



2007 Maine Fuels Report

Maine Department of Environmental Protection
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Section I: Executive Summary

Background. The Department of Environmental Protection (Department) submits this report in accordance with 38 MRSA, Section 585-H, enacted by the Maine legislature in 2000. At that time, the Legislature established the goal to virtually eliminate methyl tertiary butyl ether (MTBE) in gasoline sold in the state by January 1, 2003. MTBE is a member of a group of chemicals commonly known as fuel oxygenates that are added to conventional fuel to increase its octane. Oxygenates were added to reformulated gasoline (RFG) to increase the level of oxygen which reduced emissions and improved overall combustion efficiency. During the second special session of the 121st Legislature in 2004, Section 585-H was revised and Section 585-I enacted to reflect a statewide ban on MTBE beginning on January 1, 2007. Under the MTBE ban, gasoline may continue to contain (up to ½ of 1 percent (0.5%) by volume) MTBE, so it is expected that, in the future, there may be some trace levels of MTBE in the fuel. The Department is required to monitor and report on levels of MTBE in shipments of gasoline to storage terminals in Maine. The Department is also required to work collaboratively at a regional level to develop alternatives to the use of MTBE as a gasoline additive.

Maine began participating in the federal RFG program in January 1995 as part of the State's plan to comply with the federal Clean Air Act Amendments of 1990. The RFG delivered in Maine at that time contained higher levels of MTBE than gasoline sold here prior to implementing the program. Subsequent to the RFG program, MTBE (which is more water soluble than most petroleum gasoline components) began appearing in public and private water supplies more frequently and at higher concentrations than had been reported in prior years.

This prompted Maine to petition the United States Environmental Protection Agency (EPA) to allow the state to opt-out of the RFG program based on the risk to groundwater posed by MTBE. EPA approved the petition provided that several conditions were met, including implementation of a replacement fuel program that achieved reductions of certain volatile organic compound air emissions. The Maine Board of Environmental Protection adopted Chapter 119 *Motor Vehicle Fuel Volatility Limit*, which required "7.8 Reid Vapor Pressure (RVP)" gasoline to be used in Maine's seven southern counties from May 1st to September 15th of each year to address this EPA requirement. Having met the EPA conditions, the effective date for withdrawal from the RFG program was March 10, 1999. In May of 2001, the Department submitted a fuels waiver request for 7.8 RVP fuel under the authority of Section 211(c) of the Clean Air Act. The waiver received final EPA approval on March 6, 2002 and became effective on April 5, 2002.

After switching out of the RFG program, MTBE levels in gasoline dropped to levels sold in Maine prior to initial implementation of the RFG program. Under the RFG program, the MTBE levels were typically 11% by volume compared to pre-RFG levels of MTBE which were typically 2 to 3% by volume in regular grade gasoline.

Maine's MTBE Ban Status. In 2007 gasoline deliveries to Maine terminals easily met the MTBE limitations of the MTBE ban that went into effect on January 1, 2007 with an average of 0.14% volume MTBE and a 0.03 % weight of oxygen.

Ethanol in Maine. In 2007, Maine began to see fuel containing 10% ethanol (known as E10) being trucked into the state. Increased use was spurred on at that time by market-driven forces which lowered the cost of gasoline containing the ethanol additive sold in other southern New England states. Those states kept the RFG mandate but chose the ethanol additive after each state (except Massachusetts) banned MTBE.

All fuels data compiled for this report can be found on the internet at the DEP website www.maine.gov/dep/air/mobile/fuelspage.htm.

Section II: Introduction

A. Background

The federal reformulated gasoline (RFG) program was designed to reduce emissions of motor vehicle pollutants. To comply with the RFG program, gasoline must achieve a set of emission performance standards and was required to meet a minimum oxygen content until the Energy Policy Act of 2005 (EPA 2005) removed the requirement. Oxygen was added to RFG to make it burn more completely and reduce the amount of unburned tailpipe emissions. Refiners had opted to comply with the oxygen requirement by selling RFG containing methyl tertiary butyl ether (MTBE) at 11 percent by volume. In comparison, conventional gasoline has MTBE in amounts of 2-3 percent by volume or less, while some premium blends can contain as much as 9 percent MTBE.

MTBE is a member of a group of chemicals commonly known as fuel oxygenates added to conventional fuel to increase its octane. MTBE replaced lead as an octane enhancer in 1979 and was used in gasoline throughout the United States to reduce carbon monoxide (using a wintertime oxy-fuel) and ozone levels (using RFG) caused by auto emissions.

In 1991 Maine volunteered to phase into the RFG program and began selling RFG in January of 1995. States with voluntary RFG programs were required to decide by December 30, 1997, whether they wanted to remain in the program, otherwise procedures required them to stay in the program through 2003.

