# Variable Energy Costs and Strategic Sourcing

*Editor's Note: Boston Logistics Group's 2007 study of executive perspectives on strategic sourcing focused on how to manage energy expenditures given recent price volatility. This annual study has received approximately 350 responses since its inception in 2003, many of which come from major global companies. It involved a survey of shippers and carriers, interviews with over 50 practitioners and subject matter experts, and simulation modeling of the cost effectiveness of eight different sourcing strategies.*

## WHAT SHIPPERS SHOULD DO

**Any strategy for managing energy spend is preferable to none, with savings ranging from ten to more than one hundred percent of price increases.**

1. **DON'T REVERSE LEAN. Energy price concerns dwarf in comparison to the benefits of being lean.**
2. **ESTABLISH A BALANCED PROGRAM to manage energy spend that includes supply chain, financial, and pricing strategies.**
3. **RE-ASSESS TRANSPORTATION MODE AND FREQUENCY QUARTERLY. With unpredictable fuel prices and surcharges, shippers need to be on alert.**
4. **WHEN MAKING OFFSHORING DECISIONS, consider whether a doubling of oil prices would change the decision. Dual sourcing becomes necessary at higher oil prices.**

With oil prices topping $75 per barrel last summer, energy has been on the mind of supply chain professionals. Fuel surcharges and related price increases, and the indirect economic effects of rising energy costs, made 2006 a challenging year.

Experts are concerned about the long term. Researchers at the Massachusetts Institute of Technology (MIT) have cautioned about the possibility of extreme oil price scenarios. The Stern report, commissioned by the United Kingdom, has also stimulated awareness of fossil fuel consumption and possible regulation. Economists at Global Insight project a further increase of about five percent during 2007.

Practitioners are taking action. Innovators such as Dell have restructured operations to minimize shipping distances. At a recent Council of Supply Chain Management Professionals (CSCMP) forum in Cleveland, Ray Archer, Vice President of Americas Manufacturing for Dell, outlined how Dell has adopted a more flexible manufacturing strategy to decentralize to reduce transportation costs. Airports and airline-related ground handling companies are weaning themselves from a dependence on conventional fuels. Combined with instability in the Middle East and OPEC's production quota reductions, energy has become a hot topic.

Despite the visibility of energy and the recent price spikes, only 25 percent of the companies surveyed for this report had established specific purchasing functions for energy.

- Gemalto, a manufacturer of security card solutions, analyzed its energy expenditures and found that it was spending 20 percent more at one manufacturing plant than at an identical one in another state.
- K. Hovnanian, a U.S. homebuilding company, has 18 regional business units in the U.S. and each one is responsible for its own energy expenditures, according to Bryan Warshofsky, Director of Purchasing Applications. K. Hovnanian also pays for many energy related expenditures through its subcontracts, and energy is not broken out on the bills.
- Latham Plastics has just begun to examine the impact of energy costs across its 22 manufacturing plants, according to Director of Purchasing, Joe Valerio.
- A corporate purchasing manager at a U.S. consumer electronics retailer described the energy purchasing function as having "a lot of gray area." It is often fragmented among facilities, transportation, indirect, manufacturing, logistics, and operations.

### The collapse of lean?

Are companies increasing buffer stocks and shipping larger loads to save money on transportation due to fuel surcharges? Are they shifting manufacturing closer to the point of consumption to minimize transportation cost? High transportation costs can result in sourcing closer product, even at higher prices.

If so, this substitution of inventory and asset costs for operating costs could represent a structural adjustment to high energy costs. That could wash away the gains from the lean movement. Lean supply chains depend on cheap transportation to bring down inventory requirements. Lean theory and practice evolved when oil, which accounts for 98 percent of transportation energy consumption, was around $25 per barrel.

Supply chains could feel the pain. Carriers especially are extremely sensitive to the price of fuel and heavy manufacturing has seen escalating energy surcharges applied in the recent past. But manufacturers are not immune, either. Massachusetts-based Instron Corporation, a manufacturer of materials testing solutions, says that its casting and plating suppliers are passing on surcharges. K. Hovnanian has seen a stream of 5-10 percent surcharges, according to Warshofsky.

The level of long-term price uncertainty in the energy market is a concern to most supply chain professionals. High or uncertain energy costs contribute to the growth of inventory. As transportation becomes more expensive, managing a just-in-time supply chain becomes more challenging. In response, shippers carry extra inventory, order less frequently, or choose a slower and cheaper mode of transportation. Survey respondents cited these as their second and third most popular strategies behind passing the cost on to their customers.

