As a source of cost reduction, supply chain has been a key area of focus for many US Electric utilities. So where should companies focus for additional cost reduction after strategic sourcing has run its course?

Transforming material supply chain for US electric utilities
Material logistics benchmark study 2011
# Table of contents

## The heart of the matter

Finding new sources of cost savings in a challenging business landscape

## An in-depth discussion

Top utilities focus supply chain innovation on six key areas

- Build a service-oriented network
- Align with energy delivery business units
- Measure supply chain performance and partner expectations
- Collaborate across the extended supply chain
- Improve management of inventory
- Set high performance targets

## What this means for your business

Achieving material logistics benchmarks
The heart of the matter

Finding new sources of cost savings in a challenging business landscape
The difficult economic environment of the past few years has spurred leading U.S. electric utilities to streamline their operations. Supply chain has been a key area of focus, as it presents opportunities to reduce cost and therefore positively impact the rate case argument. The first supply chain target is typically procurement. By establishing strategic sourcing and category management processes, utilities can reduce their total spend on products and services quickly and with relatively modest effort. Many, in fact, have already implemented strategic sourcing programs.

Where should companies focus for additional cost reduction after strategic sourcing has run its course? The answer: material logistics. This covers four primary activities: fulfillment of material orders; planning for replenishment; receipt, storage, and distribution of materials; and inventory management. The challenge for supply chain organizations is to make material logistics more efficient while maintaining or improving the services provided to their business units.

PwC’s PRTM Management Consulting partnered with a major electric utility to conduct an industry-wide review of materials logistics practices in the utility supply chain. Our goal was to identify top supply chain performers and to distill guidelines for the industry as a whole. In the process, we identified a number of utilities that have implemented innovative and effective solutions.

Our benchmark findings indicate top utilities focus their innovation efforts in six key areas:
- Building an efficient, service-oriented network for materials distribution
- Centralizing the supply chain function while maintaining alignment with business units
- Measuring supply chain performance and business unit expectations
- Collaborating seamlessly with both business units and suppliers
- Reducing inactive and excess inventory while tracking and controlling critical spares
- Fostering a metrics-driven, high-performance culture

The supply chain strategy of top utilities goes beyond simply making logistics efficient. They leverage business partner alignment and supply chain collaboration to bolster productivity and reliability. Their innovations in these six practice areas are comparable to the achievements of world-renowned supply chains—a tremendous achievement.

There is broad consensus in the industry that addressing these six areas over the next five years is the right path for transforming material logistics in the utility supply chain. Even executives at companies that did not rank well in the study agreed with this agenda.

The report concludes with a three-step action plan utilities can follow to improve their supply chains without substantial additional investment.
An in-depth discussion

Top utilities focus supply chain innovation on six key areas
Build a service-oriented network

The purpose of the logistics network is to efficiently and reliably distribute materials from suppliers to line crews. We found that, in the past, cost cutting efforts at many utilities have sliced deeply into the supply chain, resulting in business unit complaints about poor service levels. We also identified several initiatives to improve service levels that failed because increased costs and inventories caused senior executives to assume mismanagement in the supply chain. Clearly, improved performance in this area requires taking costs out while simultaneously increasing service where it impacts business units.

To improve their perceived value, top-performing utility logistics teams are placing manpower at contact areas where service personnel interact with the business units. They provide kits of job-ready materials so line crews do not waste time searching for the materials they need. In addition, they offer value-added services to the crews—such as rapid deployment of urgently needed materials to job sites.

At the same time, these logistics teams strive to make their logistics network as lean as possible. They deploy a hub-and-spoke network across the utility’s service territories, with no more than one or two distribution hubs in each non-contiguous service territory.

Efficient service-oriented network
- Job kitted materials from the distribution center (DC) hub to the service center (SC) spokes
- Productivity enhancing materials services at service centers

Innovation Case #1: 24-hour materials supply chain

A major utility serving territories in the Eastern U.S. combines a lean, efficient supply chain with effective customer service. Materials orders placed by 4:00 PM are routinely delivered by 7:00 AM the next day. No other utility in our benchmark survey has been able to service non-expedited material orders in this timeframe.

