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POINT OF VIEW

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ARE UTILITY ECONOMIES OF SCALE REAL, OR A MIRAGE?

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After 70 years of steady consolidation, there are real questions about the existence of significant economies of scale in the US electric utility industry. From 1995 to 2010, over 40 mergers were announced, representing promises of billions of dollars of expected synergies. During those 15 years, which included two waves of industry consolidation (1999-2000 and 2007-2008), many companies reported successful realization of synergies from their mergers and acquisitions. Based on these pronouncements (and the many utility mergers that occurred between the 1920s and 1970s), one would expect to find evidence of significant economies of scale across the industry. In other words, the bigger the utility gets, the more efficient it becomes and the lower its unit costs go, particularly in the centralized, corporate functions.

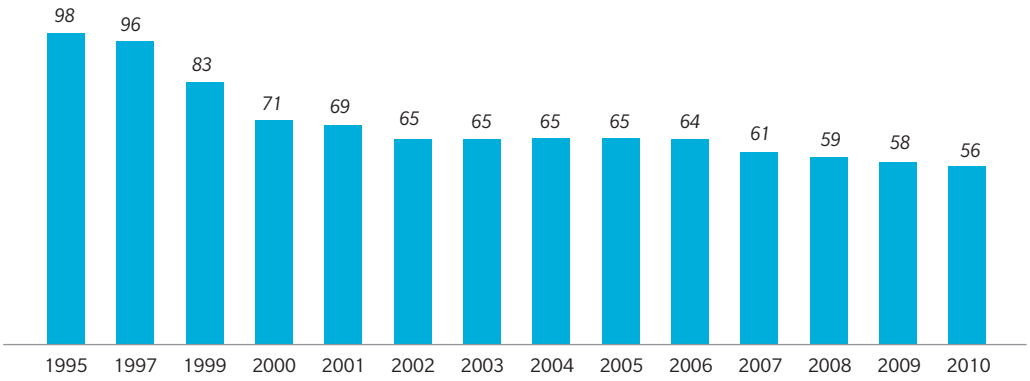
Our analysis of the cost structures of regulated electric utilities fails to find the expected economies of scale; however, we identified that as much as $2 billion of *potential* economies of scale should be available to utilities. If this is indeed the case, it raises two important questions: Why are economies of scale not being realized? And what should management teams be doing to capture these elusive scale economies and increase shareholder returns?

MARSH & McLENNAN COMPANIES

INDUSTRY CONSOLIDATION – A SLOW BUT STEADY PATH

Since 1995, the industry has seen significant consolidation. As Exhibit 1 shows, in 1995 there were 98 investor-owned utility holding companies in the EEI Index (Edison Electric Institute Index). Just 15 years later there were 56 investor-owned holding companies, representing a significant consolidation.

EXHIBIT 1: INDUSTRY CONSOLIDATION 1995-2010 US INVESTOR-OWNED HOLDING COMPANIES



Source: EEI Index.

As a result, the average size of a utility holding company has grown. The average number of customers served by a shareholder-owned utility holding company increased by 20% since 2001.

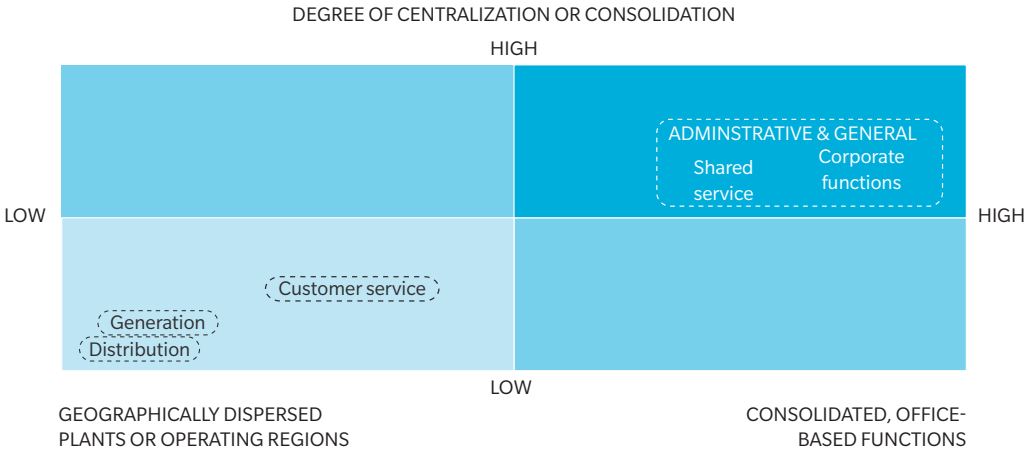
These mergers tend to be combinations of contiguous or regional utilities that seek to combine their operations to capture, at least in part, advantages of scale. Oliver Wyman has found, however, that larger utility operating companies and holding companies are not realizing lower costs on a unit cost basis than their smaller counterparts.

