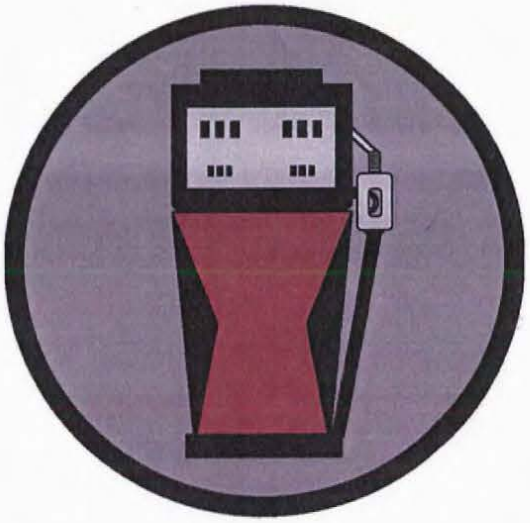
INTERIM

Alternative Fuels Report



Prepared by:

Maine Department of Environmental Protection

January 15, 1999

Why is Maine Studying Alternatives to RFG with MTBE

- Legislative Mandate

TABLE OF CONTENTS

LIST OF TABLES & MAPS

Executive Summary

EXECUTIVE SUMMARY

1. Introduction

The Department of Environmental Protection's (DEP) air bureau has conducted an analysis of alternative fuels as part of the Five Point Plan initiated in response to several cases of MTBE contamination of groundwater in Maine. Such an analysis was called for by P.L. 791, signed by Governor King in April of 1998, with reports due January 15th, 1999 and January 15th, 2000. This represents an interim report of the effort.

MTBE is a constituent of most vehicle fuels sold in the state of Maine and throughout the Northeast. Industry estimates that conventional gasoline contains an average of 2% MTBE by volume, with premium grades potentially containing more. MTBE is used as an octane enhancer to improve engine performance. Federal reformulated gasoline contains roughly 10 per cent by volume to meet the legal requirement for the fuel to contain an oxygenate to achieve a cleaner burning fuel with less toxic constituents.

Maine's participation in the federal Reformulated Gas program was initiated by Governor McKernan to help Maine reduce ground level ozone in seven southern Maine counties. Ground level ozone is a pollutant which causes respiratory problems for sensitive and healthy members of the population during summertime incidents when the health threshold is exceeded. RFG is a part of the state's mandated 15 per cent plan to reduce volatile organic compounds, a building block of ground level ozone.

Reformulated gasoline has contributed significantly to air quality improvements in Maine. Exceedances of the one hour federal health standard for ground level ozone have declined during its use in Maine and throughout the region. In addition, known human toxics, such as benzene monitored in ambient air, have declined by roughly 30 per cent during its use here and in other parts of the country where it is in use.

However, the majority of oxygenates in use in the United States are ethers which are more water soluble and mobile in groundwater than other constituents of gasoline. Other oxygenates include alcohols. Incidents of groundwater contamination by MTBE have led to calls for an alternative fuel which achieves comparable air quality benefits. This report is aimed at fulfilling that requirement.

2. Methodology

To develop this report, the Department gathered data from the U.S. Environmental Protection Agency on areas in the country which are utilizing alternative fuels to achieve air quality goals. We then contacted state officials in those areas and gathered specific information on the rationales for their use and their experiences with them. The Department consulted with the Maine Petroleum Association and the Maine Oil Dealers Association on the marketing, supply, and cost implications of ending Maine's participation in the federal Reformulated Gasoline program and of requiring at the state level an alternative fuel. We also spoke to all the major fuel supplying companies which market in Maine and to some who do not currently sell gasoline in Maine. We have also consulted informally with the Maine Chamber and Business Alliance and the Natural Resources Council of Maine.

With assistance from the U.S. Environmental Protection Agency and NESCAUM, the Department analyzed a range of fuels in terms of their ability to meet the requirements of Maine's 15 per cent VOC reduction plan.

3. Criteria for Review of Fuels

The Department reviewed fuels against the following criteria:

1) Ability of fuel to meet the requirements of Maine's 15 per cent plan and to achieve other air quality benefits, particularly reduction of air toxics;

2) Availability to Maine market, including supply, distribution, and price issues;

3) Potential for use as a statewide fuel;

4) Potential groundwater impacts;

5) Potential effects on vehicle performance and vehicle mileage; and

6) Administrative issues such as enforcement and need for waivers.

4. Fuels Analyzed

The Department analyzed the following:

Reformulated Gasoline with other oxygenates, such as ethanol, ETBE, and TAME;

Conventional fuels with lower volatility or lower volatility and lower sulfur levels.

5. Interim Findings and Conclusions

The Department's interim findings include the following:

1. Fuels with other oxygenates may pose some of the same risks associated with fuels with MTBE. Since many currently available oxygenates are ethers, they are equally or more water soluble and may be comparably mobile. Ethanol is more water soluble than MTBE, but considerably less persistent in the environment than MTBE. However, because ethanol is highly hydrophilic or water friendly, it poses a number of storage, distribution, and performance issues which require greater investigation. These other oxygenates are also significantly less available than MTBE.

2. Low volatility fuels (fuels with a lower Reid Vapor Pressure or rvp than conventional fuels), while not currently available in the Northeast, have the potential to enable Maine to meet its requirements under the Clean Air Act.

3. A fuel with lower sulfur than current conventional or RFG would achieve emissions reductions. If used in combination with a fuel with slightly lower volatility, a low sulfur fuel could be utilized without any negative effect on engine performance.

4. Fuel with a benzene cap comparable to RFG could be made available to the Maine market. Most companies indicated this would be achievable without any significant price impact.

5. The USEPA has indicated a willingness to cooperate with Maine in processing an application for a waiver from the federal RFG program if Maine adopts rules mandating an alternative fuel with comparable air quality benefits.

6. Conclusions

1. An alternative fuel without elevated MTBE levels could be provided to the Maine market that could meet the requirements of Maine's 15 % plan and with the toxics reductions associated with RFG.

2. Additional analysis is needed to determine the optimal fuel specifications (volatility and sulfur level).

3. The primary obstacle to switching fuels is in the market availability of such fuels. Additional information should be gathered to determine how to ensure that such fuel would be available to a variety of marketers to avoid adverse supply and price impacts.

Why is Maine Studying Alternatives to RFG with MTBE

- Legislative Mandate

I. Why is Maine Studying Alternatives to RFG with MTBE?

1. Legislative Mandate

In April 1998, Governor King signed into law P.L. 791, which instructed the Commissioner of the Maine Department of Environmental Protection (DEP) to

> "develop recommendations regarding alternative fuels to reformulated gasoline (RFG) with Methyl Tertiary Butyl Ether (MTBE) that would meet the requirements of the federal Clean Air Act, Section 182, 42 United States Code, Section 7511a(b)(1). In developing these recommendations, the commissioner shall consult with members of the joint standing committee of the Legislature having jurisdiction over natural resource matters, members of the public, the Bureau of Health within the Department of Human Services, the United States Environmental Protection Agency, representatives of the oil industry and other interested parties. The commissioner shall hold at least one public hearing prior to developing the interim report required under section 2.
>
> The Commissioner of Environmental Protection shall submit a report, including the findings from the evaluation and recommendations regarding alternative fuels, to the joint standing committee of the Legislature having jurisdiction over natural resource matters by January 15, 2000. The commissioner shall submit an interim progress report to the joint standing committee of the Legislature having jurisdiction over natural resource matters by January 15, 1999."[1]

2. Concerns about MTBE contamination in Groundwater

In the spring of 1998 elevated levels of MTBE were detected in monitoring wells near a public water supply in the town of North Windham. Later in the month, MTBE was discovered in the well of the Whitefield School. This and other subsequent groundwater contamination led the Governor to announce a 5-point plan to address the problem. The plan includes (1) an extensive groundwater monitoring

study; (2) acceleration of the analysis of alternative fuels required by PL 791; (3) Examination of options to protect well heads and surface drinking water supplies; (4) Examination of communications between state agencies and local officials, and (5) Examinations of options to deal with waste gasoline.

This report satisfies both item (2) of the 5 point plan and represents an interim report under PL 791.

Why Use RFG In Maine

- RFG Benefits

II. Why use RFG in Maine?

1. RFG Benefits

A. VOC Reductions and the 15% plan

There have been a number of positive impacts from the use of RFG as a part of Maine's plan to reduce volatile organic compounds (VOCs) by 15%. The Clean Air Act requires the emissions from use of RFG to have 15% less VOCs (which contribute to ground-level ozone) and 15% less toxic air pollutants than conventional gasoline. RFG reduces tailpipe and evaporative emissions from on-road and off-road vehicles, and evaporative losses from gasoline terminals and gas stations. In addition, EPA estimates that NOx, another contributor to ozone pollution, is reduced by 3%.

As one of many strategies in the 15% VOC reduction plan, RFG provides a total statewide reduction in VOCs of 6.93 tons per summer weekday for York, Cumberland and Sagadahoc counties (see table 1 below). This represents about 40% of the total reductions realized from the strategies Maine has selected to comply with the Clean Air Act.

Table 1. 15% Plan Reductions from RFG in Tons per Summer Weekday (TSWD) in York, Cumberland and Sagadahoc Counties.

Strategy	Reductions (TSWD)
RFG	**6.16**
Bulk Terminals	**0.1**
Refueling Loss	**0.42**
Off Highway	**0.25**
Total	**6.93**

B. Reduced Stage II and I/M requirements

The use of RFG in 7 Maine counties has provided sufficient VOC reductions to minimize the need for other VOC control strategies. One of those strategies is "stage II vapor control." This type of control device is placed on gasoline pumps to channel gas fumes back into the storage tanks during refueling. While they are an efficient way to reduce VOC emissions, installing the systems poses a cost burden to gas stations. Use of RFG as a control strategy enabled the State to limit its requirement for stage II vapor recovery systems to the largest gasoline stations (those pumping over one million gallons per year) in the three southernmost counties, avoiding the burden for "Mom and Pop" gas stations.

Maine's RFG program has also provided the State with increased flexibility in implementing its motor vehicle inspection and maintenance (I/M) program. The original I/M program, implemented in July 1994, was repealed in May of 1995, due to strong public opposition. The Department has since been working with EPA to develop a program that brings about the needed air quality benefits, while proving acceptable to the Maine public. The VOC reduction benefits gained from Maine's use of RFG have given sufficient reductions to allow the Department to implement a reduced I/M program that is significantly less intrusive and less costly to Maine citizens.

C. Air Toxics Reductions

Reformulated gasoline with MTBE lowers the emissions of some especially toxic pollutants from a car's tailpipe during operation and during refueling at the gas pump. These pollutants are called "air toxics," and are believed to cause serious long-term health effects like cancer. Nationwide, emissions from cars, trucks, and other "mobile" sources of air pollution account for about half of the total air toxics exposure people experience in urban areas. Reductions in toxic emissions provide a benefit to human health by reducing the number of cancer cases annually.

RFG with MTBE reduces people's exposure to hazardous airborne pollutants. Significant reductions in air toxics have been monitored in Maine's air since the beginning of the RFG program in 1995. A comparison of data obtained in 1994 with data obtained in 1997 shows average reductions in the toxic

components of gasoline. (Table 2 below) These reductions are similar to reductions seen in other RFG areas in the U.S.

Table 2. Average Toxics Reductions from 1994 to 1997

Compound		Average Reduction from 1994 to 1997
Benzene		31%
Toluene		34%
Ethylbenzene		52%
M/P Xylene		11%

Recently the Northeast States for Coordinated Air Use Management (NESCAUM) completed a Relative Cancer Risk Study. This study, looking at the Relative Cancer Risk of RFG compared to conventional gasoline, concluded that in the Northeast there is a 12% reduction in cancer risk associated with gasoline vapors and automobile exhaust when using Phase I RFG. The study then goes on to show that there will be a 20% reduction in cancer risk associated with gasoline vapors and auto exhaust when using Phase II RFG. Other conclusions of the study include:

> Of the six pollutants studied, Benzene had the greatest contribution to overall cancer risk, for all gasoline blends. This is despite benzene reductions in Phase I and Phase II of RFG.
>
> MTBE's cancer potency is significantly less than Benzene, 1-3 Butadiene and Polycyclic Organic Matter (POM), and when MTBE is added at 10% by volume to RFG it tends to dilute these and other carcinogens included in conventional gas. This dilution than contributes to an overall reduced relative cancer risk for RFG as compared with conventional gas.
>
> "While acute health effects from conventional gasoline and RFG oxygenated with MTBE reported by certain segments of the population have neither been proven nor dismissed, it is important to consider the widespread benefits of reductions in cancer risk and ground level ozone formation associated with the use of RFG Phase I

and Phase II when evaluating public policy choices."[2]

While data is limited, information obtained to date (the 1992 state-wide screening study; several Rumford area studies) indicates that generally, in Maine, air toxics associated with emissions from vehicles are a state-wide concern. Specifically, the concentrations of the carcinogens benzene and 1,3-butadiene exceed DHS' Bureau of Health guidelines for human health. (See table 2A)

Table 2A: OUTDOOR AIR LEVELS OF SELECTED HAZARDOUS AIR POLLUTANTS AND RELATED LIFETIME EXCESS CANCER RISK

(1992 data except Rumford which is 1991 data)

Location	Benzene			1,3-Butadiene		
	Range (ug/m3)	Average (ug/m3)	Cancer Risk	Range (ug/m3)	Average (ug/m3)	Cancer Risk
Westbrook - New England Telepho	**1.2 - 2.6**	**1.68**	**1.39**	**0.1 -0.2**	**0.18**	**9.26**
Westbrook - Sd Warren Lab	**1.4 - 4.9**	**2.44**	**2.02**	**0.1 - 0.3**	**0.16**	**8.23**
Westbrook - Hospital	0.5 - 1.4	1.08	0.89	0 *	0 *	0 *
Berwick - Fire Station	**1.3 - 2**	**1.64**	**1.36**	**0.1 - 0.4**	**0.24**	**12.34**
Berwick - Athletic Field	0.5 - 1.1	0.86	0.71	**0.03 ** - 0.1**	**0.05**	**1.54**
Berwick - School	0.8 - 1.4	0.96	0.8	**0.03 ** -0.2**	**0.11**	**5.66**
Kennebunk - School	0.9	0.9	0.75	0 *	0 *	0 *
Kennebunk - Parsons Way	0.6 - 1.1	0.74	0.61	0 *	0 *	0 *
Kennebunk - Grist Mill Restaurant	0.5 - 1.4	0.95	0.79	**0.03 ** - 0.1**	**0.05**	**2.57**
Woodland - Georgia Pacific	0.7 - 1.0	0.83	0.69	**0.03 ** - .1**	**0.07**	**3.6**
Woodland - School	0.6 - 1.4	1.04	0.86	**0.03 ** - .1**	**0.06**	**3.09**
Woodland - Polk Property	0.3 - 0.8	0.63	0.52	0 *	0 *	0 *
Jonesport - Ozone Shelter	0.4 - 2.1	1.13	0.94	**0.03 ** - 0.2**	**0.09**	**4.63**
Mt. Agamenticus	0.5 -0.6	0.53	0.44	0 *	0 *	0 *
Rumford - Garage	**3.42 - 18.21**	**8.15**	**6.75**	**0 *** - 0.66**	**0.15**	**7.71**
Rumford - School	**0.51 - 2.43**	**1.42**	**1.18**	**0 *** - 1.65**	**0.27**	**13.89**

* indicates that all values at that site were ND

** at least one of the samples had detectable amounts, so 1/2 the detection limit was used for ND

*** detection limits were not given in the Rumford study

CANCER RISK SUMMARY: Any value that exceeds 1.0 represents a risk that exceeds the Bureau of Health benchmark (1 in 100,000)

Fuel Parameters

- Reid Vapor Pressure
- Oxygenates
- Sulfur
- Aromatics
- Benzene
- MMT

III. Fuel Parameters

1. Reid Vapor Pressure (RVP)

Vapor Pressure is a measure of a fuel's volatility, or its evaporative rate. The term Reid Vapor Pressure refers to the method used to determine vapor pressure of gasoline and other petroleum products.[3] Volatility in gasoline is an important characteristic and can affect vehicle performance. Gasoline that is too volatile vaporizes too easily, and at high operating temperatures may boil in fuel pumps, lines or carburetors. Excessive volatility can also cause vapor lock, resulting in loss of power, rough engine operation, or complete stoppage. High gasoline volatility also has negative environmental effects. Evaporative emissions of VOCs and other pollutants generally increase, and fuel economy deteriorates as well.[4] This increase in pollution contributes to air quality deterioration.

Gasoline that is not volatile enough can result in difficult cold starts, poor driveability during the warm-up phase, poor cool weather driveability, unequal fuel distribution in carbureted vehicles, and can contribute to deposits on crankcases, combustion chambers, and spark plugs.[5]

Refiners adjust vapor pressure seasonally with more volatile gas in the winter to provide good cold starts and warm-up performance. The vapor pressure is less volatile in the summer to help minimize vapor lock and hot driveability problems, as well as to comply with federal gasoline volatility standards aimed at minimizing air pollution. RVP is also adjusted for high altitude geographic areas. Even with these changes to minimize volatility, engine performance may be affected during the spring or fall because of temperature variations.[6]

A. EPA Geographic Fuel Volatility Requirements

i. Southern Fuel vs. Northern Fuel

EPA's gasoline RVP rule divides the continental United States into two control regions: Class B and Class C. Generally, the warmer southern and western states are Class B, and the cooler northern states are Class C. To minimize VOC emissions, during the high ozone season (June 1 to September 15) Class B areas are limited to an RVP of 7.8 psi and Class C areas an RVP of 9.0 psi. This cap does not preclude lower RVP's in these areas For example, some of the Class B areas use "Southern Federal RFG" which has a volatility of around 7.2 psi,

and some Class C areas have "Northern Federal RFG" which has an RVP of around 8.1 psi. (See Map)

B. Low RVP Fuel

A Low RVP fuel is a conventional (non-RFG) fuel with the RVP reduced to a level necessary to achieve specified VOC reductions. Currently Maine's conventional gasoline has an RVP of 9.0 while RFG has an RVP of about 8.1 psi. The primary purpose of low RVP fuel is to reduce VOC emissions. Phase II RFG scheduled to begin in 2000 is expected to have a RVP of approximately 6.8 psi. This fuel is less volatile than standard conventional gasoline and yields lower refueling and evaporative emissions.

Currently states require and refiners provide fuels at various RVP's. These include RVP levels of 7.8 psi, 7.2 psi, and 7.0 psi respectively. Maine would require a 211 (c) waiver from EPA (described in Section V, 1) to begin using a low RVP fuel.

2. Oxygenates

Oxygenates are required by Federal law in both RFG and Oxyfuels to reduce emissions of harmful emissions. (Oxyfuels are strictly wintertime fuels used to reduce carbon monoxide (CO)).(Maine is not required to use oxyfuels, because the State is in attainment for CO). In RFG, there must be at least 2.0% oxygen by weight. There are several different oxygenates that are routinely used in RFG to meet that oxygen requirement. Those oxygenates are MTBE, Ethanol, ETBE and TAME. MTBE is by far the most commonly used oxygenate.