Soon after the distribution of RFG in southern Maine, there was public concern over the potential threat to ground water quality. Based on the results of a statewide groundwater study, Maine, in October 1998, petitioned EPA under federal regulation 40 CFR 80.72(a) to opt-out of the RFG program based on the unacceptable risk to groundwater posed by MTBE. A subsequent waiver request was submitted to EPA requesting approval for a 7.8 Reid Vapor Pressure (RVP) fuel. EPA approved the petition and the effective date for withdrawal from the RFG program was March 10, 1999.

The Department anticipated that if RFG levels for MTBE (11% by volume) were not required, then the levels of MTBE would drop to the levels for conventional gas sold in Maine prior to participation in the RFG program. However, the Department also anticipated MTBE would not be totally eliminated since the petroleum industry continued to rely on MTBE as an octane enhancer in gasoline fuel production.

At the direction of the 120th legislature, the Department has been collecting data on gasoline sold in Maine to determine MTBE levels. The data collection was also intended to track the progress made towards the goal of eliminating MTBE in gasoline sold in Maine by January 2003. This goal was not met, and during the second special session of the 121st Legislature, MTBE was banned in gasoline fuels, beginning on January 1, 2007. As of that date no one may sell, offer for sale, distribute or blend in Maine gasoline containing more than ½ of 1% (0.5%) by volume MTBE.

B. Legislative Requirement

38 MRSA §585-H, enacted by the Legislature in 2000, requires MTBE monitoring and reductions. This section was amended in 2004 to reflect a ban on MTBE. Specifically the law now reads:

“The department shall monitor shipments of gasoline to storage terminals in this State and compile annual reports showing the levels of methyl tertiary butyl ether, referred to as “MTBE,” in gasoline brought into this State.

The department shall promote and actively participate in regional efforts by state regulatory agencies in the Northeast to develop alternatives to the use of MTBE as a gasoline additive.

The department shall annually, no later than February 1st of each year, present a report to the joint standing committee of the Legislature having jurisdiction over natural resources matters on the levels of MTBE in gasoline brought into this State. The committee may report out to any session of any Legislature legislation relating to MTBE use in gasoline.”

38 M.R.S.A §585-I was enacted as follows:

“The following provisions apply to the sale of MTBE in the State.

1. Definition. For purposes of this section, “MTBE” means the gasoline oxygenate methyl tertiary butyl ether.

2. Prohibition on sale. Beginning January 1, 2007, a person may not sell, offer for sale, distribute or blend in this State gasoline that contains more than ½ of 1% by volume MTBE that is intended for sale to ultimate consumers in this State.”

3. Emergency order. Notwithstanding subsection 2, whenever the commissioner finds that a danger to public health or safety exists due to low supply of gasoline in the State, the commissioner may issue an emergency order waiving the sales prohibition in subsection 2.

Section III: Data

A. Status of Maine's MTBE Ban

Beginning January 1, 2007, gasoline could no longer contain levels of MTBE higher than 1/2 of 1% (0.5%) by volume MTBE. **In 2007 all of the shipments were reported at levels well below the allowable limit of 0.5 % by volume.**

Figure 1 depicts the levels of MTBE in gasoline by quarters for 2005, 2006 and 2007. Map 1 depicts the start years of all the states in the nation with MTBE bans.

B. Data Collection

In addition to the requirements of 38 MRSA §585-H, Department rules Chapter 119 *Motor Vehicle Fuel Volatility Limit* requires the following records to be kept at the bulk gasoline terminals:

“Any owner or operator of a bulk gasoline terminal shall maintain records on the Reid Vapor Pressure, oxygen content, oxygenate, benzene, aromatics, and sulfur of any gasoline that is delivered to or distributed from such terminal. Such records shall be maintained for at least three years and shall be available for inspection during normal business hours, and copies shall be provided to the Commissioner or his representative upon request.”

The Department requested the information listed above from each bulk gasoline terminal carrying automotive gasoline. A bulk gasoline terminal refers to a storage facility that has a daily average throughput of more than 20,000 gallons of gasoline.