THE ELUSIVE SCALE ECONOMIES

The promise of merger synergies typically relies upon capturing economies of scale: The economic principle is that, as the size of the utility grows, its long-run average costs will fall as its costs are spread across a larger denominator (e.g., customer base or MW of generation).

To determine the degree of scale economics in the utility industry, Oliver Wyman analyzed years of regulated costs reported to FERC. Our research revealed that despite decades of consolidation, scale economics are not evident. One would expect to find some economies of scale in most functional areas, with the greatest scale economies appearing in functions that are centralized, such as Administrative and General or corporate and support functions (See Exhibit 2.)

EXHIBIT 2: EXPECTED IMPACTS FROM ECONOMIES OF SCALE BY UTILITY FUNCTION



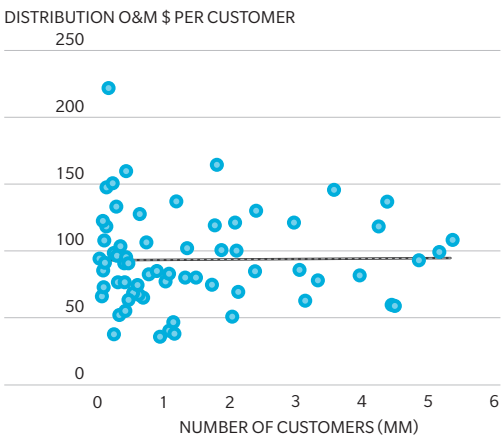
In this paper, we will explore each functional area describing what the cost data actually reveal and where economies of scale might be more readily captured.

DISTRIBUTION ECONOMIES OF SCALE?

Distribution Operation & Maintenance (O&M) functional costs were analyzed to determine if scale drives (or even influences) cost levels. As Exhibit 3 depicts, a regression analysis of the FERC-reported distribution cost per customer[1] shows almost no correlation with scale (number of customers) and does not demonstrate a downward sloping best fit line, which would provide evidence of economies of scale. (See sidebar at the top of the next page for more details regarding how to read these regression charts.)

EXHIBIT 3: POTENTIAL ECONOMIES OF SCALE – DISTRIBUTION O&M COSTS

HOLDING COMPANY



FINDINGS	OPERATING COMPANY	HOLDING COMPANY
R-Squared	0.0079	0.0000538
Correlated?	1%	0%
Negative Slope?	No	No
Economies of Scale?	No	No

Source: Oliver Wyman analysis, FERC data.

1 Our analysis encompassed 68 holding companies, representing 133 electric utility operating companies (101 electric utility operating companies under 1 million customers and 32 electric utility operating companies over 1 million customers). We also analyzed distribution cost per mile in an earlier analysis and found no evidence of economies of scale.

