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High Fuel Costs Push Efficiency Efforts to Top of Supply Chain Agendas

Rapid increases in the price of diesel fuel have decimated transportation budgets and forced companies to look for strategic and tactical steps to become more fuel efficient

By Jean V. Murphy

On Jan. 2 this year the price of crude oil broke the psychological barrier of $100 a barrel. After running up to nearly $150 in July, the per-barrel price dropped back, but remains highly susceptible to market changes. This rapid price increase, coupled with sometimes violent volatility, is playing havoc with transportation costs and spurring companies to intensify efforts to make their supply chains more fuel efficient.

"The escalation we have seen in fuel costs this year is unprecedented and goes well beyond what any of our customers budgeted for—or what we budgeted for internally," says Greg Lehmkuhl, executive vice president of operations at Con-way Freight, San Mateo, Calif. "As a result, our customers are looking at every aspect of their distribution strategy." Lehmkuhl, previously an officer at Menlo Worldwide, Con-way's logistics business, says Menlo customers are sending a clear and strong message that "everything is on the table, and that we should leave no stone unturned when it comes to helping them get these costs under control."

"Customers have taken the handcuffs off in terms of things like co-mingling freight to improve cube utilization," says Terry Miller, executive vice president–operations at Penske Logistics, Reading, Pa. "They are more open to this type of collaboration than ever before because everyone is feeling the pain."

Schneider National, Green Bay, Wis., is getting similar feedback. "Everybody is essentially blowing through their transportation spend budget this year. And they are getting a lot of pressure from within the enterprise to try to find ways to mitigate those costs," says Bill Matheson, president of the intermodal division. He predicts that this is just the beginning of a situation that will go on for many years. "Part of the challenge for these managers is to condition the rest of their organization to understand that the trend of recent years is reversed and supply chain costs are going up."

High and volatile fuel costs also complicate planning going into 2009, says Tom Jones, senior vice president at Ryder System, Miami. "Nobody really knows where the price of oil will be and that means they don't know what supply chain and logistics costs will be. This is having a cascading impact through organizations as they start developing 2009 business plans. It is very difficult to set a price for the cost of goods that will recover the cost of fuel when you have no idea what the cost of fuel will be."

While companies can't control oil prices, there are many things they can do to mitigate the impact of higher prices, both strategically and tactically. One

strategic step, which also can reveal short-term opportunities, is to use network planning and optimization tools to assess whether current networks still make sense in light of higher transportation costs.

"We see a lot of companies re-evaluating network design, looking at how many facilities or distribution centers they should have and where those should be located," says Tom Sanderson, CEO of Transplace, Frisco, Texas.

Sourcing decisions are getting a second look as well, he says. "A lot of manufacturing companies are re-evaluating whether it still makes sense to manufacture as much in Asia, with the combination of a very long supply chain and very high level of fuel consumption, as opposed to somewhere like Mexico, which may have a little higher labor cost but also has a much shorter and much more fuel-efficient supply chain."

Lehmkuhl says Menlo already is seeing some nearshoring among its customers, especially in high-tech industries. "We see huge growth in the Guadalajara area," he says, noting that Menlo recently shifted its management office from Mexico City to Guadalajara and expanded its operations there "to better support our customers that are changing their manufacturing footprint from Asia to Mexico."

While it is wise for people to revisit these questions, as many are, a re-evaluation will not necessarily result in changes on the ground, says Valerie Tardif, vice president of SmartOps, a provider of network and inventory optimization software based in Pittsburgh, Pa. "We are seeing a lot of network analysis being done at the high level, with people mostly trying to understand where the price needs to be for a barrel of oil before it really makes sense to change networks," she says. "Companies don't want to rush into decisions because there can be huge fixed costs involved. Redesign might save a few percentages in transportation costs, but the cost of implementing those changes sometimes wipes that out."

"When I hear all this talk of bringing stuff back from Asia, I have to laugh," says Chris Ferrell, associate director of the Supply Chain Consortium, a benchmarking group that operates under the umbrella of Tompkins Associates, Raleigh, N.C. "Transportation still only represents 2 percent to 3 percent of total delivered costs so it's just crazy to think that higher transport costs are going to cause companies to stop manufacturing in China," he says. "Should folks be taking an opportunity to do a network study and see if there is justification for a second DC or a different distribution center network?" he asks. "Absolutely, because most of these networks were set up at a time when fuel was not even half of what it is today. There probably is a need for incremental changes, but probably not for wholesale changes."

