

WHITE PAPER



# IMPROVING PACKAGING:

## The Cost of Shipping Air is Going Up

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**Many progressive companies say they are onboard with the green movement to save resources and fuel. One way to do that is by making your packaging as efficient as possible.**

**RETAILERS AND MANUFACTURERS** that insist on using inefficient and sloppy packaging methods—oversized boxes, inefficient packaging, poorly constructed palletized contents—are paying for their mistakes in sharply higher freight rates.

Carriers say inefficient packaging is terribly wasteful. It wastes trees to make excess cardboard for packages that are too big for products being transported. It wastes space on trailers in an era when trucking capacity is stagnant. And it wastes fuel for extra trucks to move those excessively large packages.

However, many shippers are reluctant to change their old ways of packaging. Often they aren't even aware that there are better, more efficient methods. Sometimes, because of the complexity of a manufacturer's operation, packaging is often an after-thought that falls through the bureaucratic cracks of a large organization.

Due to the driver shortage, the growth in e-commerce traffic, as well as the rise in bulky lightweight freight, carriers say that they're "cubing out" their trucks before coming even close to reaching full weight capacity—and they're reacting to these market place changes.

"It's a ticking time bomb," says Jack Ampuja, president of Supply Chain Optimizers, the North American leader in packaging optimization with more than 500 completed projects over a 30 year period.

Many are beginning to measure shipments by their package dimensions.

These so-called "dimensional pricing" methodologies are putting pressure on manufacturers to find smaller, more efficient packaging methods to move their goods.

According to Ampuja, packaging inefficiency is endemic to the logistics industry—but it doesn't have to be. Over the next few pages, we offer a guide to how to package more efficiently, why this is important to both shippers and carriers, why changes are occurring in packaging, and how an effective packaging strategy can save both large and small shippers big dollars in their freight budgets.

There are ancillary benefits as well. Smaller packaging yields less waste, and it also means that more freight can be stacked efficiently on a pallet inside a truck—which could also equate into fewer trucks and lower emissions.

### **Why packaging is an issue**

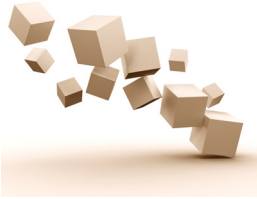
Most large organizations don't necessarily view packaging as part of their supply chain. And since it's never been truly understood by senior supply chain management, the cost reduction gained by efficient packaging methods is often grossly underestimated.

Many progressive companies say they are onboard with the green movement to save resources and fuel. One way to do that is by making your packaging as efficient as possible.

Corporate bureaucracy also plays a role. Often many departments are involved in packaging decisions. Personnel from marketing, purchasing, logistics, manufacturing, quality control and engineering—all with separate goals and areas of expertise—often have a say in the design and manufacturing of packaging.

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“But no one takes ownership,” says Ampuja. “Everybody has a piece, and that’s the problem—no one takes on the responsibility. And as a result, all the members of the supply chain feed into this inefficiency.”

**“There’s going to be more and more of this trend. I can’t blame the carriers for pushing back and taking these steps.”**

—Jack Ampuja, president of Supply Chain Optimizers

This is hardly a new phenomenon. Back in 1999, the late Robert Delaney, in his *Annual State of Logistics Report*, identified packaging optimization as the last major logistics opportunity. Sixteen years later, the opportunity is just as big in most companies. In fact, the need today is much greater than 16 years ago.

One of the main reasons for heightened awareness around packaging is the tightening capacity in the trucking industry due to the chronic driver shortage. Carriers are striving to make the most efficient use of their available capacity, and they certainly don’t want to send out two trucks on an identical route—especially if the same amount of freight can be efficiently loaded onto just one.

“There’s going to be more and more of this trend,” says Ampuja. “I can’t blame the carriers for pushing back and taking these steps.”

For years, shippers may have been moving freight as a specific class. They may have never known—or cared—that the same product could be repackaged more efficiently and shipped for a lower class rate. But because of the changes in the National Motor Freight Classification (NMFC) rating methodology, those days of ignoring Class rating tariffs may soon be over—or else shippers will be paying sharply higher rates for the same amount of freight.