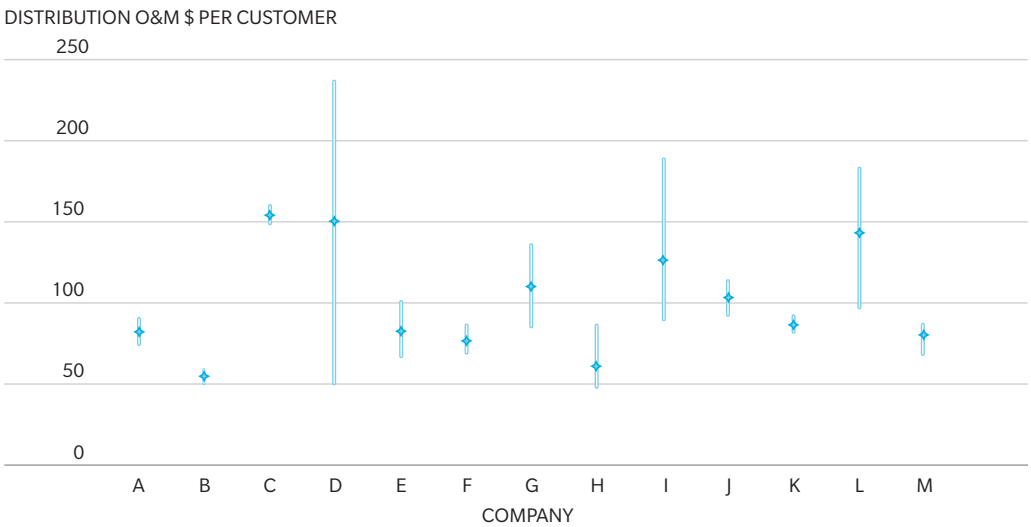
In our analysis, economies of scale are measured by R-squared, the proportion of variance in the dependent variable (cost per unit) that can be accounted for by the regression equation and independent variable (scale: number of customers or MW). If there were no relationship, the R-squared value would equal 0, while if the variables were perfectly correlated, the R-squared value would equal 1. In most cases, the R-squared will fall somewhere between 0.0 and 1.0. For example, an R-squared value of 0.01 would mean that only 1% of the variance in the dependent variable can be explained by the regression equation. The other 99% is unexplained. An R-squared value of 0.01 indicates that scale is an extremely poor determinant of costs. In the regression exhibits, each utility's costs are plotted as dark blue data points, together with the best fit linear cost curve. A negative sloping (downward) cost curve indicates some economies of scale could be present if a substantial correlation (R-squared) is identified.

As shown in Exhibit 3, no economies of scale were found in our analysis of distribution O&M costs, either at a holding company or operating company level. In other words, neither larger holding companies nor larger operating companies have lower distribution O&M costs per customer than their smaller counterparts do.

These low R-squared results indicate that there is no significant correlation between distribution cost per unit and company size, demonstrating that scale economies are not a significant factor in determining a company's distribution O&M costs.

When we focus on the largest holding companies that have multi- state operations, we find that there is a wide dispersion of operating company costs within many of the holding companies (See exhibit 4.) Similar to the observations above, distribution O&M cost per customer in operating companies is not correlated with operating company size.

EXHIBIT 4: DISPERSION OF OPERATING COMPANIES' DISTRIBUTION COST LEVELS WITHIN EACH HOLDING COMPANY



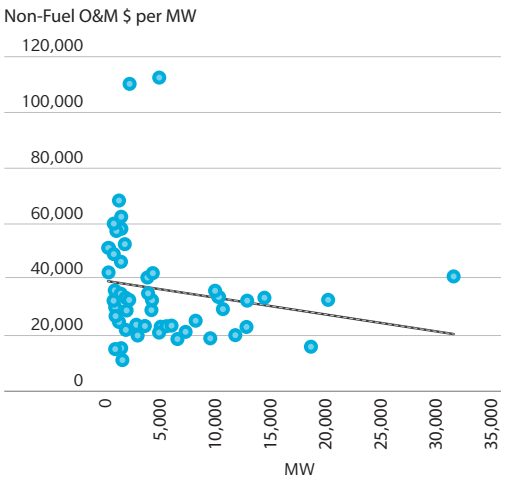
Source: Oliver Wyman analysis, FERC data.