Their process runs like clockwork: picking occurs between 4 PM and 8 PM, truck loading until 11 PM, and deliveries through the night. Because the utility operates in a major metropolitan area, night-time deliveries while traffic is light are an essential element of the process.

This creative solution achieves a fill rate of 98 percent. Virtually every line item ordered is delivered to the right place, at the right time, and in the right quantity. “It took us two years to build this supply chain” the materials manager noted. “When we started, we were at a 38 percent fill rate.”
Align with energy delivery business units

Centralized supply chain organizations provide the needed critical mass to promote best practices and continuous improvement. A centralized supply chain function does not always lend itself to strong alignment with business units, however. As a result, business units invariably prefer a supply chain dedicated to their own function.

To resolve this tension and maintain a close connection with business units, leading utilities are adding new roles in their supply chain organizations focus exclusively on building alignment with the business units. Senior-level professionals in these roles focus their attention on understanding the plans and strategies of their business partners. They advocate for their business partners in supply chain discussions, and they engage early in business partner initiatives to represent the supply chain point of view.

In our survey, over 75 percent of utilities have moved away from dedicated supply chains reporting to the business units. The alignment role, however, remains rare and business unit complaints are common. In the few cases where supply chain organizations have implemented alignment roles, business units report they receive the same value as a dedicated organization, orchestrated through their business unit advocate, while enjoying lower overall cost.

Innovation Case #2: Aligning supply chains with business units

A major utility serving territories in the eastern U.S. has created “dedicated” virtual supply chains for key business units—Power Delivery, Fossil/Hydro Generation, Nuclear Generation and Corporate Functions—within the centralized supply chain organization.

Each of these virtual supply chains is empowered to create processes and services suited to the needs of its business unit. Centralizing these supply chains allows the organization the necessary scale to create centers of excellence around common functions to realize improved efficiency and performance through exchange of their innovations in processes and systems.

“It took a long time for us to convince the business units that centralization would not reduce their service levels,” the power delivery supply chain manager said. “But we finally did it!”
Measure supply chain performance and partner expectations

Every utility surveyed measured their supply chain logistics performance using metrics. There was not, however, a common standard set of metrics used across the industry. We found considerable variation in both the choice of metrics used by different utilities and how they were computed. Few supply chain organizations had implemented metrics intended to measure the expectations of their business unit partners. Even where utility supply chains had set up Service Level Agreements (SLAs) with their business partners, they were seldom “living” documents, and did not foster constructive discussions around improving overall service performance.

Since utility supply chain performance in some areas—such as forecasts and order lead times—is contingent on business partner performance, a few leading utility supply chains have set up reciprocal SLAs to measure their partners’ performance as well as their own. These top utility supply chains also use “living” SLAs to ensure that the supply chain continually improves to meet the business unit’s needs.

Innovation Case #3: Managing service expectations

The general manager of supply chain in a Midwestern utility had a unique perspective into supply chain issues. Formerly an executive in the energy delivery business unit, she could appreciate the exacting expectations of the business units while understanding the business requirements of the supply chain organization. Drawing on her relationships in both organizations, the general manager put together a formalized SLA that addressed the critical needs of both teams.

The SLA listed the services the material logistics organization would provide and defined only a few—but stringent—service performance metrics. For example, an order could be categorized as “perfectly met” only if all the materials specified in the order were delivered on time. The SLA also identified expectations and metrics for business unit performance, such as material forecast accuracy and material return rate.

“I was responsible for drafting the SLA when I was on the business side,” the material logistics general manager said. “I made it tough but fair—and now I have to live up to it on the supply chain side!” The reciprocal SLA and her strong relationships have fostered daily dialogs between the business units and the supply chain organization, helping them to impressively improve the service levels of the material logistics function.
Collaborate across the extended supply chain

Only three utilities in our survey said they systematically integrate their suppliers into their supply chains. Most implement isolated programs with suppliers on an individual basis, such as directing deliveries to service centers or establishing consignment inventory. As a result, most miss important opportunities to improve service and reduce costs. In other industries such as electronics, supply chain collaboration has been a major value driver.

