

Stressed out

May 1, 2010 By: [Patrick Hyland](#) LPGas

Study says more storage needed to ease infrastructure strain

The most thorough analysis ever done on the propane industry's ability to deliver product nationwide underscores the need for dealers to continue adding storage in the New England, Mid-Atlantic, East-Central and California regions. And since primary storage capacity has dropped more than 798 million gallons in the last decade and remains far from major retail demand areas, more primary storage is needed in New England and the Central Atlantic regions, the report says.

The study, done by consulting firm Purvin & Gertz for the Propane Education & Research Council, verifies that industry infrastructure is sorely taxed to meet peak seasonal demand during extended periods of severe winter weather. The Houston firm based its analysis on survey returns from 644 propane retailers with 4 billion gallons of sales volume and 6.65 million barrels of storage in 2008.

"When you weigh everything together, our infrastructure has pretty much just held pace with the growth in propane demand over the last 10 years. Outside of secondary storage additions and new production from shale developments, there has not been significant improvement," says study author Craig Whitley, senior principal at Purvin & Gertz.

"Propane retailers have done the best job of all to make improvement by adding significant gallons of secondary storage over the past decade. Yet it's an area that still needs further improvement since storage capacity growth has slowed with the end of the federal tax credit program to incentivize storage additions."

LPG production, demand by region

Regions that have insufficient supply from refineries, gas plants and imports represent a combined shortfall of billions of gallons in local demand that must be met by inter-regional pipeline, rail or transport. In fact, the study reveals that eight of the nation's 11 regions had a net shortage of product to meet demand in a combined 11 billion-gallon domestic retail market in 2008.

The East Coast states typically run 1.75 billion gallons short of supply each year after figuring average import levels. That strains the rail and pipeline infrastructure to meet winter demand along the coast, where most common propane supply disruptions have occurred in recent years.

The Lower Atlantic states (Florida, Georgia, North Carolina, South Carolina, Virginia and West Virginia) are the most heavily dependent region, representing 1.3 billion gallons of product shortfall. Although waterborne imports are generated in the region, it remains heavily dependent on outside rail and pipeline to provide product.

New England states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont) have no domestic production and must rely entirely on imports and pipeline transfers. The region is more than 110 million gallons short of demand.

The Central Atlantic states (Delaware, District of Columbia, Maryland, New Jersey, New York and Pennsylvania) have some local refinery production, but still depend heavily on rail and pipeline supplies to make up its 298 million-gallon deficit.

Spacing and land shortage are common issues in New England and the Central Atlantic states that often make secondary storage expansion cost prohibitive or impossible.

The East Central states (Illinois, Indiana, Ohio, Michigan, Kentucky and Tennessee) are 424 million gallons short of the supply they typically import from Canada and produce in local gas plants and refineries. Like the Atlantic seaboard, this region depends heavily on rail and pipeline to make up for those shortages.

North Central states (Minnesota, Wisconsin, North Dakota and South Dakota) come up 579 million gallons short and likewise lean heavily on rail and pipeline deliveries.

The five West Central states (Oklahoma, Kansas, Missouri, Nebraska and Iowa) produce more than 1.7 billion gallons of propane from gas plants and refinery production (mostly from Kansas and Oklahoma). As a result, the region has a surplus of 266 million gallons each year.

Supply in the Gulf states (Texas, New Mexico, Louisiana, Mississippi, Alabama and Arkansas) is almost 2.7 billion gallons more than demand in that region. The disparity would be even greater if not for the huge chemical market draw in the area.

The Rocky Mountain states (Montana, Idaho, Wyoming, Utah and Colorado) produce a lot of propane, but much of it is shipped out of the region as a natural gas liquid-mix stream to fractionators in the Mid-Continent and Gulf Coast. Spec propane production from local refineries and gas plants in the region is supplemented by a large volume of Canadian imports. The region typically has a small annual surplus of 46 million gallons.

The West Coast region has 251 million gallons of demand it cannot meet with domestic supply and Canadian imports, despite producing more than 886 million gallons through gas plant and refinery production. Without pipeline access, the region depends almost exclusively on rail. Alaska ships any surplus propane it produces via pipeline, while Hawaii comes up 25 million gallons shy of need.

Sales ÷ storage = turns

As a rule, Purvin & Gertz recommends that dealers keep storage capacity equal to at least 14 days of peak winter demand. That generally equates to 7 percent of annual sales.

The study shows the propane industry as a whole is on that mark. In fact, 56 percent of companies are above the industry average, and more than 14 percent are double that rate.