In general the use of oxygenates also reduces total hydrocarbon exhaust emissions and air toxics such as benzene and 1-3 butadiene, but increases emissions of aldehydes (formaldehyde from the use of MTBE). The addition of oxygenates to a base gasoline lowers the benzene concentration proportionately through dilution.

A. MTBE

MTBE or Methyl Tertiary Butyl Ether is the most common oxygenate used in RFG, and is generally added at 11% by volume to meet the 2% by weight RFG oxygen requirement, but can be added in amounts up to 15% by volume. MTBE is added to RFG to help reduce air toxics and ground-level ozone, and has been added to conventional gasoline, usually at lower amounts (3 - 9%), since 1979 as an octane enhancer.

When gasoline spills or leaking tanks contaminate groundwater, MTBE is often the first compound to show up. "Due to its small molecular size and solubility in water, MTBE moves rapidly into groundwater, faster than do other constituents of gasoline."[7] Below is table 3 comparing the solubility of MTBE to other compounds:

Table 3. Solubility in water of different compounds

Compound	Weight %
Xylene	0.016
Toluene	0.052
Benzene	0.18
TAME	2.0%
ETBE	2.6%
MTBE	4.8%
Table Salt	36%
Ethyl Alcohol (Ethanol)	100%

This table gives the various solubilities of various compounds. It should be noted that although MTBE is more water soluble than other gasoline components, and does move rapidly through groundwater, it is significantly less water soluble than ethanol, another gasoline oxygenate.

B. Ethanol

Ethanol is another oxygenate that is used in RFG. Ethanol is an alcohol and can be used in blends of up to 10% by volume.[8] Ethanol is currently not used in the Northeast during the summer time. Because ethanol can boost the RVP of a fuel from 0.5 to 1.0 psi (pounds per square inch) higher than can MTBE, the product to which the ethanol is added must have an RVP of around 5 to 6 psi. This has to date precluded the Northeast from using ethanol in the summertime, because no refiner in the Northeast has been willing to produce gasoline with this low a vapor pressure.[9] Many states that use oxyfuels with ethanol have a waiver from EPA for ethanol fuel with a vapor pressure of 1.0 psi over that particular states regulated RVP(i.e. 7.8 psi, or 9.0 psi).

Ethanol has a great affinity for water. Ethanol must be blended at the terminals to minimize the risk of water contamination.

Therefore, fuel blended with ethanol is usually not transported for great distances; the ethanol is transported separately from the fuel. For that reason the use of ethanol would require more storage facilities and additional capacity for blending the ethanol at those facilities.(See Section VI, "Supply Issues")

C. TAME (Tertiary Amyl Methyl Ether)

TAME is another oxygenate that is used in RFG. TAME has performance characteristics that are similar to MTBE, but is less widely used as an oxygenate. TAME can be used in gasoline in concentrations up to 17.2 % by volume, but is usually used at lower levels. When TAME is added to gasoline it will lower the RVP.[10] TAME is less water soluble than MTBE, but more soluble than benzene and other toxics. Although there is some evidence of the use of TAME in the Northeast in Massachusetts, the percentage found in the Northeast is considered to be very low.

D. ETBE (Ethyl Tertiary Butyl Ether)

ETBE also appears to have similar performance characteristics to MTBE, but again is much less widely used. It can also be added to fuel up to 17.2 % by volume, and when added to gasoline it will lower the RVP.[11] ETBE is also less soluble in water than is MTBE, but more soluble than benzene and other toxics. EPA found no ETBE in RFG tested in the Northeast.

3. Sulfur

Sulfur reduces the effectiveness of the catalytic converter, and at high levels can cause premature engine wear (the federal standard is not to exceed an average of 1000 ppm sulfur). Excessive sulfur in the catalytic converter causes a "rotten egg" smell.[12] In addition, a high sulfur content results in greater NOx emissions.

Sulfur levels in gasoline vary significantly, depending on the base crude oil from which the product is refined. The test fuel used to certify that automobiles meet federal emission standards typically has a sulfur content that is less than 100 ppm. Gasoline sold outside of California averages over 300 ppm and Phase 2 RFG, available in year 2000, is expected to average 150 ppm, which is well above the levels in the federal certification test fuel.[13]

The EPA intends to promulgate rules regulating sulfur content in fuels. It is likely that the average sulfur content in fuels will be reduced.

A. Low Sulfur/ Low RVP

The use of a low sulfur/low RVP fuel gives the added benefit of NOx reductions as well as VOC reductions. The sulfur content of fuel outside of California currently averages over 300 ppm.[14] Right now, the two low sulfur/low RVP fuels available in the US are California RFG with an average sulfur content of 30 ppm, and an Alabama fuel (see appendix A) with an average of 310 ppm sulfur. Upon approval of a 211 (c) waiver by EPA, Atlanta Georgia will be selling a fuel with an RVP of 7.0 psi and an average sulfur content of 150 ppm in the summer of 1999.

The use of a low sulfur fuel would not require a waiver from EPA unless the low sulfur fuel included a low RVP component, and the reductions from this fuel are needed to meet the national ambient air quality standards (NAAQS).

4. Aromatics

Benzene, toluene and xylene are all "aromatics." Benzene is a known carcinogen, toluene is a known toxin, and xylene is a major contributor to the formation of smog. By design, RFG contains lower levels of these harmful aromatics than does conventional gasoline. In addition to contributing to pollution, aromatics may contribute to the deterioration of elastomers (rubber hoses, gaskets etc.) in some vehicle fuel systems. In the 1970's aromatics were in fuel at about 20%, in 1990 levels were at approximately 32% and many gasolines have an aromatic content that exceeds 40%.[15]

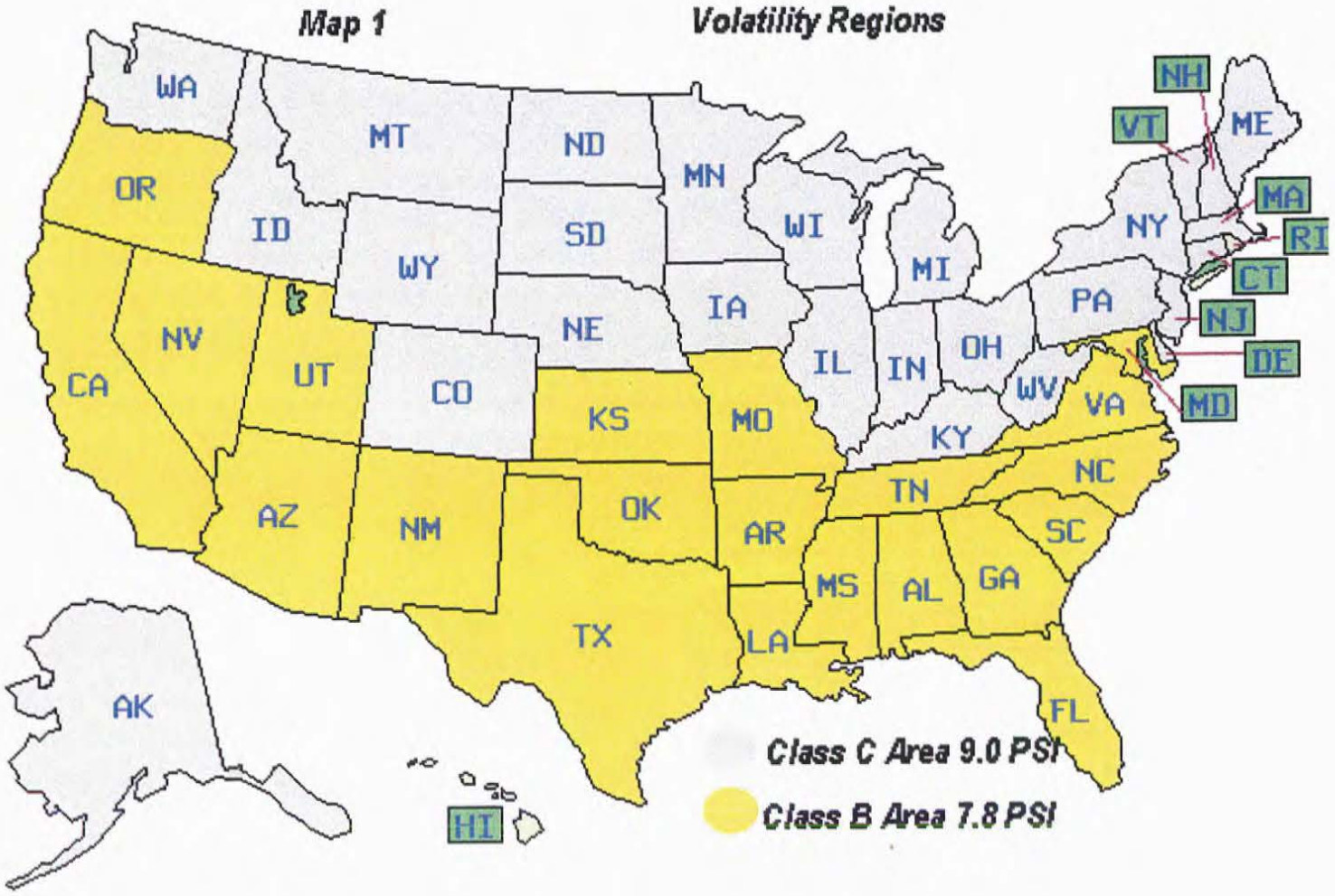
5. Benzene

Benzene is a by-product of the gasoline refining process and is of particular concern because it is a known carcinogen. Benzene is considered to have 5 to 6 times more carcinogenic potential when inhaled, as MTBE and have 10 times more carcinogenic potential when taken orally, as MTBE. Federal law requires that Benzene concentrations in RFG be reduced from 1.5% to no greater than 1.0% by volume. Benzene is high in octane, but the octane previously provided by benzene is replaced by oxygenates and hydrocarbons with appropriate boiling temperatures. The removal of benzene is not a performance issue; it is a positive health benefit, in that it lowers cancer risk.[16]

6. MMT (Methylcyclopentadienyl Manganese Tricarbonyl)

MMT is a manganese compound. Although not an oxygenate, MMT is a gasoline additive used to enhance octane. The manganese contained in MMT is a heavy metal similar to lead and federal law prohibits the use of heavy metal in RFG. Ethyl Corp. markets MMT as a gasoline additive that not only enhances octane, but also decreases emissions. Ford Motor Company takes the position that MMT may actually hamper the performance of vehicle emission control systems and that there may be health effects associated with introducing manganese into the environment. Manganese is a neurotoxin similar in its effects to lead.

The use of MMT is allowed both in the US and Canada, but most major refineries refuse to use it.


Map 1
Volatility Regions
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
MD
DE
NJ
CT
RI
MA
VT
NH
ME
AK
HI
Class C Area 9.0 PSI
Class B Area 7.8 PSI

What are the "alternatives" to RFG with MTBE?

- Options for Maine

1. What are the Options for Maine? (See table 4 at the end of this Section for a summary of alternatives)

In order to determine what gasoline options, other than RFG with MTBE, may be appropriate for Maine, it is necessary to answer a number of questions about the fuel:

- Would the fuel enable Maine to meet its VOC reduction obligation under the State's Clean Air Plan (see section II (2) (A)), or would additional strategies need to be employed?
- Would Maine see other air quality benefits, including reductions in NOx and air toxics, by using the fuel?
- What health risks are posed by direct exposure to the fuel before and after combustion, and what is the fuel's potential for contaminating groundwater?
- Is the fuel readily available to Maine or could it be made available?
- How much would the fuel cost Maine drivers?
- Does the fuel affect vehicle mileage or engine performance?
- Would the resulting fuel program be enforced by the State (thus incurring an additional administration cost) or by EPA?
- Would use of the fuel in Maine require a special waiver from EPA (see section V, 1)?

In this section, these questions are addressed for each of the fuel options. The fuel options are divided into three general categories:

1) Maintaining Maine's current fuel program which uses reformulated gasoline with MTBE,

2) Altering Maine's current fuel program by continuing to use reformulated gasoline, but banning or limiting the use of MTBE and using a different oxygenate, and

3) Opting out of the reformulated gasoline program, and using a non-RFG fuel that will gain similar VOC reduction benefits.

A. Maintain the current reformulated gasoline program

Staying in the RFG program would maintain Maine's current fuel program. Use of Phase I RFG in the seven southern counties would continue until January 1, 2000, when federal Phase II RFG requirements would apply.

VOC reductions. Staying in the current RFG program would continue to provide Maine with the reductions in VOCs needed to meet its obligations under its 15% VOC reduction plan. VOC emissions from Phase I RFG are required by EPA to be at least 15% lower than conventional gasoline, as required by law. If Maine remains in the RFG program, Phase II gasoline would be required by EPA to yield at least a 27% VOC reduction, beginning in the year 2000.

Other pollutant reductions. Remaining in the RFG program would also maintain the benefits of reduced air toxics (i.e., hazardous pollutants with serious long-term health effects, including cancer) and reduced NOx. EPA requires the current Phase I RFG to reduce air toxics emissions by at least 15% over conventional gasoline, and Phase II RFG to reduce air toxics by at least 22%. Likewise, EPA allows no increase in NOx emissions over conventional gasoline with Phase I RFG (EPA reports an actual 3% NOx reduction) and Phase II RFG would bring about a minimum NOx reduction of 7%.

Health risks and potential for groundwater contamination. EPA lists MTBE, the oxygenate in Maine's current RFG, as a "possible human carcinogen." Some sensitive individuals may experience acute effects with exposure to MTBE. MTBE is more soluble than other components of gasoline, and travels quickly through soils, where it may contaminate groundwater.

An August 1998 study by Northeast States for Coordinated Air Use Management (NESCAUM) finds that Phase I RFG reduces cancer risk associated with gasoline vapors and exhaust by 12% as compared to conventional gasoline, and that Phase II RFG reduces cancer risk by 20%.[17]

Availability. RFG is readily available in Maine. The infrastructure and delivery systems for supplying RFG to Maine are well-established, and require no disruptive changes for gasoline suppliers and gas-station owners.

Cost. Early estimates predicted that RFG would cost approximately $0.03 - $0.05 more than conventional gasoline. The actual cost differential in Maine has averaged about $0.03 per gallon, although cost has varied somewhat depending on location and other factors. Phase II RFG is predicted to cost an additional $0.02 per gallon over the cost of Phase I RFG.

Vehicle performance. Federal tests of RFG in cars show up to a 3% reduction in gasoline mileage. EPA conducted laboratory tests under controlled conditions, which ensured that all factors other than gasoline type were identical. Later, EPA also conducted road tests in Wisconsin that mimicked real-life driving conditions. Both tests showed an approximate 3% reduction in mileage.

Enforceability. RFG programs are enforced by the federal Environmental Protection Agency at no cost to state enforcement systems.

B. Stay in reformulated gasoline program but ban/limit MTBE

Another option for Maine would be to remain in the RFG program, but limit or ban the use of MTBE. Banning the use of a particular oxygenate would require the substitution of other oxygenates. Other oxygenates available for use are Ethanol, ETBE and TAME.

i. Ethanol (3.5% by weight) as an oxygenate to replace the MTBE

VOC reductions. Modeling shows that the VOC reductions from using a RFG gasoline with Ethanol would be roughly equivalent to the reductions seen from RFG with MTBE. Therefore, substituting RFG that uses ethanol as an oxygenate would provide Maine with the reductions in VOC's needed to meet its obligations under its 15% VOC reduction plan.

Other pollutant reductions. As with RFG containing MTBE, use of RFG containing ethanol as an oxygenate would not increase NOx emissions over conventional gasoline, and would bring about a roughly equivalent reduction in air toxics

Health risks and potential for groundwater contamination. Contamination of ground water from fuel containing ethanol may present some health risks. Even at low levels, it may pose some risk to fetal development in pregnant women. It is extremely

soluble in water (see table 4), much more so than MTBE, and may therefore move through soil even more rapidly than MTBE; however, it is much less persistent in groundwater than MTBE, because it will readily breakdown in the natural environment.

Availability. In the short term, fuel containing ethanol as an oxygenate is in short supply in the Northeast. The supply is limited by ethanol production. The greatest amount of ethanol is produced in the Midwest from corn. The majority of ethanol is used in those same Midwest states, with some limited use in other areas.

To use ethanol in Maine at this time, it would have to be shipped via rail or truck. There is potential for increased ethanol production in the future (for example, a plant in Maine could potentially produce ethanol from potato waste), but infrastructure development would take some time. It must be noted that there are special handling and storage requirements (de-watering twice per year) associated with ethanol storage and distribution. Ethanol must be blended at the terminal which requires additional storage at the terminals with additional logistical issues associated with that requirement. Finally the RVP of the fuel stock must be below fuel stock used for RFG with MTBE which is an obstacle to availability.

Cost. The Maine Petroleum Association surveyed its member gasoline producers to determine the expected production costs for alternative fuels for Maine. Gasoline producers surveyed estimated that the production cost of fuel containing ethanol as an oxygenate would be an additional $0.02 to $0.05 over RFG with MTBE. It is likely that the price of the fuel will rise if an oxygenate other than MTBE is used. The retail cost would then reflect those production cost increases.

Vehicle performance. Use of ethanol as an oxygenate would likely affect vehicle performance. A reduction of approximately 5% in mileage is expected because of the loss of energy content, and ethanol may cause some rubber parts associated with vehicle engines to break down more quickly.

Enforceability. Maine would have to implement a state specific rule specifying Ethanol as the oxygenate to be used in Maine. EPA would be responsible for the enforcement of the RFG program; however; enforcement of the use of ethanol as an oxygenate would fall to the state, adding an additional cost over a

federally-enforced program. Conversations with other states which have implemented specialized fuel programs have indicated that they have spent approximately $30,000 - $50,000 per year in additional enforcement costs.

ii. **Replace MTBE with other ethers (ETBE and TAME)**

VOC reductions. The VOC reductions from using RFG with ETBE or TAME would be roughly equivalent to the reductions seen from RFG with MTBE. Therefore, substituting RFG that uses one of these ethers as an oxygenate would provide Maine with the reductions in VOC's needed to meet its obligations under its 15% VOC reduction plan.

Other pollutant reductions. As with RFG containing MTBE, use of a fuel containing ETBE or TAME as an oxygenate would not increase NOx emissions over conventional gasoline, and because their performance characteristics are similar to MTBE[18] would bring about a roughly equivalent reduction in air toxics.

Health risks and potential for groundwater contamination. Because ETBE and TAME are also ethers (as is MTBE), these factors are likely similar to the risks posed by RFG containing MTBE. Less is known about the health risks of these ethers because they have not been as extensively studied as MTBE. Like MTBE, the ethers ETBE and TAME are more soluble in water than other components of gasoline, and would be persistent if found in groundwater.

Availability. In the short-term, the supply of a gasoline containing ETBE or TAME would be limited by the producers' capacity for production. There may be potential for increasing supply in the long term, but this is difficult to predict.

Cost. The results of the Maine Petroleum Association survey indicates that gasoline containing ETBE or TAME as an oxygenate would cost approximately $0.05 to $0.07 cents per gallon more to produce than RFG with MTBE.

Vehicle performance. Gasoline containing ETBE or TAME as an oxygenate affects vehicle performance in a manner similar to RFG with MTBE. Up to a 3% loss in mileage and somewhat reduced power can be expected.