When the supplier, the logistics function, and the business unit are part of a seamless supply chain, business information such as material forecasts or material orders from the business unit are communicated simultaneously across the supply chain. The suppliers and the utility collectively make the decision to store material in the most advantageous locations within the supply chain; when orders are received, the requested materials are picked from these stores. The supplier may maintain enough stock to be able to deliver required materials to the utility warehouse on short notice; as a result, the utility itself can maintain lower stock levels.

Innovation Case #4: Integrating suppliers into the supply chain

A major utility in the Eastern U.S. has made notable progress in integrating its suppliers into a seamless supply chain. It shifted management of the 2000 fastest-moving codes to the suppliers, who plan, stock, and deliver these materials to the utility. The suppliers also assume responsibility for meeting a 24-hour fulfillment goal for the codes they manage.

Supplier distribution centers (DCs) perform the same functions as the utility’s central warehouse (e.g., labeling, job kitting) and have access to the logistics organization’s systems. Suppliers ship materials to the central warehouse and, in turn, cross-dock them to the business units. Approximately 160,000 lines are picked annually at the supplier DCs, compared to 150,000 lines at the central warehouse.

With this design, the suppliers’ inventory becomes the utilities’ virtual inventory. Supply chain inventory costs have dropped with no impact to service levels. “We chose the suppliers who would be part of the program carefully,” the utility’s materials manager explained, “We needed to trust them to help us reliably support our business units.”
Improve management of inventory

The two primary inventory challenges for utilities are inactive inventory and lack of visibility into critical spares. Inactive inventory includes materials that have not moved in a specified length of time (typically one to five years) and that the utility no longer needs. Critical spares are inactive assets that must be kept on hand because in the event of an emergency an outage might occur if these spares were not distributed to the field quickly. To be useful, however, utilities need good visibility into the location and condition of critical spares even though these assets are rarely needed.

Currently, no utility in our survey manages inventory levels to minimize cost or has sufficient visibility into critical spares to ensure they can be made available quickly in an emergency. Only 45 percent of the utilities surveyed have a clear picture of the value of their stranded assets—spares that do not correspond to an existing piece of equipment or plant. For some utilities, especially those with generation companies, there could be tens of millions of dollars in stranded assets within their inventories.

Utility executives, unlike their counterparts in other industries, have not been required to maintain a strong focus on inventory management. Rather, their preference has been to hold large inventories in order to respond quickly to emergencies. They then deploy a rate structure that allows them to earn an appropriate level of return on these assets.

Utilities with operations in multiple states face an additional challenge in that they must have inventories in each state to address the concerns of the different state utility commissions. Some companies are forced to contend with yet another source of large inventories—the lack of system and code standardization after a merger or acquisition.

Utility inventory focus

To better control its inventory, a large Midwestern utility has consolidated responsibilities for inventory issues into the job description of a single senior-level manager. This individual, who reports directly to the supply chain leader, is accountable for maintaining corporate visibility into company-wide inventory and setting policies to ensure complete transparency into the location and quantity of all spares.

“The inventory manager does not play the tactical role of setting replenishment levels at the warehouse,” the managing director of supply chain said. “That is the role of the logistics managers. The inventory manager is much more strategic. He is the process owner for the inventory and sets policies for its management.”
Set high performance targets

Every supply chain leader surveyed wanted to develop a high-performance culture within their organization. It was also generally agreed that utilities should measure their performance with a few targeted metrics across all facets of the supply chain, and that these metrics should be used to drive ongoing improvement through a closed-loop improvement cycle (measure, improve, control, repeat).