So in effect, shippers are now paying for their inefficiencies that in the past were either ignored or picked up by the carrier. Because of space limitations, carriers can no longer afford to be giving away capacity. The result is a new emphasis on packaging efficiency.

“All the inefficiencies are going back to the company that created them, which is where it belonged all the time,” adds Ampuja.

Doug Dick, former Manager of Pricing and now is a Pricing Consultant for freight transportation services provider Pitt Ohio, says that there are 18 classes of freight in the NMFC—and the higher the class rating, the higher the freight rate. These classes are developed and maintained by the Commodity Classification Standards Board (CCSB).

Over the last three years there have been 14 dockets filed and approved by the CCSB that approved changes in the NMFC. “That indicates a strong desire on the part of carriers to collaborate with the shipping community and work toward improving the packaging of products,” says Dick.

On that line of thinking, Dick adds that shippers should be constantly looking to improve their packaging for two reasons: to minimize their carrier’s exposure to liability and to minimize cube of their shipping containers. “That’s actually a double edged sword,” he says. “It’s often easy to eliminate packaging, but in doing so shippers may be increasing the potential for damage. It’s not so much about eliminating packaging as it is about improving packaging.”



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## Sophisticated e-commerce shippers are certainly catching on—and realizing significant savings as well as boosting their sustainability initiatives.

### The dimension pricing effect

In the past, freight used to be priced using a matrix of weight and distance. Back in the day, the actual size of the package mattered little. What was important was how much it weighed and how far it was going.

That matrix has changed. Dimensional weight (dim weight) pricing began in earnest on Jan. 1, 2015. At that time, dim weight was applied to all ground shipments smaller than 3 cubic feet by the major small package carriers—except the U.S. Postal Service—as well as some LTL carriers.

And because most small package cartons are smaller than 3 cubic feet, virtually all of them are now subject to dim pricing. Ampuja says that the result is about one-third of all small package shipments are moving under higher rates in both the U.S. and Canada.

UPS, FedEx, and some LTLs have equipment that automatically weighs and laser scans dimensions of each package at their terminals and automatically applies the higher rate—in either weight or cube charges. The results of a couple of example cases are stunning, and clearly show the cost of packaging inefficiently.

Let's take two packages and multiply their case dimensions in inches and divide by 166 (the factor used to determine class ratings):

■ A 12-inch high x 12-inch wide x 12-inch deep package equals 1,728. Divided by 166 equals a 10.4-rating, which is rounded up and billed as 11 pounds.

■ A 24-inch high x 24-inch wide x 24-inch deep package equals 13,824. Divided by 166 equals an 83.3-rating, which is rounded up and billed as an 84 pound shipment.

So why are carriers doing this? In the past, small package shippers used to be large sophisticated companies such as Boeing, John Deere, and Ford Motor Co. They shipped many packages daily to limited destinations, primarily B2B commerce.

The impact of e-commerce changed that landscape. Now there are thousands—if not millions—of new shippers who are using little science or thought to their packaging, shipping many daily shipments of one box per destination, often to many residences in B2C commerce.

The result has changed the cost profile of carriers, which in the past had to rate their shipments traditionally only by weight and distance. But now the typical e-commerce shipper is only achieving what Ampuja says is a 60-percent cube efficiency utilization—in other words, 40 percent of their capacity is either air or filler.

However, shippers can immediately minimize the impact of dim pricing by downsizing their packages; conducting better employee training to select the right box for the right product; cutting down boxes to lessen void space; using durable polybags for lightweight goods such as socks and shirts; not overfilling boxes; and checking for void space in all boxes.

Sophisticated e-commerce shippers are certainly catching on—and realizing significant savings as well as boosting their sustainability initiatives. Large shippers such as Office Depot, Target, and Toys R Us are using computer-aided software to measure the weight and cube of each item and selecting the best box based on total weight and cube.

## Best practices for more efficient packaging

**SHIPPERS SEEKING THE BEST EFFICIENCIES** in their packaging strategies should keep in mind several tips from Jack Ampuja, president of Supply Chain Optimizers, the North American leader in packaging optimization with more than 500 completed projects over a 30 year period.