The industry's total storage capacity and sales calculates to an average storage turnover rate of 14.3 times each year. That's a slight improvement from the 14.7 rate found in a similar Purvin & Gertz study in 2000.

The problem is that almost 30 percent of companies report more than 20 turns a year. More than 13 percent turn storage more than 30 times annually. The higher frequency of turns adds stress to the infrastructure to deliver product in tighter windows, explains Whitley.

"Most of the companies in the high-turnover class are the same companies waiting in line at the pipeline terminals, holding up others," he says.

New England is particularly vulnerable due to high storage turnover rates, lack of Canadian railcar imports in winter, distance from producing areas and its total lack of domestic production facilities.

Even the Lower Atlantic region, which has a much greater supply deficit, comes through severe cold better than the Northeast because it has ample secondary storage levels, Whitley says.

"The biggest logistical problem this industry has remains the same: major areas of retail consumer demand are located far from major points of production," he maintains.

"The tertiary [customer] storage issues should be dictating to our dealers that they need more storage, especially in the Northeast where they've had many heating oil conversions."

The study shows that small independent marketers selling fewer than 1.2 million gallons have the best average turnover rate (under 10.1) among retailer companies. They also have the highest storage volume as a percentage of sales (9.9).

Marketers with annual sales between 5 million and 10 million gallons had the highest turn rate (18.0) and the lowest storage volume as a percentage of sales (5.6), the study found.

Based on responses from four of the five master limited partnership companies, the major multi-state marketers average 14.1 turns. Their storage volume as a percentage of sales is a healthy 7.1.

"Due to all the consolidation in the industry, the common explanation has been that the big guys were the culprits for some of the large turnover numbers on storage. But, surprising to us, they weren't the problem," Whitley says.

Another perception was that the small guys don't have the cash to buy adequate amounts of storage. Yet they ended up with the most storage, based on their sales.

"At first, we really found that surprising. But it makes sense when you consider the fact that most start-ups begin with a 30,000-gallon tank and have to grow to 429,000 gallons per year in sales before their storage turnovers exceed the industry average. There's a lot of small propane companies with sales below that mark," Whitley explains.

More bulk storage needed

Since there is little chance of expanding the underutilized pipelines or adding major primary storage facilities in the most critical regions, marketers must continue growing bulk plant storage to cut the number of inventory turns and reduce reliance on the infrastructure for just-in-time deliveries, Whitley says.

A similar recommendation in 2000 led to the National Propane Gas Association securing federal tax incentives for those investments. They apparently succeeded in prompting marketers to expand bulk storage from 9.2 million gallons to 15.6 million, according to the study. The tax incentives expired in 2008.

In order to reach the goal of 14.3 yearly turns, Whitley says the industry still needs substantial investment in secondary storage capacity in the four regions facing the greatest shortfall. Using 2008 sales and storage data, he says:

- The Indiana, Illinois, Kentucky, Tennessee, Michigan and Ohio region needs another 33 million gallons of storage.
- The Delaware, D.C., Maryland, New Jersey, New York and Pennsylvania region needs an additional 23.3 million.
- The New England region needs 12.4 million more gallons.
- Another 24.8 million gallons are needed on the West Coast.

Nationwide, the industry has almost 10.7 billion gallons of storage capacity. About 5 billion of that is primary storage at the producer/wholesale level. Four billion are located in the Gulf region where 65 percent of U.S. propane is produced.

Customer tanks account for another 4.4 billion gallons. Dealer bulk plants and rolling capacity (transports, railcars and bobtails) evenly split the remaining 1.3 billion gallons of storage capacity.

Saving grace

Purvin & Gertz projects global propane supply will increase faster than demand in the very near future. That means U.S. imports should improve from 2011-14, Whitley says.

Ongoing U.S. shale developments – particularly the Marcellus Shale project – could add another 2.1 million gallons per day of new product to the Northeast by 2015-20. Meanwhile, Inergy’s Finger Lakes, New York propane storage project will add up to 210 million gallons of new propane storage connected to the TEPPCO pipeline.

“The Northeast has two game-changing developments taking place that could resolve many of the supply issues this region has faced for a long time,” Whitley says.

“Adding 210 million gallons of storage in the Northeast with a connection to the TEPPCO line, along with our expectations for a huge production increase in a region where we’ve experienced the biggest supply problems, is monumental. It’s pretty easy to say that this is exactly what the industry has needed for some time.”