According to our survey, more than 80 percent of utility supply chains have well-defined metrics for reliability, such as completion of orders requested within lead time. Few, however, measure supply chain responsiveness, like percentage of calls responded to within 24 hours, flexibility, or asset utilization. Furthermore, only a few supply chains have established the processes required to use these metrics to drive improvements in performance.

A third of the utility supply chains define metrics and targets collaboratively with their business partners and document that information in the SLA. These high-performing companies also regularly monitor performance against those targets.
Innovation Case #6: Measuring true performance of the supply chain

A Midwestern utility has adopted a small but stringent set of metrics that are difficult to achieve and improve—however, these metrics match the company’s strategic vision. In addition, and in contrast with the practice of most other utilities, it does not allow any orders or deliveries to be excluded from the purview of the metrics, such as rush orders.

The utility supply chain measures and publishes these metrics on a daily basis. Its high-performance culture and established processes facilitate quick analysis of the root causes of any drop in the metric. This daily attention results in consistent and exceptional performance in this area.

One of the utility’s metrics, perfect order rate (order fulfillment), measures the proportion of completed orders with 100 percent of materials filled and delivered on time, regardless of when orders are received. In 2007, when it was first established, the perfect order rate was 38 percent; two years later, that metric had risen to 94.5 percent. (Note that order line-item fill rate, which is a less demanding metric, has been the defining service level metric in the industry for the past few years. Most utilities have achieved fill rates of over 95 percent; however, they typically exclude unplanned orders or orders received within the prescribed lead time.)

According to the utility’s general manager of material logistics, “It took some time before managers on both sides, supply chain as well as energy delivery were comfortable with the daily root cause analysis and continuous performance improvement. Now it is ‘regular’ business.”
What this means for your business

Achieving material logistics benchmarks
Based on these findings, we recommend a three-step action plan for utilities seeking to improve supply chain performance.

1. Critically assess the supply chain in each of the six practice areas outlined in this report. Ask:
   • Where do we stand in each practice area?
   • What policies/procedures do we have in place to measure ourselves?
   • What barriers prevent us from advancing?
   • Do we have the assistance from the business units to help us overcome those barriers?

2. Prioritize initiatives to address gaps in each practice. Ask:
   • Where do we want to be in each of the practice areas?
   • Should we focus our attention on particular areas?
   • Where will we get the biggest reward?
   • What initiatives will give us the performance that matters to our organization?
   • What can we do on our own, and where do we need help?

3. Design and implement initiatives that will improve the materials logistics function in the selected practice areas. Ask:
   • What innovations will help us successfully move the needle?

The results are likely to be rapid and substantial. Utilities that have followed this approach are seeing inventory and supply chain operations savings in the tens of millions of dollars. The savings experienced by their supported business units are even more significant. Increased service levels and materials positioning have led to improvement of productivity and response time of line crews. Although this improvement is frequently not measured, it nonetheless is of utmost importance to utility operations.

**Methodology**

Fifteen utility companies participated in the study, which was conducted from May to August 2010. With revenues ranging from $4B to about $15B, these companies figure among the largest gas and electric utilities in the United States. The respondents were senior managers in charge of the material logistics or supply chain function. In addition, the team interviewed supply chain leaders at the VP or Director level in these organizations.

A few factors made it difficult to directly compare quantitative data. Firstly, utilities do not have standard metrics for measuring service, efficiency, and inventory. Second, they differ on what they exclude from the scope of their metrics. Third, utilities have different rules to determine which materials qualify as assets or as inventory.

For these reasons, our survey focused on practices rather than metrics. This approach allowed us to explore how utilities innovate in their supply chain functions, how practices around standard supply chain functions vary among utilities, and how utility supply chains organize to deliver value to their business unit partners.

The performance of utility supply chains seemed to be largely independent of size—some of the best performing utility supply chains were the smaller electric utilities. This would suggest that economies of scale play only a modest role in overall performance. Our survey did not include smaller municipal utilities and the co-ops—we believe, however, the practices outlined here will be just as relevant to them as they are to the larger utilities.
To have a deeper conversation about how this subject may affect your business, please contact:

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