European smart cards manufacturer Gemalto's purchasing manager Jacques Lalauze explains that, with millions of dollars of spend every year tied up in fuel-intensive freight and air travel, fuel cost impact is unavoidable.

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Switching to more energy-efficient modes can save money. The logistics director at a U.S. paper products company notes that switching from truck to intermodal helps to mitigate the impact of fuel surcharges. But, the most common strategy for dealing with energy cost increases is to pass the increases along to customers. Sixty percent of companies interviewed for this study pass the cost on to their customers in one way or another.

As the cost of transportation is a significant factor in global sourcing, increases in transportation, and hence, landed cost, can influence sourcing decisions. When the price of oil was about $30 per barrel, transportation was 20 percent of the cost of importing from Asia, according to Boston Logistics Group's 2005 State of Strategic Sourcing Study. It has increased since then. Several manufacturers interviewed acknowledged the potential impact of freight rates on their sourcing and logistics decisions.

### Minimal impact on offshoring decisions

Even now with oil prices at more than $60 per barrel, consumers and businesses seem willing to pay for the transportation needed to support just-in-time inventory. For branded products, the costs of transportation are viewed as negligible. One retailing executive explains: "We are not going to shift brands because of fuel cost."

Direct energy costs typically represent approximately 3 percent of a company's sales, and indirect energy purchased as part of other external materials represents about 3-4 percent, according to this year's survey. Only one company surveyed reported that natural gas expenditures accounted for as much as 12 percent. Indirect energy costs—those that are embedded in a company's purchasing math—often amounted to approximately the same figure. As such, energy comes out below the top spend categories that get visibility to senior management. Manufacturers will be affected by expensive energy more than most, as they consume more energy-intensive materials and operate on typically thin margins in competitive industries.

Our analysis shows that transportation cost increases can be passed through the supply chain to consumers with almost no price elasticity due to their small net effect. Transportation makes up approximately 6 percent of the economy, and fuel about 20 percent of that. A 15 percent increase in the cost of fuel would thus only pass along a 0.2 percent total cost increase. In fact, simply passing on cost increases was shown to be the most common and the most effective method of dealing with energy cost increases across the board. Full truckload carriers have passed through 18-20 percent surcharges in the last year, according to Rich Walters, Manager, North American Distribution for U.S.-based Air Products and Chemicals, Inc., a manufacturer of industrial gases and chemicals.

The cost of carrying inventory will not increase appreciably as long as obsolescence remains an important driver and interest rate growth is slow and incremental, which it has been over the past two years. Interest rates, which determine 86 percent of changes in inventory carrying cost according to our analysis, are projected to rise only slightly.

> **"Lean supply chain theory and practice evolved when oil,** which accounts for 98 percent of transportation energy consumption, **was around $25 per barrel."**

The savings that most companies realize by using China as a low-cost sourcing platform far exceed the recent energy cost impact, so offshore sourcing will not be affected in the near term due to energy prices unless a major geopolitical or economic event occurs. Based on Boston Logistics Group's 2005 analysis of the Asian sourcing boom (which was conducted when oil was about $30 per barrel), freight from China represents 20 pecent of the landed cost, on average. Therefore, assuming fuel at 20 percent of transportation costs (one auto manufacturer estimated fuel costs at 15-25 percent of its freight bill), a 15 percent increase would only raise the cost of goods sourced from China by 0.8 percent. Compared to the 18 percent cost savings many companies get from outsourcing this loss is not significant enough to change behavior. Richard Goyette, Materials Manager at Speedline Technologies, says the total cost of sourcing from China would have to rise more than 25 percent before his company would even take a second look at its decision to source offshore.

Bill Northup, Director of Sourcing at U.S. electrical supplies manufacturer Hubbell Incorporated, adds, "I don't see them talking about needing to change D/C strategies due to fuel costs." Moreover, offshoring sourcing at most companies is driven at least in part by the desire to increase sales in fast-growing markets like China. This motive would further mute the impact of fuel costs on the sourcing decision.

However, companies are beginning to consider the impact of fuel costs in their logistics decisions. When evaluating direct-to-store shipments recently, one U.S. electronics retailer we spoke to analyzed fuel as one of the components of the decision.

Despite the overall ability of supply chains to withstand today's higher energy costs, volatility has hurt companies in the past and continues to be a source of concern. Natural gas has been subject to extraordinary volatility over the past year. Survey respondents expect gas prices to rise by 13.5 percent in 2007, and oil and coal to rise at about half that rate; however there is wide variance around expectations, given past price volatility.

Shippers, carriers, and policy makers can and should take action regarding energy price trends, to gain a competitive edge and to build a competency that could serve as an eventual long-term compounding of price increases, as per recommendations on Page 52.