Enforceability. Maine would have to implement a state specific rule specifying ETBE or TAME as the oxygenate to be used in Maine. EPA would be responsible for the enforcement of the RFG program; however; enforcement of the use of fuel with ETBE or TAME as an oxygenate would fall to the state, adding an additional cost over a federally enforced program. Conversations with other states which have implemented specialized fuel programs have indicated that they have spent approximately $30,000 - $50,000 per year in additional enforcement costs.

C. Opt out of the reformulated gasoline program

If Maine opts out of the federal RFG program it will be necessary to find an alternative fuel that yields VOC reductions comparable to RFG. Those fuels that do not meet the RFG criteria but achieve VOC reductions to meet Maine's 15% VOC plan are as follows:

i. Low RVP fuel

VOC reductions. A range of low RVP fuels was evaluated. Preliminary modeling, with EPA's Mobile 5a model, shows that a fuel with a vapor pressure (RVP) of 7.2 psi or lower (see table 4 below) is needed in order to meet the VOC reduction requirements of Maine's 15% VOC reduction plan.

Table 4. VOC Reductions from Low RVP Fuel in Tons per Summer Weekday (TSWD).

RVP	Reduction (TSWD)	Shortfall
RFG	6.16	
8.1	3.54	2.62
7.8	4.54	1.62
7.5	5.47	0.69
7.4	5.76	0.40
7.3	6.03	0.13
7.2	6.30	+0.14

Other pollutant reductions. Lower RVP fuels would slightly reduce NOx and air toxic emissions. Air toxics reductions would depend primarily on fuel properties other than RVP, and could vary significantly depending on the gasoline used. Some low RVP gasoline may have reduced air toxics emissions. EPA's Complex Model indicates a 7.2 psi fuel would yield about a 0.4% reduction in NOx and about a 2.2% reduction in air toxics when compared to convention gasoline.

Health risks and potential for groundwater contamination. Low RVP gasoline has the same health risks as conventional gasoline (see discussion about NESCAUM study Section II (C)). Low RVP gasoline also has the same potential for groundwater contamination as conventional fuel. It may or may not contain an oxygenate at a low level that could contribute to the groundwater contamination experienced with MTBE. (Note: some refiners use other methods to increase octane rather than MTBE. One of those other methods is the process of Alkylation. Alkylates are high in octane, low in sulfur and contain no oxygen. Alkylates are a hydrocarbon formed during the refining process and occurring in gasoline that increases octane and should have none of the solubility problems of MTBE.)

Availability. Supply of low RVP gasoline is currently limited. Supply is based on the fuel specifications at individual refineries, and a limited supply is currently being produced, due to demand. Some refiners have indicated a willingness to produce this fuel for the Maine market.

Cost. In response to a survey done by Maine Petroleum Association , various respondents indicated that, assuming the low RVP fuel used is southern conventional and not a state specific fuel, the additional production costs would be 1 – 4 cents per gallon. The respondents further indicated that each psi reduction in RVP results in 1 cent per gallon additional production cost until reaching 7.5 psi RVP. Reductions lower than 7.5 psi RVP have greater production costs associated with them.

Vehicle performance. The low RVP fuel would be strictly a summertime fuel, sold from May 1 through September 15 of each year, to avoid cold weather performance issues. Problems with use of low RVP fuel could be seen in the transitional "shoulder" months when cars still contain residual fuel. Phase II RFG with MTBE has an equivalent vapor pressure to 7.2 psi low RVP fuel.

This fuel has been field tested in Boston, Massachusetts earlier this year, and South Portland, Maine in October 1997. Both studies showed no problems with vehicle performance during the "shoulder" months.

Enforceability. A low RVP fuel program would be enforced by the State, adding an additional cost over a federally-enforced program. Conversations with other states which have implemented specialized fuel programs have indicated that they have spent approximately $30,000 - $50,000 per year in additional enforcement costs.

ii. Low Sulfur Fuel (150ppm):

VOC reductions. EPA's Complex Model indicates only slight VOC reductions (about 2.3% over conventional fuel) would occur with the use of low sulfur fuel, and therefore, on its own, would not give Maine sufficient VOC reductions to meet the 15% plan requirements.

Other pollutant reductions. EPA's Complex model indicates significant NOx reductions benefits (about 6.2% over conventional fuel) would occur with the use of low sulfur fuel. In addition, air toxics reductions (about 5.7% over conventional fuel) would also occur.

Health risks and potential for groundwater contamination. Low sulfur fuel has similar health risks and potential for groundwater contamination as conventional gasoline (i.e. higher levels of the BTEX compounds and it may or may not contain MTBE).

Availability. Supply of low sulfur fuel is currently limited. Supply is based on the fuel specifications at individual refineries, and a limited supply is currently being produced, due to limited demand. Recent conversations with refiners indicate that some refiners do currently have the capability to produce low sulfur fuel while others do not.

Cost. some refiners indicate that a low sulfur gasoline with 150 ppm sulfur may not be any more expensive to produce. Gasoline producers surveyed by the Maine Petroleum Association estimate that production cost of low sulfur fuel would be an additional $0.01 to $0.03 cents per gallon over gasoline with existing sulfur

limits and there are refiners that have the ability currently to produce a low sulfur fuel.

Vehicle performance. Low sulfur fuel generally improves a vehicles catalytic converter performance, resulting in lower NOx emissions. No other impacts on performance with low sulfur fuel are anticipated.

Enforceability. Use of low sulfur fuel would be enforced by the State, adding an additional cost over a federally-enforced program because we would no longer be a part of a federal program. Conversations with other states which have implemented specialized fuel programs have indicated that they have spent approximately $30,000 - $50,000 per year in additional enforcement costs.

iii. Benzene cap (1% by volume)

VOC reductions. EPA's Complex Model gives no VOC benefit from a benzene cap alone. Use of a fuel with only a benzene cap would not meet the VOC reduction requirements of the 15% plan based on current EPA methods of calculation.

Other pollutant reductions. EPA's Complex Model indicates that a fuel with only a benzene cap of 1% would provide significant reductions in air toxics (about 9.2% over conventional fuel, but significantly less than RFG). No NOx benefits would be seen with a benzene cap.

Health risks and potential for groundwater contamination. Because benzene is a known human carcinogen, health risks from direct exposure and groundwater contamination would be reduced with a benzene cap.

Availability. Some refiners have indicated they are currently providing conventional fuel which contains low benzene. However, it is difficult to estimate how much low benzene gasoline is available. Beginning in 1999, all Canadian fuel will have a benzene cap equal to RFG.

Cost. The Department currently has no information to estimate the retail cost of gasoline if a benzene cap is required. Some refiners have indicated no price increase.

Vehicle performance. A benzene cap would have no impact on vehicle performance.

Enforceability. A benzene cap would be enforced by the State, with the additional costs to be borne by the State.

iv. Low sulfur (150ppm)/ low RVP (7.8 psi)/ benzene cap (1%)

The Department evaluated a fuel which combined several of the above options. This fuel option would have a slightly lower RVP than Phase I RFG (a 7.8 psi compared to RFGs 8.1 psi). It would also provide additional VOC and NOx benefits from the lower sulfur limit specified for Phase II RFG in 2000, and attempt to maintain some of the air toxics benefits by maintaining the same benzene cap currently in RFG.

The Department chose to evaluate a 7.8 psi fuel because this fuel is available in the summer throughout the southern United States. While this RVP fuel option by itself does not provide sufficient VOC reductions to meet the 15% plan, the low sulfur parameter provides the additional VOC reductions that are needed.

VOC reductions. EPA's Complex Model indicates VOC reductions of about 13.7% over conventional fuel. The Department believes that this fuel option will provide sufficient VOC reductions to meet the RFG share of Maine's 15% VOC reduction plan. Additional work and collaboration with EPA is needed to verify this conclusion, because the use of EPA's Complex Model must be combined with the use of the Mobile 5a Model to calculate the combined benefits of this option.

Other pollutant reductions. EPA's Complex Model indicates that a low sulfur limit of 150 ppm combined with a 7.8 RVP would provide significant NOx reductions (about 6.4% over conventional fuel). In addition, air toxics reductions (about 15.3% over conventional fuel) would be achieved.

Health risks and potential for groundwater contamination. Low sulfur/low RVP fuel would have similar health risks and potential for groundwater contamination as conventional gasoline. As there is no specific prohibition of MTBE or another oxygenate, refiners may chose to use an oxygenate at some level to increase octane. The level of oxygenate used would determine the potential for groundwater contamination by MTBE.

Availability. Conversations with gasoline suppliers/refiners indicated that a low RVP fuel with a sulfur content of 150 ppm could be produced by some while others are not currently positioned to do so.

Cost. Gasoline refiners/suppliers gave production cost estimates ranging from no increased cost over Maine's current to a cost at which the gasoline is not cost-effective to produce.

Vehicle performance. The low sulfur content would improve a vehicle's catalytic converter performance, resulting in lower NOx emissions. No vehicle problems are anticipated at a RVP of 7.8 psi.

Enforceability. Use of low sulfur/low RVP fuel would be enforced by the State, adding an additional cost over a federally-enforced program. Conversations with other states which have implemented specialized fuel programs have indicated that they have spent approximately $30,000 - $50,000 per year in additional enforcement costs.

v. **"Dual Fuel" Option**

This option would allow the sale of two different fuels in Maine, as long as each fuel provides sufficient pollutant reductions to meet the reduction requirements of Maine's 15% VOC reduction plan. For example, two fuels that would accomplish this are Federal RFG and a low RVP/low sulfur fuel. This option could be coupled with a market based incentive (described below) to discourage the use of MTBE and encourage the use of the low RVP/low sulfur fuel.

Mandating that a particular fuel be sold in Maine may result in an increase in retail cost. However, creating a competitive environment pressure will tend to reduce or even eliminate any price increase. A number of fuel suppliers have indicated that a dual-fuel option provides increased flexibility to ensure adequate supplies of gasoline for Maine and to avoid any potential short-term supply issues that may occur if only one special fuel is required. However, also according to the fuel suppliers, the increased flexibility would exacerbate the fuel storage problem at the terminals.

D. Market Incentives

Another way to help control the use of MTBE in Maine fuel is to do one or both of the following:

A. Place a tax on MTBE. A tax that imposed a cost differential on MTBE-containing fuels would serve to discourage its use in Maine.

B. Create a subsidy on non-MTBE fuels, such as the ethanol subsidy employed in the Midwest, to encourage the use of non-MTBE fuels.

Table 5. Summary of alternative fuel strategies.

	RFG w/ MTBE	RFG w/Ethanol as oxygenate (3.5% by weight)	RFG w/ETBE or TAME as oxygenate (2% by weight)	Low RVP Fuel (7.2 or less psi)	Low Sulfur Fuel (150ppm)	Low Sulfur (150ppm)/ Low RVP (7.8 psi) fuel	Benzene Cap (1% by volume)
VOC benefits	Phase I: 15% reduction Phase II: 27% reduction	Would meet 15% plan req.	Would meet 15% plan req.	Would meet 15% plan req.	Would not meet 15% req.	Would meet 15% plan req.	Would not meet 15% req.
NOx benefits	Phase I: 3% reduction Phase II: 7% reduction	similar to Phase I RFG w/MTBE	similar to Phase I RFG w/MTBE	Complex model: 0.4% reduction	Complex model: 6.2% reduction	Complex model: 6.4% reduction	none
Air Toxics Benefits	Phase I: 15% reduction Phase II: 22% reduction	similar to Phase I RFG w/MTBE	similar to Phase I RF w/MTBE	Complex model: 2.2% reduction	Complex model: 5.7% reduction	Complex Model: 6.4% reduction	Complex model: 9.2% reduction
Availability	Readily Available	short-term suppl limited	Short-term supply limite	short-term supply limited	short-term supply limited	7.8 psi available in southern US	short-term supply limited
Cost	3 to 5 cents / gallon over conventional	2-5 cents/ gallon over RFG w/ MTBE	5-7 cents/ gallon over RFG w/ MTBE	1-8+ cents/ gallon over RFG	1-3 cents/ gallon over current Sulfur limits	4 - 6 cents/ gallon over RFG	Uncertain
Enforce-ability	Federal	state	state	state	state	state	state
Vehicle Performance	Reduced mileage; reduce cold weather performance w/ Phase II	5% reduction in mileage, rubber parts break down	3% reductio in mileage	possible cold weather performance issue	no impact	no impact	no impact
Potential for Contamin-ating Ground-water	soluble in groundwater persistent	more soluble than MTBE, less persistent	similar to MTBE	similar to conventional gas	similar to conventional gas	similar to conventional gas	reduced benzene contamination
Health Risks	Possible carcinogen, Acute effects in sensitive individuals	possible effects on fetal development	similar to MTBE	similar to conventional gas	similar to conventional gas	similar to conventional gas	reduced cancer risk
Storage and Transport	well-established infrastructure	would require increased storage capacity and special handling	Possible capacity issue	Possible capacity issue	Possible capacity issue	Possible capacity issues	Possible capacity issue

EPA Fuel Requirements

- Section 211 (c) Waiver
- What are the waiver requirements for each possible option in Maine?

IV. EPA Fuel Requirements

1. Section 211(c) Waiver

State adoption of gasoline requirements is controlled by Section 211(c) of the Clean Air Act. If Maine were to mandate a fuel other than conventional RFG, the State would have to obtain a Section 211(c) waiver from the federal Environmental Protection Agency. Section 211 (c) prohibits state regulation of fuel characteristics or components (i.e. benzene) for which EPA has adopted a control or prohibition unless the state adopts a control that is identical to the federal control.

Section 211(c) provides an exception to this prohibition for a non -identical state standard contained in a State Implementation Plan (SIP) where the standard "is necessary to achieve" the primary or secondary national health standard the SIP implements. (A SIP is a state's approved plan regarding how it will meet and maintain federal air quality standards.) EPA can approve such a state SIP provision as necessary if the Administrator finds that

> **"no other measures that would bring about timely attainment exist,"** or that;
>
> **"other measures exist and are technically possible to implement, but are unreasonable or impracticable."**

If a state decides to pursue a state fuel requirement rather than the federal RFG program, the state must submit a SIP revision adopting the state fuel control measure and apply for a waiver of federal preemption. The state must include in its petition specific information showing that the measure is necessary to meet the federal ozone air quality standard. The waiver request must:

A. Identify the quantity of reductions needed to reach attainment;

B. Identify other possible control measures and the quantity of reductions each would achieve;

C. Explain in detail, with adequate factual support, which of those identified control measures are considered unreasonable or impracticable; and

D. Show that even with implementation of all reasonable and practicable measures, the state would need additional emission reductions for timely attainment.

2. What are the waiver requirements for each possible option for Maine?

A. RFG with MTBE.

Retaining Maine's current RFG would not require a waiver from EPA under Section 211 (c) of the Clean Air Act Amendment of 1990.

B. RFG with Ethanol as an oxygenate.

Use of an ethanol fuel would not require a waiver from EPA under Section 211 (c) of the Clean Air Act Amendment of 1990. Comments from members of the Maine Petroleum Association indicate their belief that a waiver would be required from EPA.

C. RFG with ETBE or TAME as an oxygenate.

Using a fuel with ETBE or TAME as an oxygenate would not require a waiver from EPA under Section 211 (c) of the Clean Air Act Amendment of 1990. Comments from members of the Maine Petroleum Association indicate their belief a waiver would be required from EPA.

D. Low RVP Fuel.

A low RVP fuel would require a waiver from EPA under Section 211 (c) of the Clean Air Act Amendment of 1990.

E. Low Sulfur Fuel.

The use of low sulfur fuel would not require a Section 211 (c) waiver from EPA, because EPA does not regulate sulfur at this time. EPA is currently working on rulemaking that will limit sulfur in gasoline. Comments from members of the Maine Petroleum Association indicate their belief a waiver would be required from EPA.

F. Benzene Cap.

Maine would need to obtain a 211 (c) waiver from EPA to require fuel with a benzene cap. Obtaining a waiver may be an obstacle.(see Section IV, 1)

G. Low Sulfur/Low RVP/Benzene Cap.

Going to a low sulfur/low RVP/benzene cap fuel would require a waiver from EPA under Section 211 (c) of the Clean Air Act Amendment of 1990.

EPA has preliminarily indicated that a 211 (c) waiver for a state wide fuel program it is unlikely. Waivers granted for state fuel programs have been allowed only in non attainment areas unless it can be proven that transport from attainment areas is causing the non-attainment to violate the National Ambient Air Quality Standards (NAAQS).[19]

Supply Issues

- Inter/ Intra State Supply
- Storage

VII. Supply Issues

1. Inter/Intra State Supply

In the State of Maine there is currently about a 7-day supply of RFG stored at any one time. RFG is stored in two places in Maine, in Searsport, and in Portland. Portland and Searsport also have terminals that supply conventional gasoline. The fuel that comes into Maine comes from various sources. Some comes into Maine from Canada, some from the various East Coast refineries, and the rest from sources such as Europe and South America, depending upon price and availability.

Not all of the fuel coming into Maine stays in Maine. A certain percentage is designated for New Hampshire, Massachusetts and Vermont. Maine Petroleum Association commented with their concerns about the impacts of a state specific fuel to fuel supplies in Maine and the other three states. Additional storage is required to meet the needs of all affected states.

In addition Maine Petroleum Association identified the issue of supply shortages, run outs and other logistical problems associated with a limited number of fuel sources.

2. Storage

Storage capacity in Maine is severely limited. Currently Maine has fuel storage in Bucksport, Searsport, Bangor and Portland. Bangor and Bucksport store only conventional gasoline, while Searsport and Portland store both conventional and RFG. If Maine were to stay in the RFG program but switch to ethanol, storage would be an obstacle.

South Portland has a restriction on the construction of new terminals, allowing only one tank per dike. This inhibits expansion due to space necessary to build a proper dike. DEP regulation Chapter 600, currently in pre-rulemaking phase, may also have an effect on the future of storage expansion statewide, as any new construction will have to meet new state standards ultimately adopted.

Interim Findings and Conclusions

VII. Interim Findings and Conclusions

1. Findings

The Department's interim findings include the following:

A. Other Oxygenates

Fuels with other oxygenates may pose some of the same risks associated with fuels with MTBE. Since currently available oxygenates are ethers, they are equally or more water soluble and maybe comparably mobile. Ethanol is more water soluble than MTBE, but considerably less persistent in the environment than MTBE. However, because it is highly hydrophilic or water friendly, it poses a number of storage, distribution and performance issues which require greater investigation. It is not available in commercial quantities in Maine or the Northeast at this time. However, it is worth exploring in the future due to the potential ability to produce it in Maine's agricultural areas.

B. Low Volatility Fuels

Low volatility fuels (fuels with a lower Reid Vapor Pressure or rvp than conventional fuels), while not currently available in the Northeast, have the potential to enable Maine to meet its requirements under the Clean Air Act. Such a fuel would only be required during the summer months when Maine experiences exceedances of the health standard for ozone pollution.

Virtually all the major refiners indicated that they could produce or obtain such fuel for sale in the Maine market -- some with no cost increase, others with an increase of a few to several cents a gallon. One refiner indicated higher costs to produce a low RVP fuel.

Fuels with volatility at the low end of the range (e.g. 7.0 rvp) sold in the Southern regions of the U.S. may cause some performance problems (difficulty starting or occasional stalls) during cool fall or spring days. Field tests have been conducted in Boston and South Portland with a Phase II RFG during this season without demonstrating performance problems. Additional research and analysis is needed to determine the optimal volatility of fuels in this area which could achieve Maine's air quality goals without compromising engine performance.