- 1 Executive sponsorship is the best support for launching a project. Getting the company chairman or other C-level executives involved is highly recommended from the start. "Sometimes I get a call from a brand new employee saying that his boss asked him to look into packaging optimization to see if there was anything to it," says Ampuja. "Not surprisingly, those projects go nowhere fast."
- 2 An efficient packaging strategy requires focus on cost reduction and efficiency. Otherwise, says Ampuja, why bother?
- 3 The shipper must be open to change. If you can't manage change packaging optimization goes nowhere.
- 4 The more flexibility you exhibit, the greater the results you'll have in your packaging optimization efforts. "We've encountered clients who told us that they can't change their retail units, can't change case counts, can't change their packing process, but wonder how much cost reduction is available," says Ampuja. "Naturally, they're disappointed when we tell them that their cost reduction opportunity is virtually non-existent."
- 5 Good data is a must. No consulting project can proceed without accurate info to measure and evaluate. "Like any major corporate changes, it takes commitment, communication and a willingness to accept a new way of doing things," adds Ampuja. "But successful process change in packaging nearly always results in big savings."

Ampuja says that the typical savings in applying this type of technology is a 10 percent cost reduction—which can mean \$1 million or more for a large shipper. While this used to require a major investment in ERP systems, this same technology is now available in a stand-alone, less costly system. However, Ampuja says that there are many other improvements shippers can do to make their packaging more efficient, including:

- Manual operations to help drive down cost by thinking of packaging first, rather than an afterthought.
- Computer-aided box selection software to work with order processing.
- Building a database of all item weights and cubes—although this system must be continually updated with new product items.

Still, Ampuja says that many shippers are unwilling to spend money on these systems, so inefficiencies are still quite prevalent. "Packaging optimization is all about supply chain integration. Everybody talks about integration, but very few companies achieve it," he says.

And don't forget pallet efficiencies. If the pallet isn't stacked correctly, or if it has "gaps," that's a second hit. Once that inefficiently stacked pallet is run through a dimensioner scanner, that inefficiency will all add to the shipping cost.

In the meantime, the NMFC has roughly 150 pages of fine print related strictly to packaging specifications. If you have a packaging engineer who doesn't know about the NMFC code, how can you make right packaging decision? "It's like telling a 12-year-old that he's a bad driver," Ampuja says. "How do they know? They've never been taught properly."

### Carriers focused on sustainability

A progressive trucking company like PITT OHIO is working to reduce its carbon footprint. However, shippers make that task more difficult by sending inefficiently packaged shipments that cube out their trailers long before they reach their weight limits.



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“It’s astounding how much waste there can be found when re-engineering a manufacturer’s packaging processes,” says Ampuja. “But the best part is nobody loses when you do. Everybody benefits if it’s done the right way.”

But don’t look for your typical box supplier or packaging engineer to reduce your package freight cost issues, he says. That’s because they typically don’t understand the minutiae of freight details—or how LTL and small package freight is priced.

This can be an issue for large shippers which often carry more than 15,000 products in a single warehouse generating over 1 million combinations of outbound weight and cube each year. Supply Chain Optimizers has dealt with clients shipping more than 4 million combinations of weight and cube annually from

a single location. The elusive question is ‘how many different boxes are required to achieve the lowest total cost for 4 million shipments?’ and clearly this level of shipping analysis cannot be done manually.

“Corrugated cardboard is infinitely recyclable,” Ampuja says. “Ultimately that box comes from a tree. The smaller the box, the better it is for everyone. Everyone benefits.” But first, shippers must train employees to get the right-sized box and fill those boxes properly—and that requires senior management’s commitment for ongoing training.

“Packaging optimization delivers both financial and sustainability benefits,” Ampuja says.

“Companies make bad decisions on packaging because they don’t understand all the trade-offs. Unfortunately, many still insist on saving nickels on packaging by spending quarters in transportation, and that’s not sustainable and it makes no sense.” ■

### About PITTOHIO

**PITTOHIO** is dedicated to providing high-value transportation and supply chain solutions. As an organization that is “Customer Driven, People Driven and Quality Driven,” we remain committed to innovating in every area with our SUPPLY CHAIN, GROUND, LTL, and TRUCKLOAD services. For more please call 1-800-366-7488 or visit [pittohio.com](http://pittohio.com). At PITTOHIO, We’re Always There For You!

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