Long term, however, companies will make many adjustments to accommodate higher fuel costs, says Chris Caplice, executive director of the Center for Transportation and Logistics at MIT, Cambridge, Mass. "I think we will see products and packaging being redesigned for more economical shipping and a greater use of postponement strategies. The question we have to ask is what the price of fuel would have to be for it to make sense to start making these changes."

"The only way for a company to know when it should start adjusting its strategies is to figure out its tipping point—the fuel price below which one network structure is appropriate and above which a different structure is appropriate," says David Simchi-Levi, professor at MIT and chief science officer at ILOG, a developer of optimization technology and supply chain software based in Sunnyvale, Calif. "The tipping point is different for every company, he says, and the best way to find it is to run various scenarios using network optimization tools.

Given the current volatility of fuel costs and other factors, these scenarios need to be run more frequently than in the past, Simchi-Levi adds. "In the current environment, companies need to continuously evaluate their supply chain strategy."

Hitachi Consulting, Dallas, advises its clients to reassess their networks on a quarterly basis, says

Pete Ward, a principal in the firm. "With today's technology, once you have built the model, it is not difficult to input new parameters and run different scenarios. You can play with the model and see what you get. At the least, you'll have something to think about," he says.

"Our customers have driven us to create models that are effectively dynamic," says Lehmkuhl. "They don't just want to know what they should do at this point in time. They want to say, 'here are the seven variables that determine what we should do, so let's look at them on a monthly basis by feeding real, current data into the model to see if a different decision is justified.'" In doing that for numerous customers, "we have been able to continuously improve the models and make them even more accurate."

Jeff Ryan, vice president at BravoSolution, a strategic sourcing and spend management solutions provider based in Italy, agrees that network modeling should be a dynamic process. He warns, however, that "there is a point where you can drive yourself nuts. You don't want to rethink a brick-and-mortar decision every other day. You don't want to be so nervous about this that you keep taking little steps in all different directions."

Modal Shifts

One variable that companies can change fairly easily is the choice of transport mode, and these options increasingly are being included in network scenarios, says Robert Schecterle, vice president at Aberdeen Group, Boston. "Network design is not just about where to put facilities, but also which transportation modes to use," he says. "Companies want to be sure they are using the most fuel-efficient and low-cost mode that will meet their service requirements. With fuel prices going up, we see companies moving away from airfreight and increasing their use of ocean and rail."

"We have been hearing shippers for the last three years talk about their desire to convert to intermodal and now they are taking action," says Matheson. "They are being a lot more creative around their transit times and delivery requirements to accommodate a modal shift."

This renewed interest in rail intermodal may lead to a shortening of the traditional thousand-mile length-of-haul threshold for use of this mode, Matheson says. "We think there is potential for that to drop down to perhaps 750 or 800 miles in the East, depending on the fuel economics."

The Allen Group, a San Diego-based developer of logistics parks, is convinced that intermodal will continue to grow and has invested in two large logistics parks close to intermodal rail heads in Dallas and Kansas City. The long-haul savings are compelling, says marketing director Jon Cross, but the Allen Group also provides significant savings on drayage. "We offer a flat $75 drayage fee from the UP intermodal facility to our property in Dallas," Cross says. "If that same trailer were drayed to a warehouse near the Dallas-Ft.Worth airport the cost would be $200. On 15,000 trailers a year, that would be a $2m savings on the drayage alone."

If fuel continues to stay at its current level or goes higher, many industry experts believe the future trend will be for companies to establish more DCs and hold additional safety stock closer to consumption points. "Where possible, these will be fed by intermodal service with a regional trucker getting the product to final destination," says Sanderson. "Personally, I think we may see a lot of that truck distribution using natural gas vehicles," he says.

The scenario of stocking more inventories closer to consumption points is most likely for companies that built rapid replenishment networks, which rely on frequent small shipments, says Tardif. "The cost of daily shipments or expedited shipments to stores or warehouses has become just too expensive to justify, she says. "We see renewed interest in inventory optimization and the forward positioning of more inventories to meet service needs."

