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New York/New Jersey Intra Harbor Petroleum Supplies Following Hurricane Sandy: Summary of Impacts Through November 13, 2012



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With the help of the National Petroleum Council and with the voluntary participation of the industry, the U.S. Energy Information Administration (EIA) conducted a survey to evaluate product flows in the New York Harbor (NYH) area both prior to Hurricane Sandy and as of Tuesday, November 13. Terminals representing 98% of storage capacity in the NYH area participated in this effort. EIA and Department of Energy staff have remained abreast of the evolving situation since that time. However, this paper reports on the situation as of November 13, the last date for which data covering virtually all of the NYH petroleum terminal infrastructure are available.

Background

At 8:00 p.m. EDT October 29, 2012, the National Hurricane Center reported that Sandy made landfall near Atlantic City, New Jersey, as a post-tropical cyclone. The accompanying winds and flooding were devastating to many areas in the Northeast and damaged much of the energy infrastructure, including petroleum product supply and delivery systems around the NYH area.

The NYH area is a major distribution hub for petroleum delivery to consumer markets in New England, New York, and New Jersey. The terminals in this area, with combined storage capacity of about 70 million barrels, receive product via pipeline from refineries on the U.S. Gulf Coast, the Philadelphia area, and the two refineries located in northern New Jersey – the Phillips 66 Bayway (238,000 barrels per day) and the Hess Port Reading (70,000 barrels per day). The terminals also receive product via tanker and barge, much of it imported from outside the United States. Products from the terminals are then redistributed by barge and pipeline mainly to distribution terminals in New England, throughout the NYH area, up the Hudson River as far as Albany, and via pipeline to upstate New York. These distribution terminals also supply gasoline, heating oil, and diesel fuel to trucks for delivery to retail outlets and local distributors.

Impacts of Hurricane Sandy

The hurricane damaged much of the petroleum supply infrastructure in the NYH area, including both of the refineries in northern New Jersey and many of the terminals. The damage to the refineries and the terminals significantly disrupted the supply chain. Immediately following the storm, the lack of commercial or generator power kept many terminals from operating. With terminals nonoperational, product supply into the region stopped. Colonial Pipeline, which moves substantial volumes of petroleum products from the Gulf Coast to the New York Harbor area, was forced to stop delivering products to the NYH terminals. Colonial also had to slow product movement throughout the entire pipeline, which serves areas from the Gulf Coast, up the East Coast into New Jersey and New York.

Some NYH terminals were badly damaged, but others were able to return to full or partial operation using generator power after dock inspections, underwater surveys, and electrical equipment replacement was completed. As terminals began operating, the Colonial Pipeline was able to normalize product flows into the NYH terminals, although the recovery has not been smooth. For example, after commercial power had been restored to terminals and pipelines in the area, Colonial Pipeline and several terminals lost power a second time as utilities struggled to repair the commercial power infrastructure.

As of November 13, neither the Phillips 66 Bayway Refinery nor the Hess Port Reading refinery was operating, although the Hess refinery has more recently begun to operate, and Phillips has reported plans to be partially operational late this month. As of November 13, most of the terminals in the NYH area had returned to at least partial operations, but some are still impaired. Damage to electrical and other infrastructure inside several terminals was significant and repairs continue. In addition, damage to barge and tanker dock facilities has been limiting waterborne receipts and shipments. Terminals representing 98% of storage capacity in the NYH area voluntarily reported information provided in Tables 1 and 2.

Table 1. Summary of product flows

(thousand barrels per day except as noted)

	Receipts (Inflows)			Deliveries (Outflows)		
	Pre-Storm	Post-Storm Nov 7-13 Average	Post-Storm Percent of Pre-Storm	Pre-Storm	Post-Storm Nov 7-13 Average	Post-Storm Percent of Pre-Storm
Gasoline	941	597	63%	838	605	72%
Distillate	281	184	65%	317	176	56%
Other (Jet, Ethanol)	197	136	69%	192	38	20%
Total	1,419	917	65%	1,347	819	61%

Table 2. Summary of flows by transportation mode

(thousand barrels per day except as noted)

	Receipts (Inflows)			Deliveries (Outflows)		
	Pre-Storm	Post-Storm Nov 7-13 Average	Post-Storm Percent of Pre-Storm	Pre-Storm	Post-Storm Nov 7-13 Average	Post-Storm Percent of Pre-Storm
Tanker/Barge	523	307	59%	563	253	45%
Pipeline	753	573	76%	346	179	52%
Truck	12	7	58%	438	387	88%
Other	131	31	24%	0	0	0%
Total	1,419	918	65%	1,347	819	61%

The tables show about 1.4 million barrels of product movement through these terminals, but that number may include double counting of movements between some of the terminals. The data are very preliminary, and represent terminal operators' best information at the time. However, both the pre-storm and post-storm data were collected using the same methodology and, as a result, the data sets should be comparable and indicative of the change in product flows.

It is important to point out areas normally served by the NYH terminals were also receiving some supplies through more distant terminals as the industry pursued workarounds to meet consumer needs to the best of their ability. For this reason, the difference between the pre-storm and post-storm outflows from the NYH terminals is likely to overstate the impact on total product supplies available to consumers usually supplied through those terminals.

The data in Table 1 indicate some significant declines in ability to move product through the NYH hub. Gasoline is the major product moving through these terminals. After the storm, the terminals were receiving only 63% of the gasoline that they had been receiving before the storm, but were sending out 72% of the pre-storm volumes. Note that pre-storm gasoline outflows were less than inflows, implying inventory building of that product. But after the storm, outflows and inflows were fairly close.

Barge shipments have been most impacted by the storm. As shown on Table 2, as of November 13, barge shipments of all products were running at 45% of pre-storm levels. Barge shipments of gasoline were running at 54% of pre-storm levels and distillate shipments were even lower, only 46% of pre-storm barge shipments. These data are indicative of the storm damage to dock facilities and time required to repair the facilities and return them to normal service.

EIA also collected data from tanker truck loading facilities (truck racks) at the terminals in the New York Harbor area. These truck racks supply gasoline and distillate that is delivered to retail outlets and distributors in the New York metropolitan area. By November 13, truck rack loadings of gasoline at these terminals had reached 90% of pre-storm levels and distillate loadings were 104% of pre-storm levels.

Some companies also reported inventories both before the hurricane and as of November 13. By November 13, inventory levels at the reporting terminals had returned to normal levels.