li>• Outage indices</li> <li>• Power quality indices</li> </ul>
<b>System Safety</b>	<ul style="list-style-type: none"> <li>• Public safety measures</li> <li>• Employee safety measures</li> </ul>
<b>Customer Satisfaction</b>	<ul style="list-style-type: none"> <li>• Customer complaints</li> <li>• Call center performance</li> <li>• Appointments</li> <li>• Metering and billing accuracy</li> <li>• Emergency response</li> <li>• Results of customer surveys</li> </ul>
<b>Financial Health</b>	<ul style="list-style-type: none"> <li>• Liquidity</li> <li>• Equity</li> <li>• Leverage</li> <li>• Variable-rate debt</li> <li>• Return and valuation</li> <li>• Credit ratings</li> </ul>
<b>Production Costs</b>	<ul style="list-style-type: none"> <li>• Utility total costs</li> <li>• Different categories of costs</li> </ul>
<b>Plant Performance</b>	<ul style="list-style-type: none"> <li>• Equivalent forced outage rate on demand</li> <li>• Equivalent forced outage rate on peak</li> <li>• Heat rate</li> <li>• Outage rates</li> <li>• Availability factor</li> <li>• Capacity factor</li> <li>• Economic efficiency</li> </ul>

\* Table is from Ken Costello, NRI paper "Where does your Utility Stand?", November 15, 2010



## Steps in Designing a Benchmarking Program – Step Two

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Calculate the performance measure for each functional area being benchmarked

- Performance measures should be objective, quantifiable, and verifiable
- Performance measures can derive directly from accounting or other statistics periodically compiled and reported by utilities
- Utilities or regulatory staff can estimate performance measures using sophisticated analytical techniques

# Designing & Developing a Benchmarking Program

Performance Measurement	Use	Limitation
<b>Statistical Method</b>	<ul style="list-style-type: none"> <li>• Estimation of average performance as the predicted cost controlling for a utility's exogenous conditions</li> <li>• Ranking of the performances of different utilities based on the deviation between a utility's actual performance and average performance</li> <li>• Estimation of the effect of individual factors on cost</li> <li>• Application of statistical tests for performance evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Predictions of average performance sensitive to different assumptions, model design, the data, and econometric errors</li> <li>• Requirement of substantial data</li> <li>• Demand for skills in sophisticated econometric and statistical techniques</li> <li>• Inclusion of only quantifiable factors</li> </ul>
<b>Accounting Cost and Non-Cost Ratios</b>	<ul style="list-style-type: none"> <li>• Provision of information that "red flags" or identifies potential problem areas at low cost</li> <li>• Provision of preliminary information for in-depth inquiry</li> <li>• Comparison of a utility's performance over time or with other utilities</li> </ul>	<ul style="list-style-type: none"> <li>• No separation of management effects and other factors on performance</li> <li>• Narrow-based measures that don't account for interdependencies between utility functions</li> <li>• No definite benchmark</li> </ul>
<b>Management Audits</b>	<ul style="list-style-type: none"> <li>• Evaluation of current processes, policies and management practices for specific functional areas</li> <li>• Recommendation on improvements or prudence of past actions</li> <li>• Establishment of "process" standards for future performance</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive to conduct</li> <li>• No "outcome" metric or benchmark</li> </ul>
<b>Total Factor Productivity</b>	<ul style="list-style-type: none"> <li>• Quantification of the overall cost performance of a utility</li> <li>• Quantification of the effects of individual factors on performance</li> <li>• Comparison of a utility's performance over time or with other utilities</li> </ul>	<ul style="list-style-type: none"> <li>• Estimation of some required data</li> <li>• No separation of management effects and other factors on performance</li> <li>• No definite benchmark</li> </ul>
<b>Price</b>	<ul style="list-style-type: none"> <li>• Comparison of a utility's average cost with other utilities</li> </ul>	<ul style="list-style-type: none"> <li>• No separation of management effects and other factors on performance</li> <li>• No explicit benchmark</li> </ul>

\* Table is from Ken Costello, NRRI paper "Where does your Utility Stand?", November 15, 2010



# Steps in Designing a Benchmarking Program – Step Three

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## Compare and assess the utility's performance against a predetermined benchmark

- The benchmark can be the performances of other utilities, the regulator's own standard or the utility's own historical performance
- A comparison can help determine whether a utility's performance falls within or outside the range of "standard" performance
- The regulator can perform an internal review to further examine the performance statistics in order to identify possible explanations for exceptionally good or bad performance
- The regulator might also request to the utility to provide comments addressing the results of performance metrics



# Steps in Designing a Benchmarking Program – Step Four

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## Take action as required

- Allowing a utility to recover costs for a particular function
- Conducting a more detailed review of the utility's behavior, or establishing stronger regulator incentives for improved performance