Jones believes that companies will be looking for more multi-client solutions as a way to position inventory closer to the customer. "It will depend on the value of the product relative to transportation costs—as always, it's a tradeoff. But as fuel costs

make transportation a more heavily weighted factor, I think it will force companies in many instances to carry more inventory."

Combining inventory optimization with network optimization can help companies determine the best solution for their situations. But the ultimate answer to these issues lies further upstream, says Ferrell. "If you think about the way supply chains are built, you know that a lot of time and energy, in the literal sense, is being used to ship around a lot of stuff that is not needed. If companies spent time more on the inventory planning and demand sourcing side of the equation, they might find that they could make less. That's where the real fuel savings are."

That can happen only with "a lot more collaboration and trust" than is typically demonstrated between supply chain partners now, he says. "We still have way too many shippers and suppliers and customers all trying to optimize their individual supply chains and the overall result is far from optimal. These partners need to realize that it's one giant supply chain and it can only be truly optimized when each participant has visibility to what their partner is doing upstream and downstream and agrees to collaborate around that."

Asset Utilization

Maximizing asset utilization to ensure, to the greatest extent possible, that trucks run full and via the most efficient route is another perennial opportunity to improve fuel efficiency and lower costs. One way to get there is through load optimization tools that help companies combine shipments into full truckloads or containerloads. The savings potential is great. For one of its newer customers, Menlo increased the average container and trailer load rate from 71 percent to 90 percent, Lehmkuhl says. "That had the same effect as dropping the price of diesel by $1.25 a gallon," he asserts.

Shippers have an important role to play here, says Jones. "They need to get rid of bad habits like sloppy ways of stacking pallets. They also need to really pay attention to the details of the size of pallets and the quantities they ship. Inefficiencies that used to be acceptable simply are not acceptable at the current cost of fuel."

Deadhead, non-revenue miles that occur when an unloaded truck has to travel empty to the next pickup location are particularly painful when diesel is $4 to $5 a gallon, says Jeffrey Potts, vice president at LeanLogistics, Holland, Mich. LeanLogistics provides an on-demand transportation management solution to many carriers and shippers. Because all these customers are on a common platform, LeanLogistics has visibility to the macro network, which enables it to identify opportunities for continuous moves, Potts says. "We have visibility into 20 million shipments a year across all of our customers. With that level of visibility we see lot of opportunities to create more efficient moves that none of our customers would be able to see or do on their own. You need the technology and the density to be able to do that."

With shippers, LeanLogistics looks at traffic patterns and identifies complementary carriers in the system "that are consistently putting empty capacity into that market. The other thing we do is to look at multiple shippers in the aggregate and identify ones with complementary freight lanes that allow us to run carriers in a dedicated fashion with very few empty miles and very high equipment utilization."

ArrowStream, Chicago, provides a similar service for its customers, most of which are restaurant chains like Applebee's, Arby's and Steak 'n Shake.

Scott Deibert, vice president of supply chain management at Steak 'n Shake, says that in the past, when it asked carriers to quote a move from point A to point B, they typically would have to build in some premium for deadhead miles because they didn't know where their next load would originate. ""Using ArrowStream to manage these moves has changed that because of its ability to combine the transportation needs of many similar customers," he says. "ArrowStream is able to talk to the carrier, not just about a move from point A to point B, but also from B to C and on to the next move after that, and the next after that. It creates a series of consistent moves that can be packaged, which enables the carrier to offer a better deal." He adds that this all is

done with the permission of the companies involved.

Transplace is another logistics provider that looks across its customer base for opportunities to balance carrier capacity with freight moves. “A big part of our value proposition to our carrier base is that we can keep their trucks loaded more fully than might otherwise be possible for them because we manage freight for so many different manufacturers and retailers,” says Sanderson. “We are able to leverage the size and diversity and density of that freight network.”

Having the right technology also is critical, he adds. “Our technology enables us to know where all those trucks are going and to look within the network of freight to find other loads that will keep that truck moving.”

Having good transportation management software, either as a user or through a third-party, is essential to take advantage of many of the fuel saving opportunities out there, says Ferrell. In a recent survey on Fuel Saving Strategies by the Supply Chain Consortium, the need for TMS was a consistent theme, he says. “Whether you are talking about converting truckload shipments to intermodal or LTL shipments to multi-stop truckloads or your pallet configuration or zone skipping for parcel shipments, you need TMS.”