In fact, we would expect that scale economies are difficult to find in the distribution function because most O&M cost is associated with labor intensive, geographically dispersed regional groups. Distribution O&M expenses primarily consist of field crews, technicians and contractors physically located throughout the utility service territory, making it difficult to extract significant economies of scale. The distribution functions where one might expect to find operational synergies or economies are smaller, less labor intensive support functions (e.g., office-based engineering, design, standards, system operations and dispatch).

GENERATION ECONOMIES OF SCALE?

While one would expect some economies of scale to be present in the generation cost structure as a utility's generation capacity rises, the geographic dispersion of power plants and their varying roles in economic dispatch can limit the potential for capturing significant economies of scale. As depicted in Exhibit 5, the data indicates scale is a very weak determinant of steam generation costs. In fact, the data shows very little correlation between scale (MW of generation) and non-fuel O&M costs for steam (coal, gas and oil-fired) generation.

EXHIBIT 5: POTENTIAL ECONOMIES OF SCALE – STEAM GENERATION O&M COSTS



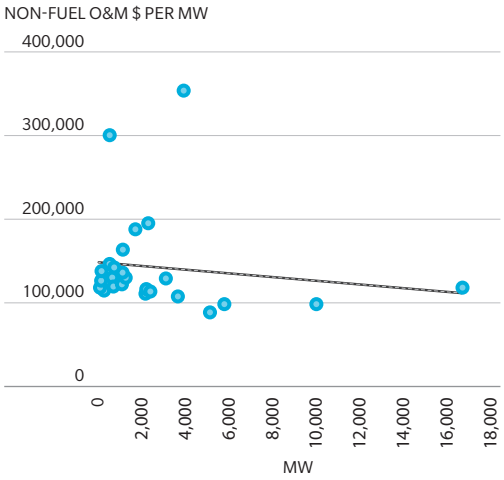
FINDINGS	NON-FUEL O&M	TOTAL O&M
R-Squared	0.0306	0.0226
Correlated?	3%	2%
Negative Slope?	Moderate	Moderate
Economies of Scale?	Very Weak	No

Source: Oliver Wyman analysis, FERC data.

Similar results were found in our analysis of nuclear generation non-fuel O&M. The varying reactor technologies and the unique aspects of nuclear generation, as well as its role as base-load plants, may also limit potential scale advantages. Our analysis identified very limited scale economies in nuclear generation (See Exhibit 6.)

Note that the downward sloping best-fit lines in both the steam- and nuclear-generation graphs seem to indicate that economies of scale exist; but the low R-squares values indicate an extremely small correlation between non-fuel cost per MW (or even cost per MWh) and scale (MW capacity). In fact, we find the same results whether the analysis compares non-fuel O&M costs or total O&M costs (including fuel).

EXHIBIT 6: POTENTIAL ECONOMIES OF SCALE – NUCLEAR GENERATION O&M COSTS



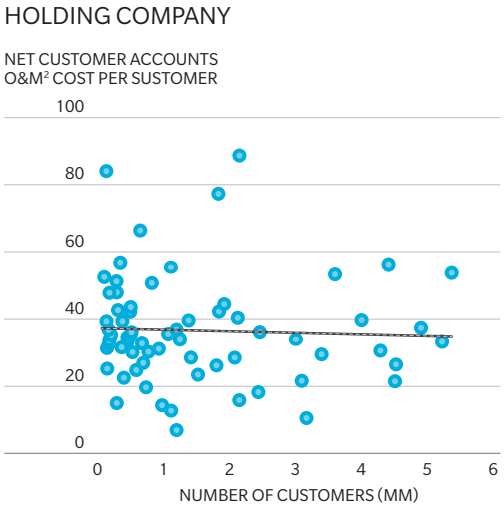
FINDINGS	NON-FUEL O&M	TOTAL O&M
R-Squared	0.0196	0.0230
Correlated?	2%	2%
Negative Slope?	Slight	Slight
Economies of Scale?	No	No

Source: Oliver Wyman analysis, FERC data.

CUSTOMER SERVICE ECONOMIES OF SCALE?

