



# **Balancing Cost & Effectiveness in the Utility Supply Chain**

**Purpose:** As utilities focus more intently on cost of service, improvement to supply chain effectiveness has become increasingly important. In order to support this interest, NAAUD commissioned Lex Smuts of LKS Associates to develop a tool which could enable consistent and comprehensive analysis of utility supply chains.

This tool provides a template for utilities to measure cost and effectiveness in their supply chain. It may also be used to compare different potential business models, firms competing for specific process responsibilities, and to drive continuous improvement in the supply chain.

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# Supply Chain Cost Worksheet Instructions

The first step in using this template is to define the business lines to be analyzed. The worksheet below is provided to assist the utility in determining its supply chain costs. For detailed analysis, assistance should be obtained from your accounting management. Service level improvements must be considered and will impact cost estimates.

The worksheet should be completed for each utility, logistics provider and any other points in the supply

chain between the job site and the manufacturer's production line. These lines are then totaled.

All of the listed costs need to be considered. If the data is too difficult to obtain from the utility accounting system, utilize informed estimates. For example, if facility depreciation, insurance and taxes cannot be identified, a commercial real estate broker can estimate the cost. Current costs will more correctly value current alternatives.

## Line Detail

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**Line 1:** All wages (pay) including bonuses should be included for warehousing, delivery, inventory management, purchasing, supervision and support personnel. Where personnel perform other activities in addition to the activities being analyzed, costs should be allocated appropriately. The result should be a realistic full time equivalent (FTE) wage cost. For most utilities, average wages will be in the range of \$45,000 to \$55,000/yr for each FTE. (FERC 163,920)

**Lines 2—6:** Benefits associated with FTE wages in line 1. For most utilities, these total 35% to 50% of the wages. (FERC 163,920)

**Line 7:** Training costs for personnel include costs of trainers, development of specialized training classes and fees associated with outside classes. Travel for training can either be included here or in line 8. (FERC 920,921)

**Line 8:** Travel expense such as source visits, field visits, entertainment, and training associated with supply chain activities. (FERC 921)

**Lines 9—10:** All principal and supporting material software systems costs should be allocated here. This includes amortization of original systems start up costs and current licensing and maintenance costs. In most utilities, these costs typically total over \$300,000/yr. (FERC 921)

**Lines 11—12:** Hardware licensing, maintenance and rent or depreciation associated with allocated material systems. (FERC 921)

**Line 13:** Software, hardware, and support costs for EDI and web telecommunications systems allocated for use with material systems. (FERC 921)

**Line 14:** Dedicated information technology personnel who support materials systems. Their costs should be calculated like lines 1 – 8. (FERC 921)

**Line 15:** Telephone and fax hardware and software expense. (FERC 921)

**Line 16:** Office supplies and other expenses. (FERC 921)

**Lines 17—18:** Warehouse, office space and associated material handling, delivery equipment and furniture depreciation or rental costs. If historical depreciation is not available, obtain current market value from a broker or rental company. A typical facility triple net rate is \$.50/sq. ft./mo. (FERC 408,409,921)

**Line 19:** Maintenance and repair services including custodial, guard and other general services for facilities and equipment. (FERC 932)

**Line 20—22:** Utilities, fuel, insurance and taxes associated with the facilities and equipment. (FERC 921,924,925)

**Line 23:** Inventory carrying costs are calculated by multiplying the average inventory times the utility weighted cost of capital. This cost of capital varies significantly over time and among utilities, but is generally in the range of 8%. Also include inventory tax which is usually 1%.

**Lines 24—25:** Freight and packaging. This includes inbound, outbound, transfer and delivery freight charges not included in the cost of material. It also includes pallets, shrink wrap and other packaging costs. (FERC 163)

**Lines 26—27:** Inventory loss includes obsolescence as well as loss. Slow and non-moving inventory not needed for emergency stock should be written off. This should be offset by any asset recovery. Under normal conditions this should be less than 1.5% of inventory value. (FERC 163)

**Line 28:** Although corporate overhead may not be directly affected by a change in the supply chain, nevertheless, it should be allocated to this analysis also. In general this is calculated as a percent of direct labor and is in the range of 10% to 15%. (FERC 920,921,923,926)