# Arguments For Benchmarking A Utility's Performance

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- An important function of regulation is to measure and evaluate the performance of public utilities
- Effective regulation should require utilities to be held accountable for their performance
  - The need to measure utility performance is a key component in determining “just and reasonable” rates or take other regulatory actions related to quality of service issues
  - To address any performance problems under regulation



# Arguments Against Benchmarking A Utility's Performance

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- Independent benchmarks, in and of themselves, do not create stronger performance incentives for utilities
- Benchmarking programs are costly and are difficult to administer
- Actual company costs are a more reliable indicator of the cost of providing service than costs calculated from benchmarking programs
- Question of legal authority to require benchmarking programs
- Benchmarking is an effort by regulators to micro manage a utility

# What Are the Problems With This Benchmarking Scenario

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**A & G Expense per meter:**

**A & G Expense per Megawatt-hours sold:**

Company	Calendar Year 2011	Calendar Year 2010	Calendar Year 2009	Calendar Year 2008	Calendar Year 2007
Company A	\$1.29	\$1.29	\$1.12	\$0.79	\$0.63
Company B	\$1.29	\$1.26	\$1.12	\$0.79	\$0.62
Company C	\$1.36	\$1.43	\$1.16	\$0.82	\$0.68
Company D	\$1.50	\$1.77	\$1.43	\$1.43	\$1.36
Company E	\$1.22	\$1.23	\$0.78	\$1.02	\$1.09

Company	Calendar Year 2011	Calendar Year 2010	Calendar Year 2009	Calendar Year 2008	Calendar Year 2007
Company A	\$1.23	\$1.23	\$1.07	\$0.75	\$0.60
Company B	\$1.23	\$1.20	\$1.07	\$0.75	\$0.59
Company C	\$1.30	\$1.36	\$1.10	\$0.78	\$0.65
Company D	\$1.43	\$1.69	\$1.36	\$1.36	\$1.30
Company E	\$1.17	\$1.17	\$0.75	\$0.97	\$1.04



# What Are the Problems With This Benchmarking Scenario

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- Performance standards have not been established such as what is outstanding, average and below standard performance
- Input data is missing. Verification of the input data is crucial. Without the input data such key questions can not be answered such as:
  - Are these companies comparable for benchmarking
  - Are there differences in these companies that need to be considered such as:
    - Differences in demographics
    - Differences in geographic regions
    - Differences in generation mix
    - Differences in load characteristics (winter vs. summer peaking)
    - Government impacts such as Renewable and Clean Air standards
    - Mergers and consolidations
    - Changes in accounting systems
    - Non-recurring events
    - Economic events
- In summary, there is a lot more work to be done in this example before we would have an effective benchmarking scenario, however, we now have a better idea of the steps we need to take to accomplish this goal



# Concluding Remarks

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- If regulators hope to set regulatory standards, determine “just and reasonable” rates or take other actions integral to their duties, they need to measure utility performance and acquire other information to evaluate utility performance
- Benchmarking and performance measures offer regulators a tool that is useful for different purposes in different venues
- Regulators first should recognize the shortcomings of the performance measures for benchmarking purposes. They need to exercise caution in interpreting and using the measures
- A good approach is to use different benchmarking methods to compare and evaluate the results rather than rely on a single method
- In summary, benchmarking and performance measurements are one of the many tools regulators should have in their regulatory tool box



# Examples of Benchmarking Studies

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- “How Performance Measures Can Improve Regulation”, by Ken Costello, NRRI Report 10-09, June 2010
- “Benchmarking Electric Utilities: Combining Energy Conservation, Renewable Energy, and Financial Strength”, Final Report, Gainesville Regional Utilities, October 2004
- “Approaches to Setting Electric Distribution Reliability Standards and Outcomes”, by Serena Hesmondhalgh, William Zarakas and Toby Brown of The Brattle Group, January 2012.
- Ontario Energy Board “Benchmarking Consideration to Guide Ratemaking for the 2006 EDR”, by Thomas Adams and Alfredo Bertolotti, January 12, 2005
- “Where Does Your Utility Stand? A Regulator’s Guide to Defining, Measuring and Assessing Performance”, by Ken Costello, NRRI for the NARUC Committee on Ware, November 15, 2010.
- “Customer Service Quality Incentive Programs New York Energy Utilities”, by Sandra S. Sloane, Office of Consumer Services, June 2-5, 2008, Zagreb, Croatia
- “Service Quality Regulation for Detroit Edison: A Critical Assessment” by Larry Kaufmann, Pacific Economics Group, March 2007.
- CAMPUT “Benchmarking For Regulatory Purposes” prepared by: First Quartile Consulting, LLC and Elenchus Research Associates, Inc., April 2010
- “Benchmarking, Rate Case and Regulatory Commitment”, by Jeff D. Makholm, Ph.D., Senior Vice President, NERA for Australian Competition & Consumer Commission, Incentive Regulation and Overseas Development Conference, Sydney, Australia, November 15, 1999