A similar analysis of customer service or "meter-to-cash" costs (called "Customer Accounts Expenses" in FERC terminology) as depicted in Exhibit 7, also reflects little, if any, economies of scale.

EXHIBIT 7: POTENTIAL ECONOMIES OF SCALE – CUSTOMER SERVICE COSTS



FINDINGS	OPERATING COMPANY	HOLDING COMPANY
R-Squared	0.005	0.0015
Correlated?	1%	0%
Negative Slope?	Slight	Slight
Economies of Scale?	No	No

Source: Oliver Wyman analysis, FERC data.

In fact, there is no significant correlation between customer service expense per customer and the size of the utility (number of customers), whether we review the data at the operating company or at the holding company level. As a result, there is little evidence of economies of scale in the meter-to-cash or customer service function.

2. Customer Accounts excluding uncollectible accounts expenses.

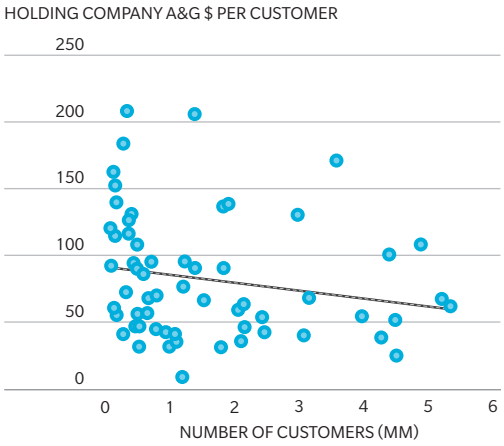
Although the customer service function has some field operations (field meter operations), it mostly comprises a number of office-based functions (e.g., call centers, billing.) These could be centralized or consolidated, and thus should exhibit some evidence of scale economies (or lower unit costs as company size increases.) Yet we found little evidence of economies of scale in our cost analysis. We will later discuss several potential reasons scale economies are not being realized.

ADMINISTRATIVE AND GENERAL ECONOMIES OF SCALE?

If there is one area of a utility where economies of scale would be expected it would be in corporate and shared services (or in FERC's terminology: "Administrative and General" (A&G) functions). A&G typically comprises the costs for corporate and support functions such as finance, supply chain, human resources, legal and other office-based functions[3]. The resources typically needed in these functions should not be directly proportional to company size, thus we would expect that in larger companies the resources associated with these functions would be spread over a larger corporate base, thereby reducing unit costs.

However, despite years of consolidation, scale economies are not evident in corporate and shared services functions (See Exhibit 8.) Once again, the downward sloping best-fit cost curve indicates that scale economies are available, but no statistically significant correlation to the industry cost data exists, whether these costs are reviewed on a per customer or per megawatt basis.

EXHIBIT 8: POTENTIAL ECONOMIES OF SCALE – ADMINISTRATIVE & GENERAL O&M COSTS



FINDINGS	O&M/ CUSTOMER	O&M/MW
R-Squared	0.0382	0.0673
Correlated?	4%	7%
Negative Slope?	Moderate	Yes
Economies of Scale?	Very Weak	Very Weak

Source: Oliver Wyman analysis, FERC data.

These weak correlations mean that there are very limited, if any, economies of scale in A&G, despite expectations to the contrary.

3 Administrative and General (A&G) are costs as reported to FERC; for the purpose of this analysis we have excluded pensions and benefits expenses.

ARE SCALE ECONOMIES A MIRAGE, … OR HAVE THEY NOT BEEN REALIZED?

Given that our analysis found no statistically significant economies of scale in any functional area, perhaps a little of both of these are true. In the case of large single operating company utilities that were formed from mergers many decades ago, any economies of scale that were once realized are likely to have been lost over time due to the proliferation of regional variances in work practices and the increased complexity of running a larger utility, among other reasons.

In the case of more recent mergers, difficulties in the ability to capture efficiency gains from operating a larger electric utility can create a mirage of economies of scale. Barriers to consolidating call centers or corporate functions across state lines or across union locals can limit the ability to realize economies of scale. Often, the obstacles to achieving the expected scale economies are difficult to fully discern until integration efforts begin. As a result, benefits are elusive: either they are slow to materialize or they are too costly or hard to capture.