C. Low Sulfur Fuel

Lowering sulfur is a NOx reducing strategy that obtains only a small amount of VOC reductions. A low sulfur fuel by itself is not adequate to achieve VOC reductions.

Some refiners have indicated an ability to produce a lower sulfur/lower volatility fuel without price increase. Other refiners have indicated they would face difficulties providing a low sulfur fuel in the immediate future.

D. Benzene Cap

Fuel with a benzene cap comparable to RFG could be made available to the Maine market. Most companies indicated this would be achievable with some price impact. Obtaining an EPA waiver to establish a benzene cap may be an obstacle.

E. Waiver Application

The USEPA has indicated a willingness to cooperate with Maine in processing an application for a waiver from the federal RFG program if Maine adopts rules mandating an alternative fuel with comparable air quality benefits to RFG.

2. Conclusions

A. An alternative fuel could be provided to the Maine market that could meet the requirements of Maine's 15 per cent plan and with air toxics benefits similar to RFG with MTBE.

B. To avoid any concerns in engine performance, a fuel with a moderate reduction in volatility and lower sulfur level would be optimal. Additional research is needed to determine whether there would be any performance problems associated with a fuel with volatility at the low end of the range of southern fuels (e.g.7.0 rvp).

C. The primary obstacle to switching fuels is in the market availability of such fuels. Additional research is needed to determine how to ensure that such fuel would be available to a variety of marketers to ensure prices are competitive with existing alternatives.

3. Next Steps

A. PL 791 requires DEP to hold a hearing on its alternative fuels study before January 1999.

B. Opting-out of the RFG program and adopting an alternative fuels program would require a demonstration that an alternative program has been adopted, and will provide for equivalent emissions reductions. In addition to a letter from the Governor requesting opt-out from the RFG program, the demonstration must contain adopted State regulations for an alternative fuel or a combination of an alternative fuel and other strategies that provide equivalent emissions reductions to RFG. The Department must also obtain a Section 211 (C) Waiver pursuant to the 1990 Clean Air Act Amendments. Once an opt-out petition is approved by EPA, it will become effective in 90 days, or at a later date if requested by the State.

Governor King submitted a request to opt out of the RFG program to EPA on October 13, 1998. EPA responded with a conditional approval on October 30, 1998. For Maine to opt out of the program we must:

1. Identify a replacement measure to provide VOC reductions equivalent to RFG;
2. Provide a schedule for implementing the replacement measure; and
3. Provide an explanation of the impact to the state implementation plan (SIP).

The Bureau of Air Quality has already begun the rulemaking process. The Bureau has submitted two alternative fuel rulemaking proposals to the Board of Environmental Protection. A special public hearing will be held on January 20, 1999. In a letter dated December 23, 1998 EPA submitted comments on those proposed rules stating neither proposal was acceptable to allow opt out of the program and that Maine has not yet met the conditions of the Governors opt out request. The Bureau hopes that an acceptable rule will be adopted by the Board of Environmental Protection (late February or early March).

Appendix A

- What are other states using and why?

Appendix A: What are other states using and why?

To fully gauge what fuels are currently available, the DEP contacted the EPA and obtained a list of states showing the federal and state Reid Vapor Pressure (RVP) fuel requirements for each state. From that list the DEP was able to determine which states are using RFG, conventional fuel, or some other alternative.

Using information obtained from EPA, the Department compiled charts showing those states using alternative fuels, a combination of fuels, or RFG (See attached charts). Then, Department staff contacted those states currently using and alternative fuel or proposing to use an alternative fuel. Those states with an alternative, with the exception of Alabama, universally had state-run fuel programs as part of their current State Implementation Plan (SIP) or were proposing to have a state-run program become part of their SIP. A summary of the states with alternatives fuel programs is as follows:

A. **Alabama. Federal RFG or Low RVP/ Low Sulfur.**

Alabama has established a limited state-specific fuels program in an effort to avoid any ozone exceedances which would bump Birmingham up from a marginal to moderate ozone non attainment area. The program is effective from June 1, 1998 to September 15, 1998 and allows two fuels, Federal RFG and Low RVP/Low Sulfur fuel (7.0 psi RVP with a sulfur cap of 310 ppm averaged over the summer), to be sold in that area. Alabama did not obtain a waiver for this short term strategy.

B. **Arizona. Federal RFG or California RFG**

Phoenix, Arizona originally opted into the federal RFG program in January 1997 and then opted back out as of June 10, 1998. As of June 10, 1998, Arizona has received approval from EPA for a state-specific fuels program that will allow the sale of both Federal RFG and California RFG in the Phoenix area. Their state-specific rule requires that fuel sold in Mariposa county beginning May 1, 1999 shall meet the standards for federal Phase II RFG or California Phase II RFG. Then, on November 1, 2000 through March 31, 2001, and for that period for each subsequent year, fuel sold in Arizona will meet California Phase II standards. Currently Arizona has a federally approved SIP limiting the RVP in their summer gasoline to 7.0 psi.

C. **California. California RFG**

In California all gasoline sold must meet California Phase II RFG requirements which require a 17% reduction in VOC's, an 11% reduction in NOx, an 80% reduction in Sulfur dioxides, and an 11% reduction in CO. The only exceptions

are in Los Angeles, Sacramento, and San Diego which because of their ozone non attainment status are required to sell Federal RFG.

D. **Georgia. Low RVP (6/1/99); Low Sulfur (4/1/99)**

Georgia is currently awaiting approval from EPA for a 211(c) waiver so it may enact its proposed State Specific Gasoline Rule. In this rule, Georgia would have 25 counties subject to a 7.0 psi RVP gasoline, which upon EPA approval of the waiver request would begin on June 1, 1999. The 7.0 psi RVP has conditional approval from Region V EPA. This gasoline would be sold from June 1, through September 15 of each subsequent year. Beginning on April 1, 1999, and continuing through March 31, 2003, the average sulfur content of the gasoline cannot exceed 150 ppm (by weight) from June 1 through September 15 of each year. Effective on April 1, 2003, the sulfur content will not exceed an average of 30 ppm (by weight). Georgia also has other requirements on Olefins and Aromatic Hydrocarbons.

E. **Illinois Low RVP**

Illinois has three counties that are part of the St. Louis ozone non-attainment area. Illinois has adopted a 7.0 psi RVP for those three counties to match the St. Louis MO vapor pressure. Illinois is a Class C state, and is therefore only required to have a RVP of 9.0 psi. Going from 9.0 to 7.0 psi provides a large enough reduction that the Illinois section of the non-attainment area is currently able to meet it's 15% plan requirements.

F. Kansas Low RVP

Kansas has a 7.2 psi RVP for the Kansas section of the Kansas City maintenance area. (A maintenance area is an area that has been in violation of an air quality standard in the past, and must make take measures to ensure that it maintains its attainment status.) As of this past summer, they were looking at the same issues that the Missouri side is looking into, because of exceedances in 1995. They hoped to make it through this ozone season without any exceedances in order to meet the 1-hour ozone standard and remain in attainment. Adequate modeling data is not available in this area to determine which pollutant, VOC or NOx, is a bigger culprit in forming ozone. Kansas is considering RFG in the future to enable them to meet the new eight-hour ozone standard.

G. **Maryland. Federal RFG with lower RVP**

Maryland currently uses Federal RFG in 13 counties. Of those counties using Federal RFG, 12 use the southern RFG and one, Cecil County, uses northern RFG because it is included in the Philadelphia Metropolitan Statistical Area

(MSA). The southern RFG in Maryland generally has an RVP of around 7.2 psi, while the northern RFG has a RVP of 8.3 psi. The remainder of the state uses conventional gasoline with a RVP of about 9.0 psi. The oxygenate used in Maryland is primarily MTBE, although there is some limited use of TAME.

H. Michigan Low RVP

Michigan has an RVP of 7.8 psi in the seven county Detroit maintenance area. The Michigan rule also includes a provision for the use of ethanol. Fuels containing up to 10% ethanol by volume are allowed an RVP of up to 8.8 psi.

I. Missouri.

1. St. Louis, Low RVP with Federal RFG

In June of 1998, Missouri held a fuel summit for the St. Louis area to decide whether or not to opt into the federal RFG program or to go with a state-run fuels program. Previously, the Legislature had prohibited the St. Louis area from using RFG in conjunction with an enhanced Inspection and Maintenance program. (The Air Commission has the authority to implement a state program that is as effective as RFG, is comparable in cost, and does not exclude ethanol.) At that time St. Louis decided on an I/M program.

The 1998 legislative session saw the Missouri Legislature remove the "ban" on RFG with Governor Mel Carnahan signing the Legislation. On July 10, 1998, Governor Carnahan sent a letter to EPA opting the Missouri portion of the St. Louis area into the Federal RFG program, with the program to begin on June 1, 1999. There will most likely also be some sort of supplemental state run program encouraging the use of ethanol.

The SIP for the St. Louis area also includes a 7.0 RVP gasoline for the summer ozone season.

2. Kansas City, Low RVP with the possibility of Federal RFG

Kansas City is currently a maintenance area for ozone. Federal violations of the ozone standard occurred in both 1995 and 1997. Currently the State is undecided what control strategy to use, as they are not sure if federal RFG would prevent further violations. An I/M program had originally been recommended for Kansas City, but the Air Commission stated that because of problems implementing I/M program in St. Louis, it would not approve an I/M program; some other strategy had to be found. RFG was then chosen as the option for Kansas City , but it is uncertain whether RFG will be an option for that maintenance area. EPA is currently investigating this issue. If EPA decides

that RFG is not an option, Kansas city will then look at Stage II vapor recovery as a strategy.

The Kansas City SIP includes a 7.2 RVP gasoline for the summer ozone season.

J. **Pennsylvania. Federal RFG or Low RVP; Low RVP (7/23/98)**

Pennsylvania underwent a stakeholders process in 1996, and out of that process came a majority recommendation to establish a fuels program for cleaner gasoline to help meet the federal ozone standard in the Pittsburgh area. The majority recommendation was for a rule that would allow the sale of either federal RFG or a low RVP fuel with a RVP of 7.8 psi. After this rule was adopted, the Pennsylvania Legislature raised concerns about the use of RFG with MTBE, and the Pennsylvania DEP subsequently informed the legislature that it would amend the rule to include only the low RVP fuel with an RVP of 7.8 psi. That revision has been submitted to EPA, and EPA has issued a direct final approval of the submittal. EPA did not receive any relevant adverse comments by July 8, 1998 so this rule will became effective on July 23, 1998. The regulations apply to the sale of gasoline in the Pittsburgh area between May 1 and September 15 for distributors, and between June 1 and September 15 for retailers.

K. Texas

1. El Paso, Low RVP

Texas has a low RVP gasoline (7.0 psi) as part of the SIP for the El Paso area only.

2. Dallas/Fort Worth; Houston, Federal RFG

These two areas in Texas are required to have Federal RFG as they are severe non-attainment areas.

3. Area proposed for Cleaner Burning Gasoline (as of 7/20/98)

The Texas Natural Resources Conservation Commission is looking into a regional cleaner-burning gasoline strategy for the eastern half of Texas. The TNRCC is currently looking at four possible options for cleaner gasoline. The gasoline options being investigated are: Federal RFG, a fuel that meets federal RFG performance requirements with no benzene cap, a low RVP/low sulfur fuel with a benzene cap, and California RFG. A decision on this fuel is expected within the next few weeks.

Appendix B

- Canadian Fuels Sold in the United States

Appendix B: Canadian Fuels Sold in the United States.

In addition to speaking with other states, the Department contacted its Canadian counterparts. Initially the Canadian federal government was contacted to find out what fuels were being sold in Canada. The Canadian federal government has enacted a benzene cap in all fuels sold in Canada. This cap meets the toxics requirements of Federal Phase I and II RFG. The Canadian government is also currently looking into gasoline sulfur as well. Each province has authority to determine the gasoline it sells. This includes any oxygenate requirements..

1. New Brunswick

   The Irving refinery is located in St. John New Brunswick. Irving sells both conventional and RFG in Maine.

2. Nova Scotia

   Imperial is the refinery located in Newfoundland. Currently they do not directly sell any fuel in the United States. They do sell to brokers who in turn may sell in the US. Imperial is a subsidiary of Exxon.

3. Newfoundland

   The refinery in Newfoundland is called Come-by-Chance. Efforts to reach this refinery have been unsuccessful. Previous information indicates that this refinery does ship both RFG and conventional fuels in the US.

Appendix C

- Transcript from December 1 Public Hearing and written comments submitted

ORIGINAL

STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

* *

PUBLIC HEARING RE:

INTERIM ALTERNATIVE FUELS REPORT

PREPARED BY: MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
OCTOBER 1998

* *

DATE OF HEARING: December 1, 1998

LOCATION: Verrillo's Restaurant
Portland, Maine

APPEARANCES:

NED SULLIVAN (Afternoon only)

JIM BROOKS

JOHN CHANDLER

RON SEVERANCE

MELISSA MORRILL

(This hearing was held before Commissioner Ned Sullivan and members of the Department of Environmental Protection, at Verrillo's, Portland, Maine, on December 1st, 1998, and consisted of two sessions. Session I was from 1:00 to 3:00 p.m., and Session II, 6:00 to 7:15 p.m.)

* * * * * * *

SESSION I

MR. SULLIVAN: Good afternoon. My name is Ned Sullivan. I'm Commissioner of the Department of Environmental Protection. We're here to hold a public hearing on issues related to alternative fuels in Maine as Public Law 791, signed by Governor King in April of 1998, directed the Department of Environmental Protection to conduct an analysis of alternative fuels which could be used as substitutes for Reformulated Gas (RFG) with high levels of MTBE. An interim report is due to the Legislature by January 15th, 1999, and a final report due by January 15th, 2000. We have shared drafts of that interim report, and today's meeting is a public hearing on that report.

With me at the table here are Jim Brooks, the Director of the Department of Environmental Protection's Air Bureau, and other members of the Air Bureau staff, including John Chandler, Ron Severance, and Melissa Morrill. I'm going to make some introductory remarks,

and then we are going to make the podium available for public comment.

MTBE is constituent of most vehicle fuels sold in the state of Maine and throughout the Northeast. Conventional gasoline contains between 3 and 6 percent of MTBE by volume as an octane booster to improve engine performance. Federal Reformulated Gasoline contains roughly 10 percent by volume to meet the legal requirement in federal law for the fuels to contain an oxygenate to achieve a cleaner-burning fuel with less toxic constituents.

Maine's participation in the federal Reformulated Gas program was initiated by Governor McKernan to help Maine reduce ground-level ozone in seven southern Maine counties. Ground-level ozone is a pollutant which causes respiratory problems for sensitive and healthy members of the population during summertime incidents when the health threshold is exceeded. RFG is part of the State's mandated 15 percent plan to reduce volatile organic compounds, a building block of ground-level ozone.

Automobiles generate more than 50 percent of Maine's air pollutants of concern, including volatile organic compounds which are the building blocks of ground-level ozone, as well as air toxics.

Reformulated gasoline has contributed significantly to air-quality improvements in Maine. Exceedances of the one-hour federal health standard for ground-level ozone have declined during its use in Maine and throughout the region. In addition, known human toxics such as benzene monitored in ambient air have declined by roughly 30 percent during its use here in Maine and other parts of the country where it is in use.

So I'll run through a couple of these graphics which illustrate those points. This chart indicates that Reformulated Gas is a significant component of Maine's 15 percent plan. That's a federal plan required by federal law to reduce the generation of in-state volatile organic compounds. As you can see, RFG constitutes 40 percent of that mandatory plan. This chart demonstrates the reduction in hazardous air pollutants at Cape Elizabeth in Maine where we've actually monitored reductions in air toxics since the RFG program began.

And this a map that demonstrates that RFG is in use in many areas of the country, significantly in the Northeast, Texas, and California, as well as certain Midwestern states where reductions in ozone-causing pollutants is required. It is also used in some areas of the country to reduce wintertime carbon monoxide

exceedances.

However, oxygenates in use in the United States are ethers, which are more water-soluble and mobile in groundwater than other constituents of gasoline. Incidents of groundwater contamination by MTBE have led to call for an alternative fuel which achieves comparable air-quality benefits.

Our primary goal in issuing a report and gathering public comment today and this evening is to identify a gasoline which provides Maine with the air-quality benefits of Reformulated Gas without the increased risk to groundwater posed by MTBE.

As I mentioned, the Department has conducted a study of alternative fuel pursuant to Public Law 791 but accelerated somewhat because of the several cases of MTBE contamination of groundwater which were discovered last spring, and Governor King directed a 5-point plan to look at the impact of MTBE on groundwater and other threats to public drinking-water supplies.

So we accelerated that study and issued the report recently. The findings include the following: Nonreformulated Gas could be made available in Maine which would meet the clean-air mandate for lower VOCs, reduce toxic emissions, and reduce the threat to our groundwater.

Another finding is that fuels with other oxygenates may pose some of the same risks associated with MTBE. Since currently available oxygenates are ethers, they're equally or more water-soluble and may be comparably mobile. Ethanol is more water-soluble than MTBE but considerably less persistent in the environment than MTBE. However, because it is highly hydrophilic, or water-friendly, it poses a number of storage, distribution, and performance issues which require greater investigation.

These other oxygenates are also significantly less available than MTBE. Low volatility fuel, that is, fuels with a lower Reid Vapor Pressure, or RVP, than conventional fuel, while not currently available in the Northeast, have the potential to enable Maine to meet its requirement under the Clear Air Act.

Second, a fuel with lower sulfur than current conventional, or RFG, would achieve emission productions as well. If used in combination with the fuel of a slightly lower volatility, a low-sulfur fuel could be utilized without any negative effect on engine performance.

Next, fuel with a benzene cap comparable to RFG could be made available to the Maine market. Most companies have indicated this would be achievable

without any price impact, though others have indicated that there could be cost impacts in the short term.

Finally, the USEPA has indicated a willingness to cooperate with Maine in processing an application for a waiver from the federal reform program if Maine adopts rules mandating an alternative fuel with comparable air-quality benefit.

One of the key issues that we face in bringing a fuel meeting these characteristics and goals is market availability. Our study found the primary obstacle to switching fuel is market availability. Additional research is being conducted, including today's hearing, to determine how to ensure that alternative fuels would be available to a variety of marketers, which would allow for competitive pricing and make sure that there's no disruption of the fuel supply and avoid adverse impacts on price.

We feel, in addition, that additional analysis is needed to determine the optimal fuel specifications including volatility and sulfur level, and we have been conducting this kind of analysis since we completed the draft report and are continuing to do that.

In terms of the process that Maine would have to go through, if we were to be successful in opting out of a Reformulated Gas program, we would need to demonstrate

that equivalent VOC reductions are available from an alternative fuel. We would have to go through a rule-making process to adopt an alternative fuel, which would be enforced by the State of Maine. We would have to apply for a federal fuel waiver. We would petition the U.S. Environmental Protection Agency to allow us to opt out of the reform program. Once approved by EPA, our petition would be effective in 90 days pending completion of the public process.