**Line 29:** Other miscellaneous costs not otherwise listed above.

# Supply Chain Cost Worksheet cont.

## PERSONNEL (Operations, Office and Management)

Wages and bonuses (1) \_\_\_\_\_

### Benefits 2—6

Vacation, sick leave (2) \_\_\_\_\_

Medical (3) \_\_\_\_\_

Workers comp (4) \_\_\_\_\_

Pension, 401K (5) \_\_\_\_\_

Payroll taxes (6) \_\_\_\_\_

Training (7) \_\_\_\_\_

Travel (8) \_\_\_\_\_

## SYSTEMS

### Computer systems

#### Materials software

Amortization (9) \_\_\_\_\_

Maintenance (10) \_\_\_\_\_

#### Hardware

Depreciation (11) \_\_\_\_\_

Maintenance (12) \_\_\_\_\_

Telecommunications system (13) \_\_\_\_\_

Dedicated IT personnel (14) \_\_\_\_\_

(see above costing)

Telephone, fax (15) \_\_\_\_\_

Office supplies, expenses (16) \_\_\_\_\_

## FACILITIES AND EQUIPMENT

Depreciation (17) \_\_\_\_\_

Rent (18) \_\_\_\_\_

Maintenance, repair (19) \_\_\_\_\_

Utilities, fuel (20) \_\_\_\_\_

Insurance (21) \_\_\_\_\_

Property taxes (22) \_\_\_\_\_

## MATERIAL EXPENSES

Inventory carrying cost (23) \_\_\_\_\_

Freight (24) \_\_\_\_\_

Packaging (25) \_\_\_\_\_

Inventory shrinkage

Obsolescence (26) \_\_\_\_\_

Loss (27) \_\_\_\_\_

## CORPORATE OVERHEAD

Corporate Overhead (28) \_\_\_\_\_

## OTHER MISCELLANEOUS

Other Miscellaneous (29) \_\_\_\_\_

**TOTAL** \_\_\_\_\_

Annual Usage \_\_\_\_\_

Average Inventory \_\_\_\_\_

Cost of Capital \_\_\_\_\_

# Utility Supply Chain Effectiveness

Supply chain effectiveness, as measured by service level, must be considered along with cost. A thorough understanding of both costs and service level, attained by use of best practices and monitored by appropriate performance measures, will enable the design of material and information flows which fit performance requirements.

Major facets of the utility supply chain from manufacturing through logistics to utility operations must again be evaluated to assure that overall service level is properly balanced and optimized with cost. Electronic commerce and specialized service providers have created many new options.

On the following page, we have provided sample best practices and performance measures that can be used to assure that a balanced approach to the supply chain is achieved.

In order to build consensus, it is suggested that a cross functional team with members of construction, maintenance, finance and supply chain organizations jointly perform the analysis. NAAUD member companies are ready to assist any utility reviewing their supply chain for improvement potential.

# Best Practices

## Utility Operations

- Material Management participates in job planning and scheduling.
- Supply Chain is fully integrated from manufacturer to job site.
- Metrics are in place to monitor the overall process.
- Comprehensive activity cost analysis is used.
- Process steps are performed by the most effective organization.
- Specific projects for improvement are organizational goals.

## Logistics Provider

- Order management is fully integrated between customer and provider.
- Material demand is communicated to the entire chain.
- Unplanned demand is minimal.
- Inventory is held at the optimum level and location.
- Inventory loss and obsolescence is accounted for.
- Freight costs are optimized including transfers and backhauls.
- Delivery minimizes the number or hand offs.

## Manufacturer

- Six sigma processes and ISO certification.
- Capacity planning.
- Manufacturing cycle time is regularly reviewed for improvement.

# Performance Measures

	Quality	Flexibility	Cost
<b>Utility</b>	Planned vs. Actual Material Orders Scheduled With Adequate Lead Time	Job Schedule Changes Within 10 Days Average Material Lead Time	Number of Unique Designs Fully Cost Allocated Purchasing Rate Fully Cost Allocated Warehousing Rate
<b>Logistics Provider</b>	Orders Filled at Request Cycle Count Accuracy Kits Delivered Complete and On Time Job Site Deliveries	Automatic and Electronic Releases Orders Expedited Transfers Emergency Response	Premium for Freight Inventory Turns Inventory Loss
<b>Manufacturer</b>	On Time Shipments Complete Shipments	Manufacturing Lead Time Emergency Response	Product Reliability After Sales Service