Additional reasons why economies of scale are not being realized include:

- Insufficient attention or discipline to driving standard ways to operate across regions or plants; for example:
  - A tendency to reinforce silos by promoting from within groups rather than developing managers by transferring them across regional, divisional, or plant functions as part of their development.
  - Using state regulatory requirements and differences as a reason for not pursuing more difficult operational efficiencies.
- Letting regional, divisional or plant managers optimize their own individual operations without a comprehensive effort to share/transfer best practices or optimize at an enterprise level, causing once standard approaches to move apart.
- Systems and processes that, on paper, appear to be the same but actually are not because job descriptions, roles and practices vary across the different groups (e.g., plants, regions, functions) within the utility.
- Increasing complexity (and cost) of running a larger single state operating company or a larger holding company with multiple operating companies.
- Not revisiting acquisitions several years after a transaction closed to explore implementing plans considered during due diligence that were never implemented (often because of external or internal political sensitivities to consolidate functions, avoidance of confrontation regarding a best practice at the time of merger close, etc.).

While there are many reasons why economies of scale are not being captured by larger utilities today, there do not appear to be structural reasons why the estimated $2 BN in scale efficiencies cannot be realized.

CAN THE $2 BN IN LOST SCALE ECONOMIES BE CAPTURED?

Harvesting the elusive scale economies—in this era of slow growth and significant earnings pressures—should be a high priority for many utilities. While any company can adopt these recommendations, they are primarily directed toward utilities that are seeking to drive significant operational efficiencies and consistency across the enterprise.

- Conduct a "second wave synergy audit" of a prior merger or acquisition to target opportunities that were identified in the original due diligence or subsequent analysis, but never implemented or fully captured.
- Undertake a complexity reduction effort to reduce cost and:
  - Streamline management or officer ranks (we have had several clients who implemented changes to reduce management cost, strip out complexity, and speed decision-making).
  - Simplify processes and work practices to focus on the areas of greatest value, eliminating redundancies and inefficient operations.
  - Consolidate dispersed or separated corporate and support groups, where such changes make sense, to promote efficiency and simplify management.
- Initiate a "Common Platform" or "We are One" company program to drive standardization and common approaches where feasible:
  - Identify internal and external best practices in each functional area and transfer and implement these best practices as consistent work practices and processes across the organization.
  - Develop cross-regional or cross-plant "audit programs" where managers and supervisors visit other regions or plants to observe work practices and audit the adoption of common approaches.
  - Move to standardized IT platforms based on the streamlined best practice processes and simplified work and information flows to enable future consolidation.

We believe these recommendations are a start toward achieving efficiency gains, but success requires attention and discipline from senior management. Aggressive efforts by our clients have allowed them to reduce 10-20% of non-fuel O&M costs in targeted areas. Moving quickly can help management address the earnings gap challenge, and can help turn mirage-like ("paper") scale economies into concrete gains for the company.

Oliver Wyman is a global leader in management consulting. With offices in 50+ cities across 25 countries, Oliver Wyman combines deep industry knowledge with specialized expertise in strategy, operations, risk management, organizational transformation and leadership development. The firm's 3,000 professionals help clients optimize their business, improve their operations and risk profile, and accelerate their organizational performance to seize the most attractive opportunities. Oliver Wyman is a wholly owned subsidiary of Marsh & McLennan Companies [NYSE: MMC], a global team of professional services companies offering clients advice and solutions in the areas of risk, strategy and human capital. With 52,000 employees worldwide and annual revenue exceeding $10 billion, Marsh & McLennan Companies is also the parent company of Marsh, a global leader in insurance broking and risk management; Guy Carpenter, a global leader in risk and reinsurance intermediary services; and Mercer, a global leader in human resource consulting and related services.For more information, visit www.oliverwyman.com. Follow Oliver Wyman on Twitter @OliverWyman.

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