I'd also like to note that in pursuing this alternative fuels initiative, we have begun the process of drafting rules that would require the sale of an alternative fuel in Maine. We have developed a preliminary draft rule. It's marked "Staff Working Draft," and that has been made available, and there are copies available at the back of the room. And we would like to hear comments on that draft rule before we actually formally enter the rule-making process. We have not formally initiated rule-making at this stage, so we are open to hearing comment on our draft today or in writing.

So in providing your comments both on the report and on our draft rule, if you've had an opportunity to review that, we would most like your input on the following issues: The ability of an alternative fuel to

meet the requirements of Maine's 15 percent plan and to achieve other air-quality benefits, particularly the reduction of air toxics and nitrogen oxide.

Second, the availability to the Maine market including supply, distribution, and price issues associated with such a fuel, the potential for use of such a fuel as a statewide product, potential groundwater impacts and how you feel these would be addressed by an alternative, the potential effects on vehicle performance and vehicle mileage, and any administrative issues such as enforcement and need for waivers which you feel are deserving of comment.

I think Jim Brooks is going to comment on some of the logistical issues on how we're going to conduct the hearing from here.

MR. BROOKS: The way we're going to conduct this hearing is really simple. When you came in, there's a table in back that has a sign-in sheet. We also ask people to sign in if they wanted to speak. We're going to take that list and call them off one by one, as they came in, and we ask that everyone keep their talk down to 15 or 20 minutes.

At the end of that time period where everyone's had a chance to speak, if there are others that want to speak, we'll take them as you raise your hand. At the

end if there's enough time, we could have an informal question-and-answer period.

And there is a transcriber here to record your comments, but we would also welcome any written remarks you might have.

Okay. The first person on the list is Ted Davis.

MR. DAVIS: I just have a couple of quick questions. I don't understand why we can't first get rid of the villain and then do the study, rather than do the study before we got rid of that. I was wondering also about how much since 1994, how much fuel injection would have reduced the pollutants in our air if we'd just continued retiring carbureted cars.

I think the problem is the government wants to do the study first, and I think the gasoline is the problem, but we want to attack the gasoline rather than attack the problem of getting rid of the villain. Thank you.

MR. SULLIVAN: Thank you very much.

Ralph Stevens.

MR. STEVENS: My name is Ralph Stevens, South Berwick. It's my understanding that you are not addressing NOx for the first year, or until May 1st of the year 2000. You have stated a number of times in the paper and in letters to DEP that NOx is the one thing

that Maine has to reduce in order to achieve emission reductions. But here we are. We're still going after VOC reductions. And, as you know, better than 92 percent of the VOCs in Maine comes from deforestation of vegetation.

The other thing that bothers me is the benzene issue. Everybody is talking about 30 or 40 percent reduction in benzene, which is true, but you're only talking 1/2 of 1 percent. Unless you're willing to totally get rid of benzene, you're not doing anything.

A 1995 study in Alaska bears this out. They checked the blood levels of people during the oxygenated program before and after for benzene. There was no significant difference in their blood levels as far as exhaust emissions are concerned. So this half a percent is ridiculous. You have so much background benzene in the air. As I say, half a percent is nothing.

Your 50 percent of your total exposure to benzene comes from cigarette smoke; 20 percent comes from auto exhaust and industrial. Industry has been found to be one of the biggest producers. The report that is referred to in the 1995 Maine health study has found that the highest levels of benzene in the air are around industrial sites, so this half a percent of benzene is nothing.

And, as far as the sulfur levels, you're talking 150 parts per million. The auto manufacturers have petitioned Congress last March to lower the sulfur content. I believe it's down to around 50 parts per million. And this is what we should be looking at.

There is a 1997 study, which I'm sure you've probably seen, an auto-oil report, and the biggest thing that you can do in gasoline right now is reducing sulfur. It will give you the biggest results.

Another area of concern that I have is the RVP, lowering vapor pressure. You're talking about using this gas statewide. If you use this up in Aroostook County in May, September, I can almost guarantee you're going to have problems anywhere up there. I agree with a lower RVP gas. However, I think it needs to be either brought in gradually during the month of May and phased out at the end of August, or you don't transport it up north.

MR. SULLIVAN: Thank you very much.

Jami Py (phonetic).

MR. PY: Thank you, Commissioner Sullivan. I am Jami Py. I'm legal counsel for the Maine Oil Dealers Association. Again, I thank you for your attention. I stand before you today, and I'd like to comment on the Interim Alternative Fuels Report.

I would first like to say at the outset that we are committed to helping the Governor's DEP and the citizens of this state achieve our goals of providing Maine with alternative gasoline which has a reduced level of MTBE and providing fuel for Maine that works.

First, let me just say who MONA is for everyone in the audience. MONA represents Maine businesses and their 8,000 Maine-based employees that market petroleum products at the retail level, and our members include 240 of the approximately 275 companies that engage in retail sale of home heating oil to a little over 330,000 customers in the state.

These companies also provide a majority of propane gasoline in the state, and our members own and operate roughly 1250 of the roughly 1300 retail gasoline stations in Maine. Our members basically sell over 90 percent of the heating oil and gasoline in Maine.

First of all, I'd like to say this study does a very good job of outlining the issues, and I wish to commend the Department for putting together a comprehensive and, in fact, a very useful document. We have minor concerns on some of the topics, but they're not really something I want to discuss today. I think we can resolve those informally and with discussions.

Many of the issues dealt with in the report we're

not an authority on either, and therefore we really have no authority or ability to effectively comment. While the majority of our members are in fact retailers, we also represent Maine's largest refiners and suppliers. The refiners supply a segment of our memberships here, the concerns that we bring you today.

The first question of my concern with a new gasoline for Maine will be whether or not someone can actually make it. While we could not adequately answer that question, we are concerned nevertheless about the ramifications of having a new gasoline for Maine. Basically, that is what I would like to speak with you about today.

While the study notes that certain things could be done and that possibly other things may occur, we'd like to just back up and comment about the general situation involving the possibility of a new fuel and what issues should be discussed in the context of securing an alternative fuel. And we have some concerns about the substitution or replacement of Reformulated Gasoline.

First of all, new gasoline must work. That's primary in everyone's mind. Second is the environment. We clearly don't want to incur some other environmental problem associated with some sort of new fuel. We want to be able to achieve the same results we have today or

at least not cause anything new.

Price. I'm concerned about the price. I think we are all are -- supply, competition, and Maine's economy.

First, the new gasoline must work. This simply means that cars, trucks, buses and snowmobiles, outboard motors, small engines must be able to start and run as efficiently and must function equally as they do now using RFG with MTBE.

Clearly a Maine-only gasoline that has not been tested and/or is possibly problematic when used in the internal combustion engine is not an alternative. I think that's very basic.

The environment. The new gasoline must continue to reduce our VOCs by the federally-mandated amount in order to stay in compliance with the Clean Air Act. This will ensure that our ozone exceedance will stay in Maine as low as they have been for the last couple of years. Also, the new gasoline must not have some other ingredient or effect which may cause a problem with some other area of the environment.

And we're here today because of that very problem. While RFG does a great job of cleaning the air, the price of the MTBE contamination may not have been adequately calculated. So we believe that throwing out

RFG and finding its replacement should take time and be carefully scrutinized so as to avoid another possible situation that we have today.

Price. Maine, according to the U.S. Department of Energy, is the 45th lowest, with 50 being the lowest, state in the U.S. as to the cost of its petroleum products. So we're 45th lowest in cost. While this fact may not be widely known, it is something we should all be proud of, especially in considering we are at the end of the pipeline. How are Maine's sponsors able to deliver the 45th lowest price to all of us? There are a lot of reasons -- I pat myself on the back up here -- some which may be the character, industriousness, and innovativeness of the Maine marketer petroleum products.

Much, however, has to do with the variety and number of supply options available. Currently there are 18 to 20 different wholesale suppliers operating and throughputting gasoline at the Maine terminal. A like number are available to Maine marketers outside of Maine in New Hampshire, Massachusetts, Quebec and St. John. This variety of purchase options keeps the supply to Maine marketers very price-competitive. One supplier cannot and will not remain high-priced for very long to survive.

In addition, paper gallons can be purchased on the New York Mercantile Exchange of America. This local, national, and international competition keeps the price down and, again, allows Maine to offer the 45th lowest price in the country. This competition would not be possible with the specialized nonstandardized limited production of alternative Maine fuel. Again, that's our opinion. It is likely that there would be only one supplier or perhaps even 2, not 20. This effect would not allow us to continue to have Merc trading and, in essence, there would be very little competition.

It is unlikely, with Maine only representing less than a half of 1 percent of the gasoline sold nationally, that very many will invest in reconfiguring their refining, transportation, and storage systems in order to make and deliver a stored product with such a limited demand unless the price is commensurate with this high-level capital expenditure.

The conclusion for the Maine-only fuel is that it is likely to be expensive and may be higher-priced and probably will be higher-priced than in a neighboring state and perhaps even as high as Canada's, although at this time I'm not sure we can make that kind of judgment.

The next issue is supply, and you've adequately --

all these points, I think, were brought out in one of your charts and talked about the ability to have the fuel in Maine. Again, I congratulate you on recognizing the fact that that's an extremely important issue. Whenever one deals with a specialized nonstandardized product which is manufactured, again, in limited quantities and by limited numbers, options may be nonexistent. When this singular supply source has a problem -- and they do have them -- supplies may be unavailable. Problems could be in refining. There could be fires, labor strikes, storms, transportation. We've seen it with weather, breakdowns, accidents.

Storage. There may be not enough storage. Storms once again. Accidents. Maine currently has what we believe is a 7-day supply of storage for gasoline. This storage is also for other states as well because the terminals in South Portland supply New Hampshire, Vermont and, to a lesser extent, massachusetts.

Adding another gasoline to this unexpandable storage capacity at these terminals means that there will be an even smaller supply of gasoline storage for Maine. Problems will and do occur. And if there's no gasoline, Maine obviously will be at a standstill. Should we decide Maine must have an alternative fuel, then we must carefully develop and implement a

contingency plan to alleviate the likely supply disruptions. Otherwise, we expose ourselves to what we believe is a very precipitous position.

Gasoline, again, is a commodity that is generally exchangeable amongst suppliers. Maine gets cargos from all over the world, including the U.S., Venezuela, St. Croix, Russia, Europe, Africa. Gasoline, again, is a global commodity. Global supplies mean adequate choices and competitive prices. Global supply means competition.

My fifth point is competition. For years our Maine market has been very competitive with many dealers and marketers supplying Maine. These low prices, as I just told you about, are given to us by the U.S. Department of Energy and have been the result of intense competition amongst the suppliers in Maine. In fact, the Maine Attorney General has a keen interest in seeing that competitiveness remains in our industry. The Maine Attorney General's Office has specific legislation. The Petroleum Market Share Act, which is Title 10, Section 1677, is to oversee the industry and to ensure that it stays competitive with many diverse players.

The limiting effect on competition will be quite obvious whenever supply options are reduced to only one or two suppliers, especially if those one or two

suppliers are also major players in other levels of the marketplace, which may be the retail level. Competition at all levels will be effected dramatically. Lack of competition would be a negative outcome for the other marketers and most likely for the consumers of Maine.

Number six would be possibly a weakened economy. With low petroleum prices being one of the only costs actually lower than other costs associated with living and doing business in Maine, basically when we compared those costs with other states, high gasoline prices may further reduce Maine's ability to compete and therefore threaten our positive economy.

In conclusion, while the Maine Oil Dealers Association is very willing to help in any way that we can to assist the state with addressing the options of alternative fuel, we are nonetheless concerned, and unless careful consideration is given to addressing these issues, Maine may be placing itself in a very precarious position. We suggest that any gasoline chosen to replace RFG should have the fundable nature of a commodity and thus ensure a reasonable price and adequate competition nationwide.

Thank you for listening to that, and I can answer questions, and I'll give you a copy of this.

MR. SULLIVAN: I have a question. Do you feel

the southern fuel, 7.8 RVP fuel, meets the characteristics that you've outlined?

MR. PIE: I sent a memo out to our folks about that, and I think if it's widely available, I feel it is. I think that would be a reasonable alternative.

MR. SULLIVAN: Thank you very much.

Patricia Ahan.

MS. AHAN: Good afternoon. I appreciate the ability to provide public comments this afternoon in regards to the Interim Alterative Fuels Report which was issued in October 1998. I am Patricia Ahan, the Executive Director of the Maine Petroleum Association. MPA is a division of the American Petroleum Institute and represents over 400 companies engaged in all aspects of the oil and gas industry including exploration, production, transportation, refining, and marketing.

I have provided you with comments this afternoon that, as you can see from the comments in the left-hand margin, track the appropriate page number of the Interim Report and then also in each section, it tracks the section and the comments.

I'm not prepared this afternoon to provide comments, unfortunately, in regards to the areas you outlined 10 or 15 minutes ago, so I apologize. We do have copies of both regulations, proposed regulations,

and I'm assuming that you are hoping for comments in regard to both Draft 1 and Draft 2 of the regulations that are on those back tables.

As you can see from my comments, they are extensive in regards to the Interim analysis, and I hope that you will correct those areas of your report prior to delivery to the Legislature rather than simply attaching comments to the back of the report. I think in many cases there are factual discrepancies and errors that should be corrected prior to release to the Legislature, and I would encourage you to do so.

I will go through these comments briefly for you because they are extensive, and I do not wish to exceed my 15 or 20 minutes limitation here this afternoon. So if I do, please let me know and I could perhaps proceed later this evening if that would be permissible.

Starting with Roman numeral one, the statement is made that conventional gasoline contains between 3 and 8 percent MTBE by volume. Actually, this is also inconsistent with the comments this afternoon where you said that it is between 3 and 6 percent MTBE by volume. An average conventional gasoline is considered to contain only roughly 2 percent of volume MTBE. That's primarily because you have to look at the sales of the products, and the most gasoline sold obviously is the

regular and the mid-grade.

Secondly, on a number of occasions within the report as well as this afternoon, the statement's been that oxygenates in the U.S. are ethers. There are oxygenates that are alcohols such as ethanol.

Roman numeral two. The statement is made, "to achieve other air-quality benefits, particularly reduction of air toxics." The reduction of air toxics is not part of the USEPA's mandated 15 percent VOC reduction plan. In fact, in the United States there is not a national ambient air-quality standard for air toxins.

On Roman numeral three, the statement is made that "Fuels with other oxygenates may pose some of the same risks associated with fuels with MTBE." This is unfortunate because fuels are spilled or leaked, and that means gasoline is placed in or on the ground. It is not because of any inherent in the oxygenates themselves.

On Roman numeral page 3, you also make the statement again that oxygenates are ethers. I believe that there are actually some oxygenates used that are alcohols.

On Roman numeral page 3, in regards to the low-volatility fuel section, we'd just like to state

that industry is conducting an independent study of the state's 15 percent reduction plan, and we will be cooperating with you in reviewing low-volatility fuels. We believe that 7.8 RVP southern-grade conventional gasoline is the appropriate replacement fuel for the state of Maine rather than a fuel that is created and sold unique to the state of Maine.

Roman numeral page 3, the statement is made that a fuel with lower sulfur than current conventional or RFG would achieve emissions reductions. Emissions reductions which are realized from lowering the sulfur content of fuels are primarily reductions in NOx. Normally it's a minimum reduction in the VOC content.

On Roman numeral page 3 the statement is made that fuel with a benzene cap would be achievable without any price impact. The Department did not request any information from us regarding estimated additional production costs of a fuel with a benzene cap. We disagree that there would not be any additional production costs.

On Roman numeral page 3, the conclusion, Item No. 1. We would request that this item be expanded to include the serious logistic issues which have been raised regarding an alternative fuel. The possibility of fewer suppliers participating in the Maine market,

higher manufacturing costs, logistical issues such as supply disruptions, run-outs, and refinery shutdowns all need to be explained as associated risks the state will encounter when using an alternative fuel.

On Roman number page 4 the statement, "Additional analysis is needed to determine the optimal fuel specifications." We would request further explanation be added regarding USEPA's expected low-sulfur fuel regulations. This regulation is expected to be proposed shortly and will address the sulfur content of gasoline on a national and regional level.

On page 3 the VOC reductions and the 15 percent plan makes reference to the counties of York, Cumberland, Sagadahoc, and there is no reference made to the four other counties which currently require RFG. We think perhaps that section should be expanded to include the other four counties that are currently required to use RFG.

Page 8, in regards to the issue of engine performance and RVP, it might be helpful to provide greater explanation in this section on issues surrounding engine performance, RVP, and temperature variations. It's critical that the section should explain the risks associated with what we in the industry refer to as the "shoulder seasons," May and

September and the possibility that the Department is pursuing fuel strategies statewide. Further explanation really should be added in regards to that.

On page 8 the explanation of the southern fuel versus northern fuel. As written the section may confuse the reader, and it might be helpful for the Department to explain there is a current EPA regulation regarding RVP in addition to regulations regulating RFG, and in fact RVP is also regulated in RFG. Otherwise, I think the explanation of southern versus northern may lose a little bit in the translation.

On page 9 there is a discussion of the various RVP fuels that are in place in different parts of the United States. It would be helpful for further explanation regarding these fuels at the different RVP specifications and to discuss certain situations that surround the RVPs in those areas.

For example, in some of the markets they're very limited and small in scope. As an example I cite Kansas City which utilizes a 7.2 RVP conventional gasoline while the Atlanta area is using 7.0 RVP. Obviously, when those markets are so limited, they are not readily available to Maine.

On page 9 a brief reference is made to both the RFG and Oxyfuel program. It would be helpful for the reader

to have an explanation that the Oxyfuel program is not used or required in the state of Maine. Otherwise, there may be some confusion between the two programs.

On page 10 there's a discussion regarding the use of ethanol and the need for waivers from the EPA in regards to the use of ethanol. We would have serious concerns if the state were to pursue this particular strategy of seeking a 1-pound waiver from EPA, obviously because at the same time you're attempting to find an alternative fuel for your 15 percent VOC reduction plan. If you were to pursue a waiver from EPA for ethanol, you may in fact be increasing your emissions rather than decreasing your emissions.

It's also important, I think, to point out at this point that the ethanol waiver is applicable for conventional gasoline. It's not for RFG. For example, with RFG the governing specifications in the complex model calls for percentage reduction in VOC on a per-gallon basis in the summer. So it's confusing when you discuss the ethanol waivers whether you're discussing it for an RFG fuel or a conventional fuel.

On page 11 there's also a discussion regarding the sulfur content of gasoline, and we believe, as I stated earlier in my comments, that this section should have a discussion regarding EPA's anticipated lower sulfur

regulation. We would also hope that you would include within their discussion of the petroleum industry's proposal for lower sulfur regulation for gasoline. The industry's proposal as well as the expected EPA regulation will significantly benefit the northeast region in the state of Maine, and I think it would be helpful if within the Interim Report there is reference to what is expected from EPA in the next two or three months, I believe, is the time frame.

On page 12 in the section entitled "Low Sulfur/Low RVP," the last two sentences of that section do reference to some extent EPA's sulfur proposal, and so you may want to actually move that discussion to the section where you're discussing the sulfur content of fuels. Additionally, it should be noted that the American Petroleum Institute's proposal regarding sulfur content of gasoline will also include a standard of an 80/30 ppm level by the year 2010.