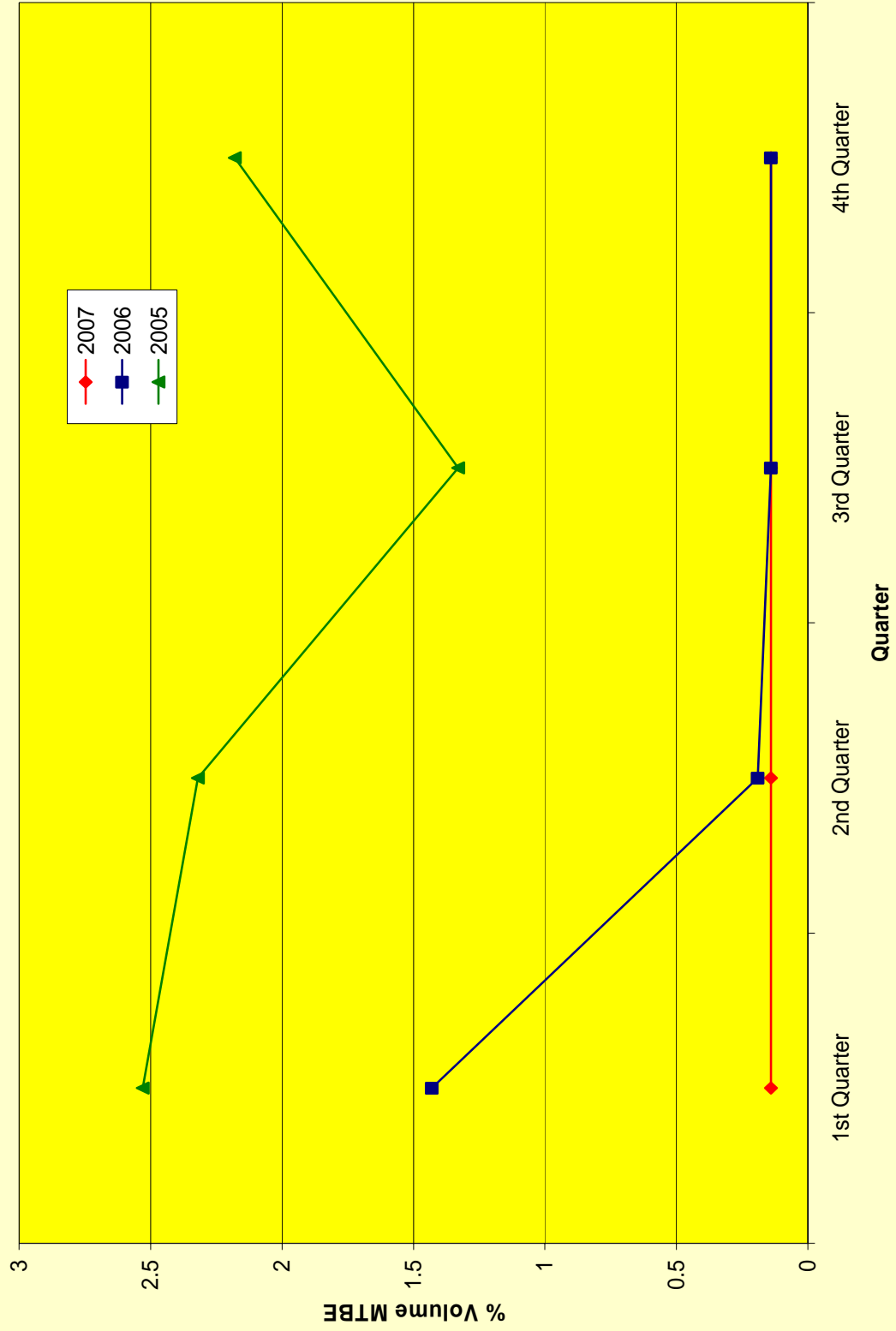
In cooperation with the Maine Petroleum Association, the Department developed a quarterly reporting form for the terminals to fill out and submit to the Department. In addition to the various fuel components, the Department requested the date of delivery, the number of barrels delivered, and other significant information.

The following bulk gasoline terminals reported automotive gasoline data to the Department:

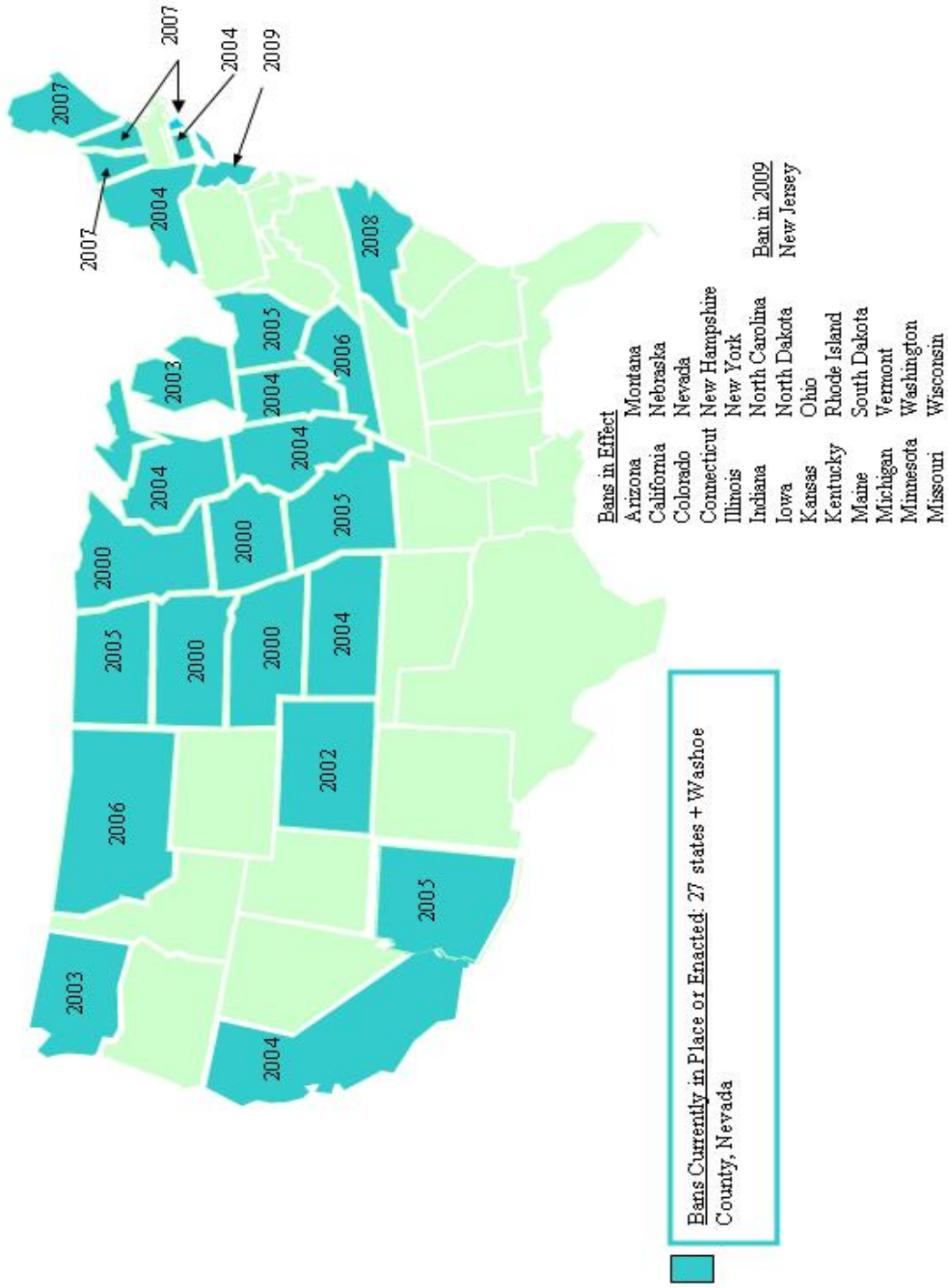
<u>Terminal</u>	<u>Location</u>	<u>Fuel Reported</u>
Gulf	Portland	Gasoline
Irving	Bucksport	Gasoline
Exxon-Mobil	Portland	Gasoline
Citgo	Portland	Gasoline
Webber	Searsport	Gasoline

It is important to note that data was not obtained from any trucking of fuel into the state.

Figure 1
% Volume MTBE by Quarter 2007



Map 1: State MTBE Bans



C. Ethanol Use in Maine

For the first time in 2007, fuel containing ethanol was brought into Maine for sale. Ethanol-blended RFG with 10% ethanol (known as E10) sold in New Hampshire and Massachusetts is being trucked into Maine for sale at some retail facilities. At this time we are unable to track the amount of E10 fuel being trucked in so there is no information on how many facilities are using it. There has been at least one instance of phase separation (the condition where ethanol bonds with water and separates from the gasoline) being reported at a retail facility. A few terminals are contemplating blending ethanol here in Maine, but so far none have begun construction on blending facilities.

Maine has two separate Reid Vapor Pressure (RVP) areas. One area, encompassing seven counties, is limited to a RVP of 7.8 psi from May 1 to Sept. 15 of each year, and the remaining nine counties have a RVP of 9.0 psi. The federal RFG meets the 7.8 RVP standard in the summertime, however, when E10 is blended with conventional gasoline the RVP exceeds even the 9.0 psi RVP. Federal regulations 40 CFR part 80.27 includes a 1.0 psi waiver for conventional alcohol blended fuels, however Maine does not currently have that waiver in Department rules Chapter 119 *Motor Vehicle Fuel Volatility Limit*, so any fuel blended with ethanol must meet the 9.0 psi volatility limit.