Ferrell says he was “smacked in the face,” to realize how many companies that have a pretty good TMS are not using it to the fullest ability. “We see pretty robust systems where companies have turned off some of the functionality or where there are people whose full-time job seems to be to override the system,” he says. “These are things that could be easily addressed and the savings would be immediate. It’s a ‘no-brainer.’”

One key way that TMS can help is to enable better visibility to both inbound and outbound freight, says Ryan. “We find that many manufacturers and retailers still are focusing all their attention on their outbound freight and not paying attention to their inbound,” he says. “Maybe the inbound move is handled by the supplier or even by their own fleet, but because there is no connection between inbound and outbound freight, those inbound trucks usually go away empty. Managing inbound and outbound together certainly could help fill those trucks up and save a lot of fuel.”

A related step is for shippers to allow carriers to see both inbound and outbound moves so that they can bid on combinations that make sense for their business. “There would be many more opportunities to reduce empty miles and reduce costs if inbound and outbound were tied together,” he says. “I’m surprised at how few companies can actually administer that kind of approach. From a transactional standpoint, the coordination of inbound and outbound is very weak.”

When suppliers control the inbound movement, transportation is often embedded in the delivered product price, which is another practice that companies should look at, says Lehmkuhl. “With transportation costs on the rise, this type of pricing may not be a good idea. Decoupling the logistics expense from the piece price gives more transparency and more control over that expense.” This is a high priority with some customers because their suppliers have increased piece prices and blamed fuel for the increases, he explains. “We could not analyze whether those increases were legitimate because there was no transparency,” he says.

Even if a company decides in the end to allow a vendor to continue embedding transportation in the delivered price, they should at least demand to see a decoupled price when comparing price options, says Ryan. “This allows you to see how efficient the vendor is with their transportation management. If you know the freight component you can see if one vendor is better than another in particular lanes or better than if you controlled the transportation yourself. Then you can decide whether to use their freight arrangement, but it shouldn’t be a default position.”

David Rutchik, a partner at consulting firm Pace Harmon, Vienna, Va., strongly urges companies to decouple accessorial charges as well, including fuel surcharges. “A lot of carriers follow what I call the ‘law firm model’, where the law firm charges $1 per page to make a copy of documents, a charge that has

nothing to do with the actual cost," he says. "These accessorials often are not aligned with actual costs and often are not all tied to the same indices. But people tend to look at them almost like an incremental tax and so they don't question them. Customers could get a lot more visibility into their freight charges by demanding a la carte accessorials and, of course, the fuel surcharge is the largest of these."

In managing fuel surcharges, the key is to make sure there is some incentive for the carrier to be as efficient as possible, says Ryan. "If it is a straight pass through, there may be insufficient incentive for a carrier to update its fleet," he says.

Ward agrees. "A carrier with a good, new fleet, especially one operating in the flatlands, should be getting 6.5 to 7 miles per gallon, he says. "Customers need to ask their carriers about their miles per gallon and anything else that gets to the consumption of fuel."

This is not just important for cost reasons but also for sustainability programs, which are increasingly important to shippers, he says.

"All of our customers are asking about our carbon footprint and how we impact the environment," says Miller. "It's a really big issue for them and we have employed full-time leadership to drive and maintain our focus on sustainability."

"Right now the drivers for fuel efficiency and the drivers for being green are coming together to support each other," says Schecterle. "We see those two things going hand in hand."

Most carriers do not need their customers to challenge them on either fuel efficiency or sustainability because it is to their own advantage to be as fuel efficient and as green as possible. Many already have taken steps such as reducing the maximum miles per hour that trucks are allowed to run from 68 or 65 to 63 or even 60. Other common practices are the use of automatic sensors to check for engine efficiency and proper tire inflation, automatic engine shutdowns to decrease idling and the use of auxiliary power units for heating and cooling.

Sensors also are being used to monitor an operator's driving habits and increased attention is being paid to driver training and to incentives for drivers to operate vehicles more efficiently.

"I believe that high fuel costs will essentially end up being an inefficiency tax," says Ferrell. "It will inspire companies to start doing the things they should have been doing all along, but never needed to because the pain wasn't great enough, and to stop doing silly things they never should have been doing because the added cost was not that big of a deal. Well, at $4.50 a gallon, it's a big deal."