On page 12 the statement is made that the use of a low-sulfur fuel would not require a waiver from EPA. We strongly disagree with this statement. In fact, a waiver is needed from EPA in order to regulate the sulfur parameter of fuel. In my comments you'll see how we believe that this is required, and in fact Georgia is awaiting its waiver for the sulfur content of gasoline

from EPA. So we would ask you to take another look at this particular statement.

On page 13 a reference is made to MMT, which is not an oxygenate. In reading this particular section, it is a little confusing and troubling because the phraseology implies that MMT is currently replacing lead in gasoline. It is not. As you note in your report, most refineries in the U.S. refuse to use MMT. So if that could be corrected, that would be helpful as well.

On page 16 there's a discussion in regards to the health risks and potential for groundwater contamination. You may wish to update the Interim Report by adding the recent work released by the International Agency for the Research on Cancer, which is part of the World Health Organization and its new report on MTBE.

On page 17 the section discussing the banning of the use of a particular oxygenate which would lead to the substitution of oxygenates. The banning of a particular oxygenate would require the use of another oxygenate. It would not lead to that. This section should have a discussion regarding the legality of a limitation or ban on a particular oxygenate, whether a waiver from EPA would be required in or to pursue a ban on a particular oxygenate. And obviously once again, as

we've stated to the Department, a ban on the use of MTBE would allow refineries with no flexibility in regards to their products currently.

Page 17, in a discussion regarding substituting a gasoline that uses ethanol, the report, I believe, at this juncture is discussing substituting an RFG gasoline that uses ethanol, not a conventional gasoline. But it's confusing. It's confusing to me, and it may be to other readers as to whether you're discussing an RFG program or a conventional gasoline program.

On page 18 -- and I apologize. This is picky. The statement is made, "Ethanol is the substance found in alcoholic beverages." Actually, ethanol that's found in fuel is denatured, so it's not exactly the same ethanol that you find in alcoholic beverages.

On page 18 you also have a discussion in regards to the availability of the fuel that's under discussion, and we believe at this juncture the report should provide more information regarding logistics issues, such as the need for increased storage at terminals because of the in-line blending that would be required with ethanol, the required permits to construct additional storage, permitting schedules, permitting costs, with changes in fire-fighting equipment at the terminals and gas stations would be necessary, and their

associated cost to consumers for this particular fuel strategy.

On page 18 the statement is made, "The Maine Petroleum Association surveyed its member gasoline producers to determine the expected retail costs." The Maine Petroleum Association never surveyed its members regarding retail costs. The survey information we provided to the Department was very clear that we were providing estimated additional production costs.

Further, we've requested the Department to correct this section and all other sections in the Interim Report which have incorrectly referred to the information provided by us as retail price, and once again we request for you to change this. We request for you to change this prior to release of this report to the Legislature, and you'll see in my comments that I've provided you today, there are a number of other sections in the report where we are making similar requests.

On page 19 the statement is made that there's a possibility of 3 percent loss in mileage. We believe that added oxygenates result in 1 to 3 percent loss of mileage on average, so the reference to the 3 percent number is on the high side. We are also not quite sure as to the statement of reduced power. The octane levels in RFG and conventional gasoline are the same. It's the

octane that provides the power. So we're not clear as to what is actually meant by the report in that section.

As you can see from my comments, there are other areas that I've asked you to correct, once again the information pertaining to the cost and the information that we provided to you earlier this summer.

On page 22 there's a typographical error that references BTEX compounds. I believe it's BTX. I believe you're referencing benzene, toluene and xylene compounds.

Other places in the comments -- as we go along you'll see where we have provided you with comments regarding the actual amounts; for example, a 1 percent benzene cap. In one part of the report, the statement is made that a 1 percent cap would provide air toxics reductions at a level significantly less than with RFG, yet on page 24 of the report, it states that the 1 percent benzene cap would maintain the same air toxics provided by RFG. So there's an inconsistency in regards to that.

We would also recommend further analysis of the enforcement costs that are outlined throughout the report to have a sense of what you project enforcement costs for the state of Maine might be for running your own state fuel program. Costs from other states may not

be similar to what we in the state of Maine might experience as you pursue your own fuel program.

On page 25 the report provides information regarding a dual-fuel option. Most fuel suppliers have indicated that a dual-fuel option would not provide flexibility but would actually further exacerbate storage requirements at terminals that already have to provide the various grades of gasoline, diesel fuel, home heating oil, kerosene, and other petroleum products.

We would also recommend that this section of the report include other information regarding whether the dual-fuel option would require waivers from EPA and what the other legal, technical and, of course, what the issues would be in having additional fuel requirements here in Maine.

Pages 25 and 26, there's a brief discussion in regards to market incentives. Both have subsidies and taxes. We think further analysis needs to be provided regarding if there is legal issues surrounding either taxing a particular oxygenate or subsidizing a particular oxygenate. And, otherwise, if further analysis isn't provided, you may wish to delete this from the report.

Page 27 of the report has a chart, and on the

horizontal axis of the chart, you list off the various fuel formulas. On the vertical axis you list off some of the criteria by which you have analyzed various fuel formulas. On the horizontal axis you reference an option called the "Low Sulfur Fuel Option." Our questions to you are, does this analysis mean a summer-only fuel? Is it a 150 ppm average or a per-gallon specification for sulfur? Is the RVP specification in here a 9.0?

The other fuel option that needs more discussion on the horizontal axis is the fuel option that's listed as the "Benzene Cap," and we're not sure whether this means a 1 percent benzene limit with a 9.0 RVP with no sulfur specification, and is it for the summer season only? As it's worded right now, there are a number of questions as to actually what the fuel specification is that you are trying to lay out in a matrix form at that point.

On the vertical axis, one of the criteria that you have in the chart is referenced as "Cost", and under the "Low Sulfur/Low RVP Fuels" category, you list that the costs are uncertain. We provided you with what we estimated to be the additional production costs for that particular fuel, so you might be able to fill that in rather than just leaving the cost as uncertain.

On page 29 you have a discussion as to whether EPA

waivers are going to be required for the various fuel options that you list in the report. Items numbered 1-B, 1-C, and 1-E, we disagree with the statement that no waivers would be required for these particular fuel options. We believe that waivers from EPA would be required for all three of these particular fuel options.

Finally on page 30 under the "Supply Issues," we think more information needs to be provided in this section to discuss the amount of fuel which presently comes into Maine but goes to other states such as New Hampshire, Vermont and Massachusetts. There should also be a discussion in this part in regards to the various logistics issues in regards to run-outs, supply shortages, transportation and storage issues.

And then finally at the end of my comments, I briefly just touched on some brief comments in regards to the states of Alabama, California, and Maryland, and the specifications you list there.

I sincerely appreciate the opportunity to provide these comments, and I do appreciate your willingness to seek comments on the Interim Alternative Fuels Report. I think the fact that the Interim Report was done on such an accelerated basis just shows how much information that you collected and worked with in such a short amount of time. It's very well-done. Please

don't let our comments dissuade you otherwise. And we also appreciate your putting forth the two proposed regulations, and we will be providing you with comments in regards to the two proposed regulations in the future. Thank you all very much.

MR. SULLIVAN: Thank you very much.

Chris Carroll.

MR. CARROLL: Good afternoon, Commissioner Sullivan. I'm Chris Carroll from the Department of Economic Community Development Energy Conservation Division. I'm speaking not only for my division, but I will speak as a private individual.

I'd like to make the Board aware of an Act that was passed in the waning days of the last legislature, HP489, an Act to promote clean fuel alternatives. Looking at this, you can see some of these are rather experimental, but there are some that are now commercially available.

I spoke to a local Maine vehicle dealer who was selling the dual-fuel Ford Taurus and Ford Ranger, which can use any combination of alcohol and gasoline, and I'd like to present this to you for your information. Currently these customers are driving around only on conventional gas. It's a chicken-and-egg situation. There's no place for them to fuel with ethanol.

At the Energy Conservation Division we are fuels neutral, and that brings up the point, has the EPA considered methanol, M85, as a possible alternative? Looking at the other Maine, which to a large degree is resource-based, methanol could be produced in our own industry. Ethanol could be produced of course from agricultural waste, mainly potatoes in Aroostook County. On a historical note, I'd like to say that the county did have a viable ethanol industry during the Second World War for war-time production purposes. Following the war the plant was mothballed, and then it burned to the ground.

The technology is not rocket science. It is a proven technology. Archer Daniel Midlands is a Maine agribusiness proponent of ethanol. They are a huge supplier of this commodity. I can recall, as the energy extension service agent in Presque Isle a decade ago, being able to purchase gasohol at a local Texaco station in Presque Isle. So apparently the transportation issue was worked out at that point.

I'd like now to switch to the role of private individual because I have to a degree an interest in this fuel. I'm a vice president of something called Farmers Fuel Corporation, which is a small ethanol producer in Aroostook county. We started out with a

table-top model, graduated to a 55-gallon drum and a 3-inch column to a 500-gallon cooker and an industrial column. What we are producing is salts, perhaps a little bit of fuel, and no way could we produce the quantity required by the state.

However, the several years of experience I've had as a federally-licensed distiller has given me a certain amount of expertise I think you could use, and I'd like to volunteer that to the Board any time you need it.

There is a little misinformation, and I'd like to clarify a few things. One of the previous speakers mentioned that ethanol in gasohol is not the same as potable alcohol; it is denatured. By ATF -- Alcohol, Tobacco, and Firearms regulations -- that denaturing technically can take place by mixing potable, drinkable ethanol with gasoline than it is by regulation denatured. However, some manufacturers do denature it with a chemical ingredient called Bitrex, which makes it extremely bitter and unpotable for human consumption.

Ethanol would be roughly equivalent to reductions seen from RFG with MTBE, enabling Maine to meet its obligations under the 15 percent VOC reduction plan. There is no increase in NOx over conventional gasoline, and there is a rough reduction in air toxics. The potential to produce ethanol from Maine's agricultural

industry does help the other Maine. It does give us some measure of energy, independence, and security.

I'll put on my other hat. I'm a research intelligence air force officer. I was called up for Desert Shield and Storm, put a lot of my friends and comrades on B-52s to fly in the Middle East. And it was a galvanizing experience for me. I hope to never do that again. And that's one reason I've got a fire the belly about the work I do to help Maine achieve some measure of financial security through conservation and other measures. If we have the opportunity for some small degree of home-grown, home-produced fuel, we should at least investigate it to buy a little bit of energy independence.

Although ethanol is more water-soluble than MTBE, it is considerably less persistent in the environment, as it readily breaks down and degrades. Although no refiner in the Northeast has been willing to produce the gas for it -- once again, I was able to produce it from Texaco, although the label did say, "This is not a Texaco product." I believe it was being shipped in from the Midwest, which has a very viable ethanol industry. Ethanol is a fine gasoline oxygenate and can be used in blends up to 10 percent without any special engine modifications. You don't necessarily need the Ford

Taurus or the Ranger.

Lastly, the use of ethanol fuel would not require a waiver from EPA under Section 211 of the Clean Air Act of 1990. That concludes my comments. Are there any questions?

UNIDENTIFIED SPEAKER: My question has to do with how fast could an ethanol plant be built and operated, from the start to production and then potentially to a gas station?

MR. CARROLL: Some of the professional literature we get, say, the American Independent, as it's called. This is a trade publication of the American ethanol industry. They have packaged turnkey plants that are freighted on into whatever location, constructed.

I would say within one year you can have one of these turnkey plants, and we're speaking up to a million gallons at least annually up and running. The potential was investigated by Johnson and Johnson in Presque Isle. J&J was looking at that to make medicinal-type alcohols. At that point the economics didn't pan out, so J&J abandoned that plan.

But now with this whole search, this has brought a whole new factor into it. I believe a plant could be up and running within one year according to the industry

packages that I have seen advertised in Aroostook County.

MR. SULLIVAN: Thank you for your comments and all your hats.

MR. CARROLL: You're welcome.

MR. SULLIVAN: Is there anyone else who is intending to speak? Sir.

MR. BOILARD: Commissioner, members of the Board, my name's Robert Boilard, better known probably as Bob. They've called me everything, even an environmentalist, but I don't know. I'm probably the least articulate speaker you'll face here today, but I'm known to have 5- to 10,000 documents on what is good for Maine people or what is harmful.

And I'll give you a report right now. See that? Cancer. I've been through it. This is an annual report of Southern Maine Medical Center, so it must be pretty reliable, don't you think? "Summary of 1996 Cancer Incidents. In comparison with state and national figures, et cetera -- in Maine runs -- as well as breast cancer -- runs five to six times the national average." In Biddeford, which is where I live, this is where Southern Maine Medical Center is. What does that have to do with MTBE? Oh, I'll get around to that.

I drove 50-odd years with what was claimed as

regular gas. Maybe it did affect me. I don't know. I sure attended a couple of meetings when this Reformulated Gas was being developed and the pros and cons, and it seemed to me the cons were pretty much speaking their parts pretty effectively.

Off the river corridor. You probably read it. You probably saw editorials. Well, that was a dream of mine and five other people back in the late '60s. Volunteers. We pushed a concept because we felt it had to be done sooner or later that the Saco River, which you first have to line up and say, what is it? It's a river. But it's a reservoir for water. We couldn't survive down there without the Saco River as a watershed.

Subsequently, we've been laid out as an act of the Legislature. No higher, no lower than the Planning Department, Welfare Department, Fish and Game. We were elected or recognized by the Maine Legislature in 1973. We're all volunteers. We have a director that gets paid and a staff person as a secretary. Two people but we are two people from every town along the Saco River watershed who participates in the program of enforcement, development, et cetera, and hopefully to keep the water clean. The Saco River puts out over 2 billion gallons of drinking water for York and parts of

Cumberland County a year. Pretty impressive enough.

So subsequent from that, I'm here to promote the corridor because we are in dire straights of losing the water conditions. The state of Maine sees fit to give the corridor a $5,000 grant a year. We presented our case well to the Maine Legislature and they said, you're doing such a good job, we're going to give you $5,000 more. But it never came up. So this time around, friends, this next legislature, Commissioner, we will dance. I'm sorry to tell you, we will dance.

EPA creates a panel on gas additives. Subsequently here, look at this. Here's a headline: "Saco River Polluted." August 7th, 1970. And I go back 40, 50 years with Saco. This past summer/fall, the Saco River again had headlines: "Saco River Polluted. Closing down certain areas." In the Bar Mills area, especially mentioned, the bacterial count in the water was listed.

In Maine the DEP says you have to expect the water to get to 61 points. But when they tested the water in Bar Mills, it was 2.9 million -- and I have the document here -- and the bottom line says, we couldn't register anymore but there is. That's a drinking-water reservoir for no less than a quarter million people, and that represents your tourist dollars to operate the state with down in York County, Cumberland County.

Ironically I received this document from the Maine Department of Inland Fishery and Game: "Mr. Boilard, in response to your numerous requests about information about toxic issues, et cetera. I don't think anyone's overlooking the nature of the seriousness of the site at Limerick." In 1995 was this memo and they told me how they know about the problem, and they're going to do something about it. I've never seen it in print.

This one's recent. This is one of two so far received of EPA's reports, and it states that in all the benzene articles and whatever you -- and I'll show you a readout in a minute -- mercury, pcb's, dioxin, arsenic are all included in the Saco River tested by DEP standards by themselves. This tells me that 2.9 million bacterial count has been found in that area.

It was an old mill built in the late 1800s, and I've been on that case for better than 30 years. And when I came to the City of Biddeford to represent them in the dredging the Saco River, they told us, don't touch that mound of dirt down below where our treatment plants are now because we don't want to spread that anywhere. So we never excavated that area out.

"One in three carcinogens found in our water" -- and this is our drinking water -- carcinogenic. I write letters to the editors quite often. "Saco River more

polluted than you think," and this was in October 1988. "Your county must work to keep the Saco River pure." And I got involved with this one, an editorial -- "Is It Safe to Drink?"

Well, I've just mentioned some of the components of what's happening in the Saco River. Here's two pages. "Is It Safe to Drink?" They tell us it is. "Meet Maine's Rivers and Their Chemicals." You well remember that through the Casco News up there.

And I really don't care who I fight when you come down to it. You must realize the CMP has near a half a million electric customers. Maine has a 1 million population. But I'll fight anyone to protect our children's drinking water in the Saco River. Why CMP's plan to lower the Saco River was doomed to failure -- CMP put out four 4-inch loose-leaf binders of information how it would be a good deal. One year later they killed the plan. It died. It wasn't fit. And I told them it wasn't fit and that they would die.

Remember the Maine Waste Energy people? They were going to site 9, which is Biddeford, Saco, Arundel. They came down. They went to 20 other sites, but this one was going to be ideal because the person who wants to sell a big parcel of land for $1 million was going to do the job on Route 111 outside of Biddeford and

Arundel. They went in there and did a 6-week survey that the DEP did in one day. And you'll see.

But after the 6th day the Maine Waste Energy -- the chairman says, it's time. When we come back from lunch, I am recommending to the Board that this site is not suitable. Subsequently, that was the end of the Maine Waste Energy to complete this. They have not been around since.

State park. They wanted to close it. I says, no way. I says, that's what the people paid their money for in referendums and what have you. No way. This is important. "State Finishes Evaluation." Cumberland County. They don't drink an awful lot, but they're going to need some in the future because Sebago's going to die out on them people. $14,000,960 represents the valuation of Cumberland County. The York County valuation, $10,277,000. That is an excess of 26 billion dollars, those two counties -- and the rest of the 14 counties don't even come close to that -- and the closest we have is the one in Penobscot, which is 3 billion dollars.

All right. I'm almost done. Here is a list of the DEP's overboard discharge. When you talk about overboard discharge, to me, you're talking not only Maine, because half of our Saco River watershed is in

New Hampshire, and there's no assurance at all they're doing their best because they don't need the water. They're having a damn good time around the White Mountains, Mount Washington up there, building condos and what have you. And they're just dumping it in the ground. It's coming down the Saco watershed. Just to let you know that I think I follow somewhat what the State's trying to do.

This is a report, a final preliminary assessment report of Limerick complex, Limerick, Maine. In it the DEP -- this report, by the way, as far as I know, hasn't been followed up yet, but this was in April of '95. Here's a list of chemicals, et cetera, et cetera, and that's only one of two other sheets I don't happen to have with me now. Acknowledged by DEP, acknowledge by DHS. Fish and Game Department told me already that we have a problem. The Saco Bay is starting to accumulate a lot of dioxin.

What is this all going to be about in the middle of a watershed that feeds a quarter of a million people and protects some billions of dollars in property valuation, and there are 40 documents that they remind me to go to look at in Augusta at the DEP.

That is a problem that's facing Maine big time. You can bet your life -- I think I've got more than

sufficient help in the legislature coming up because the new people are people that I know, and we have talked together, and we will get some results out of Augusta this trip around.

And on a finishing basis, we're spending 20 million dollars right now in Biddeford improving and increasing -- the EPA especially has found that we were not up-to-date. But we've always gone to their documents and their plans to do the job, but all of a sudden, it never works. It's like the doctor. The patient dies. So subsequently we're fined $100,000, $250,000, whatever.

Look at this. This picture is of the Saco River's west channel. No water running. This is going to flush out that 20 million dollar treatment plan. It's unbelievable that -- I will pursue it. No water running. And we built the tank roughly three times the size of this room in order to help the Saco River. Where do we gain anything by all this?

The lobsters -- I talked to one of the fisherman two days ago, and they said, what's happening in the bay? I says, well, you can't get all this stuff in and enjoy it, plus the lobster treatment plan is not too hot right now these days. The rivers are all polluted. So how can you help the bay? And if you don't help the

bay, we lose our clamming on the surf and what have you.

I'm not here to insult the good Commissioner, but I'm here to tell you that we have got to dance. Here is what came out in the editorial in the Herald Press Herald. Accountability due. Poison drinking water, poison Saco River too. That's river water. There's a picture of the Saco River, and what's in it is not fit for drinking even if DEP claims it's a Class A water.

My good friends, I'm not very articulate. I probably hurt feelings, but on the same token, believe me, my kids mean a hell of a lot more to me than what you people are thinking. Thank you.

MR. SULLIVAN: Thank you very much. Any questions?

MR. BOILARD: I have one more thing, please. As a Saco River member I checked out the -- this metal scraping is rusty and what have you. I was there on a given day, and I took water samples. That is rust. I dread to think that down river -- and look what it does to this jar. It sticks to it like gum. Our own system of waterworks which was built in the late 1800s, I compare that to a Stanley Steamer. If you go to Sebago, they have the ozone-type cleaning and what have you. And then when they clean it, they return it to the river

below where our estuary and ocean products will be hopefully surviving.

The Atlantic salmon has been extinct in the Saco River for 140 years, and now we're spending, again, multi-millions of dollars. And I'm on the Board, by the way, and I'm going to ask for a moratorium of building no more damns. The first two have already cost over 14 million dollars. Somebody has to clean the water, and what in the hell they're going to do? Thank you.

MR. SULLIVAN: Okay. Is there anyone else who wants to speak?

MS. WIGGLESWORTH: I'd like to apologize for being in the hall when you called my name earlier. Let me hand my card to you all.

Good morning. I'm Terri Wigglesworth and I am Executive Director of the Oxygenated Fuels Association. I'm also a chemical engineer by training, and I've worked with over 15 different states on working on state implementation plans particularly for ozone and carbon monoxide reduction. I've done a lot of air dispersion modeling and worked with Union Carbide for over 20 years before I became Executive Director of the Oxygenated Fuels Association, and I've spent three years lobbying Congress before that working in Washington and working with the federal EPA air-quality issue.

I'm telling you that background because I really would like to work with the State of Maine to address these problems and give you any kind of technical information that you would like to have on oxygenates such MTBE because the Oxygenated Fuels Association, as you know, represents the leading producers of oxygenates internationally, and we are the world's repository of technical information on such issues as groundwater contamination of oxygenates and also the air-quality benefits that are associated with gasoline which contains oxygenates.

I want to commend your staff. I read the 57-page report that we're discussing today, which is your Interim Alternative Fuels Report. I really believe it is a balanced report. I think you all have done an excellent job. It was very clearly laid out to show no prejudice. It did show how all the benefits that are being achieved by the air-quality program you have in place now. And it also showed your concerns over groundwater contamination. So I really mean that sincerely. It was a very fair and balanced report. I guess I've heard a few technical corrections. And I'm going to list them too, and I've written comments, but those are minor. I just think you did such an excellent job.

The major area in my minors corrections is with some of the state's fuel problems and what is actually occurring, and we want to give you information to make sure the record's clear.

I want to go to one of your reports. It's called "MTBE in Maine, Summary 5-Point, October 13th, 1998." This is the report where you stated even more clearly the benefits of RFG, and I'd like to quote that report. "The RFG program is considered one of the most successful initiatives ever undertaken in the Northeast to reduce ground-level ozone as well as air toxics. Federal law requires emissions resulting from the use of RFG contain 15 percent less volatile organic compounds and 15 percent less toxic air pollutants than conventional gasoline. EPA has verified that these emission reductions have been met and surpassed."

And I want to congratulate Maine for doing that, for putting in place that program. "In addition, violations of the federal 1-hour ozone standard have steadily declined in Maine and other parts of New England during the RFG program despite an increase in ambient temperature, the fact which otherwise would lead to an increase in the number of air-quality violations."

Now all us that work with ozone plants know how important the weather is. You have weather which should

have caused more ozone violations, and yet you have continued to continue to decrease in ozone violations, and that shows several things. It shows you all have been very, very effective in working with the refiners, working with the people ensuring that gasoline's in place. And it shows that gasoline is clearly working to reduce air pollution in Maine.

Possibly, the most significant benefit is the monitored levels of air toxics. I want to talk about that air toxics have declined dramatically during the same period. Specifically, benzene has declined by 31 percent between 1994 and 1997, with ethyl benzene declining by 52 percent. That's amazing.

On a related note, NESCAUM recently issued a statement documenting a 12-percent decrease in cancer risk due to exposure to air toxics from RFG, as compared to risks to exposure to conventional gasoline.

Now I want us to think about health risks. That's really why we're here today. We want the citizens of Maine to have as few health risks as possible, and you all are doing a very good job to accomplish that.

Now let's talk about the health risks that are posed by direct exposure to Reformulated Gasoline with MTBE before and after combustion. If you look at exposures before combustion, the International Agency

for Evaluating Risks for Cancer, IARC, has determined that MTBE is a Group 3 compound. Now Group 3 compounds are not classifiable as human carcinogens.

IARC has announced its decision after evaluating over 83 separate studies to determine whether or not MTBE is a carcinogen, and IARC has decided that MTBE is not classifiable as a human carcinogen. That's according to IARC.

MTBE poses less health risks, lower cancer risk, than either gasoline or alcoholic beverages containing ethanol. Gasoline is ranked by IARC as a 2-B. The lower the number, the more types of cancer. A 2-B gasoline means possible human carcinogen.

Alcoholic beverages containing ethanol and benzene are a Group 1 known carcinogen. IARC says that MTBE is not classifiable as a human carcinogen.

Now what different components that you all decide to replace MTBE with in gasoline must not be anymore of a human health cancer risk than MTBE. And that is extremely important for the health of the citizens in Maine. We do not want to risk increasing the cancer risk that people have from exposure to a gasoline choice that is made by the state of Maine.

Regarding exposure to RFG after combustion -- this is what comes out of the tailpipe of cars -- monitored

levels of air toxics including carcinogens have declined dramatically during the period since RFG was introduced in Maine.

Specifically, benzene has declined by 31 percent between 1994 and 1997 -- and I'm taking these numbers from your report -- and ethyl benzene has declined by 52 percent. Again, both are known human carcinogens. And we already discussed that NESCAUM said that a 12 percent decrease due to exposure to air toxics from RFG has occurred as compared to the cancer risk that you would get from conventional gasoline.

Now why does that occur? It's because when you have MTBE or other oxygenates in gasoline, you are replacing components of gasoline that cause cancer. Why is MTBE so important? MTBE is the cleanest source of octane that you can put in gasoline, and when you put MTBE in, you are not only getting rid of the cancer-causing components, you are also boosting the octane. If you don't have MTBE, you have to put other components in gasoline to boost the octane, which are much more harmful to human health.

The emission of oxygenates in gasoline also causes reduced carbon monoxide, and this is a big issue. I know that Maine is in compliance with carbon monoxide standards, but reduced carbon monoxide helps cardiac

patients and expectant mothers and sensitive populations such as children, so we need to look at reducing carbon monoxide to help these sensitive individuals in Maine.

The displacement of aromatics caused by oxygenates has caused toxic emissions to be released even more significantly than EPA requires. This is really important because in Maine you have succeeded with Reformulated Gasoline with MTBE. You have met and exceeded the Clean Air Act requirement.

But that's only part of the story. The rest of the story is that in the year 2000, Reformulated Gasoline Phase II is going to receive an even greater reduction in ozone and air toxics, and that's a greater reduction in your cancer risk from gasoline for the citizens of Maine if RFG were to stay in place.

Now what are the health risks of other fuels that Maine is considering, such as low RVP fuels and low-sulfur fuels? These fuels are not required to reduce air toxics emissions which cause cancer, and thus their ability to reduce people's risk to cancer is not there. Even if you do require a benzene cap or an air toxics cap, the only way the citizens would achieve the same benefit as they have from RFG would be if you would go to the year 2000 requirements for those components.

Why is Maine going to trade the successful RFG

program for unknown fuel that has failed to reduce ozone air toxics in other states? This fuel has disappointed regulators. In our written comments, which I'm going to submit to you tomorrow, we detail all the areas that have tried low-RVP gasoline, low-sulfur gasoline and the outcome. And while some of these areas have switched to RFG, in some of these areas they have had even more ozone exceedances than they had with conventional gasoline. And we have the facts there from the State agencies, and you can check those out.

But this is extremely important. You don't want to put a fuel in place that is not only unknown to Maine, it's not working in other parts of the country. Birmingham, Alabama, is an example of where they've had a lot of problems. They used a 7.0 RVP gasoline with a low sulfur at 310 and continued to have ozone exceedances.

St. Louis and Phoenix both tried very low RVP at 7.0 but decided to switch to RFG after experiencing increased ozone violations. There's a lot of these. The Oxygenated Fuels Association believes that no backsliding or degradation of Maine's air quality should be expected, and any replacement fuel must demonstrate performance equal or better to what RFG with MTBE is already providing to the citizens of Maine. And

this must be in the real word, not just on paper. And those of you that have run air-dispersion models like I do know that you can model something and see what's supposed to happen, but you go out to the street, and it's not always the same case. We have real monitoring data to show that Reformulated Gasoline is exceeding what the Clean Air Act said it had to as far as cleaning up the air quality.

Now it's very important too that we address the other health concerns regarding the MTBE that has come up. In your report, October 13th, 1998, your 5-point plan, you say, "Current levels of MTBE in Maine's public drinking water system do not appear to pose a significant human health risk. Monitoring of MTBE in public drinking water systems should continue, in part because of the apparent low odor and taste thresholds for this compound and in part to monitor for any evidence of increased contamination."

So you all have stated in that report that the levels found in the study do not pose a significant human health risk. And I think this is important because we are talking about a very significant human health risk if you give up your protection and lose the benefits of a reduced risk of cancer that you have now in place in the area from Reformulated Gasoline.

I want to talk about the water-monitoring study. I believe this study raises more questions than it answers. How did the gasoline get to the groundwater? We know that if MTBE is in the water, then gasoline is there too. According to USEPA, the leading cause of gasoline reaching groundwater is leaking underground storage tanks.

The National Science and Technology Council in a June 1997 report entitled "Inner Agency Assessment of Oxygenated Fuels" stated, "The current improvement in the physical condition of underground storage tanks and release detection capabilities coupled with the reduction in the population of tanks should contribute to a considerable reduction in the annual volume of oxygenated gasoline released to natural waters." What they're saying is the new standards for tanks is going to help get rid of this problem.

How has Maine done in complying with this new federal underground storage tanks replacement program? You all have led the nation in your implementation of that program, and that's an enormous feat. Again, you're doing everything right. I see positive things that Maine is doing. So thank you again for the things you're doing.

This program you have put in place, you have

removed more than 30,000 -- this is amazing -- or 98 percent of the steel gasoline tanks and replaced them with double-lined tanks. Now we commend you for this, but we want to urge you to go another step. And you may already be planning this, but we urge you to further ensure compliance with the federal gasoline underground storage tank replacement program by putting in place a thorough and comprehensive follow-up program which mandates that any future leaks are quickly detected to and responded to.

And any existing leaks need to be cleaned up that haven't been found yet because if you change the fuel and that gasoline is in the ground, it spills into the groundwater even if you stop all the sources. We need to find all of those sources in Maine that are still reaching the groundwater.

It is important that Maine-elected officials and citizens understand that your success in implementing the federal gasoline underground storage tank replacement program has made the water contamination problem manageable by virtually eliminating the primary source of gasoline spills in the environment, leaking underground storage tanks. Is not necessary to discontinue Maine's highly-effective air pollution problems to solve a problem that Maine is already

addressing.

What about small gasoline spills? I know you all are struggling with this. This is a hard issue to deal with. Are the small spills causing the problem? Now your water-monitoring report was not conclusive on this point. A further, more careful reading of this report demonstrated its inability to conclude that small spills are the actual cause of the contamination or that this phenomenon will translate to widespread contamination. The report affirms, while the exact cause of these incidents has not been definitely established, each of them seems to be related to a spill of a small quantity of gasoline. Now it's important to note that you say the exact cause has not been definitely established. And that means to me that you all are looking into this.

We urge you to continue to do that because the main point is, how is the gasoline getting into the groundwater? Changing the additive to gasoline does not solve this problem unless you stop the source of how this is getting into the gasoline. It is clear that additional studies are needed to determine the exact cause of gasoline reaching your groundwater.

The State should begin immediately a comprehensive study to identify gasoline sources that are polluting the water, and this study should be followed with a plan

to prevent spills and leaks from occurring. The plan should include public education to prevent gasoline mishandling and ensure immediate notification of your emergency agencies whenever a spill occurs. Also the plan should include a comprehensive underground storage tank monitoring and a follow-up plan to ensure that these spills and leaks are not occurring and are cleaned up as soon as they occur.

Meaningful penalties should be imposed on all parties who fail to comply with this plan, regardless of the source of the problem. Gasoline does not belong in the water even through leaking underground storage tanks or small spills. Elimination of Reformulated Gasoline with MTBE will not stop these gasoline spills from reaching water.

I notice that your monitoring report also said that in some of the samples benzene was detected, and so benzene is in gasoline. It's in all gasoline that I'm aware of. If you just switch to another type of gasoline, you will have benzene, a known human carcinogen, still reaching your groundwater, which is much more of a threat according to IARC than MTBE, and this is a huge problem. We've got to stop these spills.

Now Oxygenated Fuels Association, as I've said, we have a lot of experts on groundwater contamination. We

want to work with you all. We offer today our technical people to help assist you. We'd appreciate calls. We'd be glad to help you. But we believe it is purely premature. It's just too soon to give up without fixing the problem of gasoline reaching the groundwater.

MTBE and Reformulated Gasoline is the cornerstone of Maine's air-quality program. Maine residents have too much at stake to risk losing your benefits. According to EPA, RFG has reduced air toxics by over 200 tons per year, including benzene and 1,3 butadiene, known carcinogens, and nitrous oxide by 400 tons. That's the same as taking 305,000 vehicles off of Maine's roads. Again, this is really important that you not lose these enormous benefits.

There are many costs associated with changing fuel. I'm not going to get into the gasoline costs. But as you consider the cost of alternate gasoline, you need to consider the cost of higher health costs. Because if you take away these human health protections of reduced risk to cancer, then you're going to have more and more problems and the carbon-monoxide problem that the advanced levels increase. You're going to have more and more human health concerns by switching fuels, so any cost calculation has to look at this impact on human health from additional fuels.

It also is significantly less costly to put in spill collection systems at gasoline stations. One of the things many other states have had to do when they have switched or chosen a less-effective ozone reduction gasoline, they've had to go back the next year after they had more ozone exceedances and put in a recovery system which is extremely expensive at service stations, and that's something you all would face if you continued to have ozone exceedances.

They've also had to go back and change their inspection maintenance program from the basic car inspection to these burdensome tasks that the public hates, and they take time and cost a lot of money for the public. And this has never been popular in any state, and it's been hugely unpopular with state legislatures.

So you need to think hard about returning to that type of a program, which I know you all got out successfully at a high cost and you don't want to go back to it.

There's also the added burden if you don't get enough reductions that you might have to go over industry sources or small-business stationary sources and put more controls on those. And that's a lot less cost-effective than staying with Reformulated Gasoline.

I guess I want to say in closing, I want to challenge you all to look at the science on this issue. I work in Washington, D.C., and I know how hard it is not to be influenced by politics. It's very hard in your decisions because you're working with the public day in and day out, and you all understand these technical issues, but not everyone does because they don't have your background.

We've got to stick to the facts on this issue. We cannot make an emotional political decision. It is extremely important for the citizens of Maine that you are charged with protecting, and I just challenge you to put all the politics aside and look at this issue in deciding whether or not you need to stay with Reformulated Gasoline.

I'll be glad to take any questions and, again, I offer you my help in any way I can. Thank you.

MR. SULLIVAN: Thank you for your testimony. A lot of good competent insights there. I did have a few questions. You mentioned that you read the report carefully and that benzene was detected in groundwater in private wells as was MTBE. Do you recall the percentage of benzene?

MS. WIGGLESWORTH: I remember it was like half of what MTBE was or something like that. I don't

remember the exact numbers, but it was detected in a lesser number of samples.

MR. SULLIVAN: I think it was more like less than 1 percent.

MS. WIGGLESWORTH: I'm sorry. I don't remember that. But, again, whenever gasoline reaches groundwater, that's the only way MTBE gets there. Benzene is also in the gasoline spills.

MR. SULLIVAN: Do you recall in the report that in fact other gasoline constituents are not detected at the percentage levels like 15 percent in both public-water supplies and by the wells that it wasn't the other gasoline constituents? It was just MTBE except in a very percentage, less than 1 percent.

MS. WIGGLESWORTH: I apologize. I didn't read that part very clearly, but I will go back and look at that.

MR. SULLIVAN: And I just wondered. Did you read the part about the number of projected sites where we would find contamination based on a fairly common statistical analysis? We did a random study throughout the state and found 15 percent of our wells had detectable levels of MTBE and in about 1 percent had levels of MTBE above the health standard for MTBE.

MS. WIGGLESWORTH: Yeah. I remember

specifically there was only 1.1 percent of all of your well samples that had MTBE above the 35 parts per billion. That was roughly 10 samples. And that there's a public water supply that didn't have any samples that showed MTBE above the 35 parts per billion.

And I want to talk about the projection to a larger number of wells. I think this is very, very important to have peer review and evaluation of how you all did that. I'm not saying you did it wrong, but you all have been very fair in sharing that, and I'm sure you will continue to share that with us, and we do have some of the data that you all have given to the public, and we are looking at that now.

And I just wanted to say that this has got to be very carefully evaluated by a number of sources, not just the people that do the work. So I don't think it's conclusive until we have that affirmation back from people like industry and others that have looked at it.

So, again, I still say that we have time to deal with this. You all have said in your own report that it's not a human health concern. EPA has listened very hard. USEPA has put together a blue-ribbon panel where they're going to provide data on this issue. You all can get involved, and they are giving you a forum to involve this with the leading experts, and I think it's

premature to make a decision until you have all that data.

MR. SULLIVAN: Are there any other others who would like testify at this time?

MR. STEVENS: I want to make some clarifying comments. This IARC report that has been referred to on this cancer, that report has not been published and will not, to my understanding, be published for another year. It would indicate to me that report has not been peer-reviewed either. Much of the information on that report was supplied by the Oxygenated Fuels Association. They have a large stake in this because as long as oxygenated fuels are around, their very existence depends upon that. So they have a large stake in that report.

On ethanol it has been found that unless you control the acidity in ethanol, it will ruin the engine fuel components. The higher the acidic level, the more damage it does. This is a proven fact. As far as making a comparison between RFG and conventional gas, the EPA said you cannot make any comparisons because there have never been any comparisons made. Right now they are doing a 5-year study to do exactly this.

Gasoline without MTBE will biodegrade eventually. California was allowing many of their spills that were

not in the immediate areas of water to just biodegrade. It has been found that benzene will biodegrade in roughly 10 weeks. It has also been found that a conventional gas spill will only go out something like 250 feet from the site. Gasoline with MTBE goes out much farther -- if I remember, a half a mile to a mile from that site. So you're polluting much more ground, much more water.

And I ask you where did the MTBE from Christy's come from? Those were all brand new tanks and piping. It is my understanding that it was MTBE that was found outside the tanks and very, very little benzene.

We're finding that a lot of the MTBE only is reaching water. The other components are not reaching a lot of water. You have to address the issue of property values with MTBE. If your water is contaminated with MTBE, your property is worthless because it's going to be there for a long time.

As you people well know in setting up these filtration systems, they're costly and it makes the property useless. This has been proven. So unless you're willing to look at this issue and discontinue MTBE, then you are looking at devalued property values throughout the state. Every site that's found has property devalued.

There is property in Somersworth, New Hampshire, that has been contaminated with MTBE. Those properties have been up for sale for two years. Not one property has sold. And I don't know how it is in Maine, but in New Hampshire whenever that property is sold, regardless of whether the MTBE is cleaned up or not, the deed has to specify that it was there. Here, again, your property value is gone. Thank you.

MR. SULLIVAN: I'd like thank everybody who provided comments this afternoon. Again, we welcome any written comments that anyone would like provide. We're also having a session this evening, 6:00 to 9:00 p.m. this evening. So thank you very much and, once again, we welcome your comments on the draft rules. They will be most valuable to us in the immediate future because we will soon be proposing them as formal rules and beginning a time clock for public comments and for moving to a final rule.

(SESSION I WAS ADJOURNED AT 3:00 P.M.)

SESSION II

MR. BROOKS: We're here having a hearing on the Interim Alternative Fuels Report. This was a report that was required by a bill that was passed last year in the Legislature, LD Public Law 791, that requested the Department to conduct an analysis of alternative fuels to the current Reformulated Gasoline program that has RFG with MTBE.

The report is due to the Legislature by January 15th of 1999, just coming around the corner, and a final report by January 15th, 2000. This represents an interim report of the effort, and we're required to have a public hearing to take comment on it.

Before we get started, I'm just going to give you a little bit of background on the MTBE controversy in the state of Maine. But before I do, I'm going to introduce Ron Severance who heads up the Mobile Source Section of Bureau of Air Quality in the Department of Environmental Protection; John Chandler who is Division Director of the Division of Technical Services in the Bureau; and Melissa Morrill who's our Fuels Specialist with the Bureau.

MTBE is a constituent of most vehicle fuels sold in the state of Maine throughout the Northeast. Conventional gas contains between 2 and 8 percent MTBE

by volume and is used as an octane enhancer to improve engine performance. When I say between 2 and 8 percent, I'm including the 87 octane to the 93-octane-type fuels.

Federal Reformulated Gasoline contains roughly 10 percent by volume to meet the legal requirements of a fuel to contain an oxygenate to achieve cleaner-burning fuel with less toxic constituents. An oxygenate usually includes some sort of ether or ethanol or some sort of an alcohol. Maine's participation in the Federal Reformulated Gas program was initiated by Governor McKernan to help Maine reduce ground-level ozone in seven southern Maine counties.

Ground-level ozone is a pollutant which causes respiratory problems to sensitive and healthy members of the population when the health threshold is exceeded. RFG is a part of the state's mandated 15 percent plan to reduce volatile organic compounds, one of the building blocks of ground-level ozone.

Reformulated Gas has contributed significantly to air-quality improvements in the state of Maine. Exceedances of ground-level ozone have declined during its use in Maine and throughout the whole Northeast region. In addition, known human toxics such as benzene monitored in ambient air have declined by roughly 30

percent during its use here and other parts of the country where it's been used.

However, oxygenates in use in the United States are ethers or alcohols. MTBE is an ether and ethers tend to be more water-soluble and mobile in groundwater than other constituents of gasoline. Recent incidents of groundwater contamination by MTBE have led to call for an alternative fuel which achieves equivalent air-quality benefits.

At this time our primary goal is to identify a gasoline which provides Maine with the air-quality benefits of RFG but without the groundwater contamination risk.

We spent this past summer doing this report, and there are copies of it available up on the back desk behind the chairs. We came up with several interim findings and conclusions. The first one is that fuels with other oxygenates may pose some of the same risks associated with fuels with MTBE.

And this is where when I mentioned ethers, which MTBE is, and there are other ether-type oxygenates, they tend to react in the groundwater much in the same way as MTBE does. Since currently available oxygenates are ethers, they're equally more water-soluble and comparably mobile.

Ethanol, another oxygenate which is an alcohol, is even more water-soluble than MTBE, about 100 percent soluble as a matter of fact, but considered less persistent in the environment than MTBE. In fact, it biodegrades really quick in the groundwater or in nature. However, because it's highly hydrophilic or water-friendly, it poses a number of storage distribution performance issues which require greater investigation. These other oxygenates are also significantly less available than MTBE, the most common oxygenate that's used in the United States.

The second point is low-volatility fuels. The fuels you'll hear talked about throughout the evening -- you'll hear people talk about Reid Vapor Pressure, or RVP. That has to do with the fuel's ability to evaporate. Low-volatility fuels, or low-RVP fuels, while currently not available in the Northeast, they do have a potential to enable Maine to meet the requirements under the Clean Air Act.

The first conclusion we had was that a fuel with a lower sulfur content than current conventional or RFG would achieve greater emission reductions. In fact, low sulfur correlates with low NOx emissions. As some of you may know, NOx is the other building block to the ozone equation. If used in combination with a fuel that

is of a slightly lower volatility, a low-sulfur fuel could be utilized without any negative effect.

Fuels with a benzene cap comparable to RFG could be made available to the Maine market. Most companies have indicated that this would be achievable without any price impact, though recent information indicates that may not be true.

The fifth point is the USEPA has indicated a willingness to cooperate with Maine in processing their application for waiver from the federal reform program if Maine adopts rules mandating an alternative fuel with comparable air-quality benefits.

And the sixth finding has to do with market availability. What we found was there's a couple of types of fuels out there that would achieve similar air-quality benefits, but it all hinges on whether or not they would work in the Maine situation by market availability. I guess I would probably, after this afternoon's session, also include cost in that equation.

In providing your comments on the Alternative Fuels Report of the draft rules, we would like your input on the following: 1) the ability of a fuel to meet the requirements of Maine's 15 percent plan and to achieve air-quality benefits, particularly the reduction of air

toxics and nitrogen oxide; 2) any fuel availability in the Maine market including supply, distribution, price issues; 3) I'd like your comment or input on fuels with a potential that could be used statewide; 4) comments on potential groundwater impact, potential effects on engine performance and vehicle mileage, and any administrative issues such as enforcement or the need for waivers.

I'd also like to point out up on the back table up there, we have a couple of copies of Draft Rules. We're in the process of trying to go through a rule-making to have a fuel available on the Maine market by May 1st, 1999. We don't know which direction. We're trying to get a lot of input to help shape that direction, and that's one of the reasons why we're here today. So if you want copies of the Draft Rules, they're up there on the back table.

In hearing testimony today, in order to accommodate as many speakers as possible, I'd like to limit comments to each speaker to about 20 minutes to a half hour. We don't have as many people here this evening as we did this afternoon. Also, we're asking people to sign up, and we'll read off the names in the order in which they were signed in. At the end of that time period where everyone gets a chance to speak, we can open it up for

general questions.

Today's hearing will be transcribed and made available to people who want a transcription of today's events, both the afternoon and evening ones. Contact Melissa and we'll gladly send you one when they come in.

UNIDENTIFIED SPEAKER: Thanks for the opportunity. It's a frustrating situation where the state of Maine with Ed Muskie creating the Clean Air Act in '77 and then George Mitchell with the Clean Air Act amendment in 1990 that we're beating around issues on air quality when we had a test that was thorough enough that a change in gasoline formulation wasn't important.

That brings me to Item 4 on your board here, a petition to opt out of the RFG program. I believe the RFG program is in lieu of a reasonable exhaust-emissions test, which could indeed check cars efficiency therefore minimize, if repairs are made and maintenance done, the need for the RFG program.

So with all the evils and alternatives, it's frustrating to have to beat these issues around when indeed we wouldn't be in this spot if we had a reasonable emissions test. It's no one's fault at this table, I realize. And I think you've probably heard this attitude from me in the past, but given RFG in cars that spew unnecessarily because they're far, far out of

proper condition and not testing for that seems like a contradiction in air quality. So I guess that's my only thoughts. Thank you for the opportunity.

MR. BROOKS: Are there any questions?

That's just your personal opinion about RFG with MTBE?

UNIDENTIFIED SPEAKER: It's my professional opinion as an auto-repair person on air quality, and that being a reasonable emissions-test program that would help clean the air by bringing out-of-standard cars somewhere up to standard and possibly -- not being a regulator, I don't know where the line is -- but possibly not needing RFG like Item 4 suggests and like -- because we've also had RFGs. It's just that we call it RFG now. Depending on the season, we have RFG; is that not correct?

I mean, the Reid Vapor Pressure changes per season. Gasoline has been played for years. Now we have a name for it: RFG. But this formulation for gasoline wasn't an issue with MTBE, for example, until we eliminated an emissions-test program that was an approach to cleaning our air. I guess that's one evil versus another. Now we're going to deal with the evils of different RFGs.

I guess I'm frustrated because I'd like to be able to know the cars that are on the road, being the father

of an asthmatic child and being a native of Maine, a state that prides itself on being a clear, fresh-air vacationland, I'd like to think that rather than just approach things with a Band-Aid approach by coming up with a better gas -- maybe we should be doing that too, but to have cars that aren't measured at all for uncontrolled tailpipe emissions is silly.

I'm still one of the consumers that think starting January, we're actually going to be testing cars' emissions with what the state is calling an emissions test. And it's an emissions test that doesn't test emissions. It's a joke because there's no tailpipe emissions measured. So that's just more of my frustration.

Working with cars daily, using exhaust gas air lines in my shop, I can see the clear-cut difference between cars that run well and efficiently and cars that spew unnecessary carbon monoxide, hydrocarbons, nitrous oxide. It's maintenance. So all these issues circumvent all those mechanical issues that I face daily. So that's where my frustration lies.

MR. BROOKS: Any other questions? Thanks. Jamie Walley.

MR. WALLEY: I thank you for the opportunity to speak. I'm not sure -- did anyone come from the

Portland Water District today?

MR. BROOKS: I think there was someone here this morning but didn't speak.

MR. WALLEY: Okay. Well, as a citizen I'm here first and then, secondly, as a trustee of the Portland Water District. We've been well-versed in the concerns with MTBE and so I share a concern on a third light where the business that I've started is centered around nonpoint source education and so MTBE, it seems to me, the canary in the coal mine that speaks to other nonpoint source issues.

But I look at this next plan, or this plan, and the cost concern, and I just wanted to come down and voice what a great opportunity we have right now with $11-a-barrel oil, you know, a windfall and inexpensive transportation costs. All of us share a little bit of hay with reduced gas prices and take the best option.

And so I'm just voicing the -- I have an environmental science background and know there aren't any easy trade-offs. When you cut back in one area, sometimes it affects another, and we saw that with MTBE. And then externalities develop. The Chapon Pond issue with the contamination of our well out there.

I'm here as a citizen first and not as a trustee or any other capacity. I think with oil as cheap as it is

now and transportation costs actually going down overall -- even the price of cars seems to have flattened out over the last few years -- it's a great opportunity for us to invest in the environment by maybe spending a little bit more and trying to take the best alternative. And it may be an emissions test.

Hopefully, more of the general public will see that and take some greater steps. Better-running cars will have many benefits, not just keeping our air pollution down but also saving money from having our cars run better. So I thank you for the opportunity to speak.

MR. BROOKS: Thank you. Any questions? All right.

MS. SINNETTE: Joanna Sinnette. I'm not sure what the ultimate outcome of all this is going to be, but I know one thing. I'm 180 degrees from him because I am vehemently against the emissions test. And I'll tell you why, because it wrecks car motors, pure and simple. Because when they did the emissions test, they put the car on these things, and they revved up the motor of those cars at an unbelievable speed that nobody in their right mind would ever drive a car. Even if they're driving in the Indy 500, they don't do that to motors. Motors weren't created to have that done to them.

They wrecked the motor on my car. I had to go back twice to pass the stupid emissions test and after paying the $400 and paying a premium and so forth because it failed the emissions test the first time because of what they did to my car, I ultimately ended up having to trade the car because the motor was wrecked.

I don't care how many filters you put on a car. I don't care if you check the muffler or visually check it or whatever they do to it. But I don't want here in Maine to put a car on one of these things and have whatever contrivances there -- and people never touch my car anyway because I'm fussy about who touches the car, very fussy about who touches it mechanically. To take my car, kick me out of it, behind my back and do whatever to my car. And we don't want this in Maine ever again.

Now this additive they put into the gasoline that's been causing the environmental problems, maybe that needs to be replaced. So let's find another environmentally-friendly fuel we can put in the car, be it ethanol, be it whatever. And don't charge us a premium for hauling it to the pump because a truck that hauls these things to the pump -- it doesn't take any more to stand there and put a hose in the top of that truck and fill it with one thing than it does with

something else. Filling it and transporting it, and the same thing -- whether you put soap bubbles in there or you put gasoline in there. I mean, come on. But put something in there. We all want to clean up the environment. That's not an issue. The issue is how to go about it. And it isn't an emissions test. An emissions test is not the way to go about it, unless you want to buy me a car. And if you want to buy me a car, great. I'd like a minivan, please.

Seriously, I don't know what other alternatives besides, for instance, ethanol there are that we could use that are available that we know about now. Are there any other being bandied about?

MR. BROOKS: Well, we're talking about low RVP and the low-sulfur fuel. A low RVP is a fuel where the fuel doesn't evaporate as quickly as the current fuels, so they don't emit as much. And a lower sulfur fuel has other --

MS. SINNETTE: That's the way to go on this thing because we all want to clean up the environment. It's necessary to. I'll go along with that. I won't go along with the emissions test. I'll fight it like crazy. But anything else you can do, I can go along with. But, please, not that. So I guess that's about what I had to say.

MR. BROOKS: Are there any questions? Thank you very much.

MS. SINNETTE: But, seriously, I don't drive a car that way. No car motor was ever designed to idle at that particular speed. Thank you very much.

MR. BROOKS: Thank you very much. Is there anyone else who wants to speak?

MR. STEVENS: Ralph Stevens from South Berwick. I have before me the letter from the EPA on the opt-out, and it is not very clear as to when the clock starts ticking on the waiver. Can you tell us exactly what's going on here?

MR. BROOKS: Ron, you want to give it a shot?

MR. SEVERANCE: All right. The letter from EPA -- in order to receive a fuels waiver, which is required by the Clean Air Act under Section 211-C -- well, actually we are talking not about the waiver but opting out of the RFG program which is part of federal rules, so we changed that so we're talking about the right thing.

They set three conditions on us being able to opt out of the RFG program. We had to find a replacement fuel that essentially achieved the VOC emission reductions for RFG as part of our 15 percent plan. We had to submit to them a schedule on how we were going to

go about the timing for getting that substitute fuel in as a replacement. The third thing was the impact that has on our state's implementation plan.

That is because Reformulated Gasoline not only provides us benefits of RFG for the 15 percent plan, it allows us flexibility in meeting our Stage 2 Comparable Measures plan, this being in the ozone-transport region where we're required to have Stage 2 vapor controls on gas stations statewide and in all stations that throughput 10,000 gallons per month or more.

We were able to use the benefits of RFG's use in the four counties outside of the Planning Area 1, which is York, Cumberland and Sagadahoc Counties and use those benefits so that we only had to put Stage 2 on major gas stations in that three-county area.

So in addition in order to provide flexibility on our inspect-and-maintenance program, so that we can qualify for the ozone-transport region low-enhanced IM, we also use RFG credits to meet that State requirement.

So we have to demonstrate, whatever the replacement fuel is, we are still able to meet all the conditions of our State Implementation Plan. Once we meet those conditions, the EPA has stated in the letter we have to come to an agreement with EPA, and once we reach that agreement, that will start the 90-day clock to when we

can opt out of the RFG program. Right now we have not met the conditions set forth in the letter.

MR. STEVENS: When do you expect that we may meet those conditions?

MR. SEVERANCE: Well, we're seeking input now on trying to determine what a replacement fuel might look like. We'd be planning to go to the Board of Environmental Protection in the near future, within the next couple of months, to look at a possible fuel.

So EPA needs to know what that fuel is going be and whether it will meet the conditions of our State Implementation Plan. So the timing is not definite but in the near future.

MR. BROOKS: Yeah. We were looking at by the end of February. If everything works out well, then we're on an accelerated schedule to do that.

MS. MORRILL: I think you received a copy of the schedule, Ralph. You also got a memo and an attachment.

MR. STEVENS: I may have. I've had so much come into the house that some things escape.

MS. MORRILL: If you need another one, let me know and I'll send it to you.

MR. STEVENS: Okay. I'm pretty sure I've got it. One of the issues that I want to address is the

cost of changing over. Now we've been hearing cost, something on the order of no increase to 8 to 10 cents a gallon.

MS. MORRILL: Production costs. That doesn't include the retail.

MR. STEVENS: The last report that I had about a month ago, MTBE was selling for 90 cents a gallon on the open market. With 11 percent you're looking at roughly 9 cents a gallon for gasoline. And with the gas mileage increases without the MTBE and the 9-cent decrease for the MTBE, we in fact may not be looking at any increase.

In my own case -- and I've heard it at different meetings throughout the state over the last three, four years, many people have experienced in the neighborhood of 20 to 30 percent gas mileage reductions. I have experienced a 25 and I was told, well, cold weather. Well, I'd have to be in an area where I can travel 28 miles and put in conventional gasoline. And I did this in cold weather, and I gained my 25 percent mileage back.

Now we know from this auto-oil report and also the Wisconsin road study that it was very important that they keep the energy content of these gasolines as close as possible. And this is why they're only showing a 1-

to-3-percent decrease in gas mileage. And, in fact, in some cars this is all they do experience, but there are many more out on the road that experience far greater.

As far as the IM-240 testing, Volconics in Canada has written three studies on this, or reports. There's no scientific evidence for justification. If you do not control the amount of sulfur in your gasoline, you also will not be able to control your emissions systems in your car. The higher the sulfur levels, the more your emission system is affected.

So you can have a car today that you've had maybe 300 parts per million sulfur and take it in on an IM-240 and pass it with flying colors. But if you go to another station with 450 parts per million tomorrow and run that same test, the car may fail even though the car is well-maintained. You're shaking your head no, and it's a fact. It's definitely a fact. There's a senior writer for a well-know trade publication that asked various states that have the IM-240 for data on how much the IM-240 has reduced their emissions. Not one answer from one state.

And by your own data, I take exception to the fact that RFG with MTBE has done a whole heck of a lot. If you look this graph, which was put out last summer -- 94 was a very high ambient temperature. We only had one

exceedance. In '93 we had a little lower ambient temperature, and we had three exceedances. You go to '95, the temperature was lower than it was in '93 and '94, and yet we have three exceedances. In '96 the temperature was way down, and we didn't have any. In '97 the temperature was not as high as it was in '95, and we still had three exceedances

According to a newspaper article back in '95, all of New England experienced some of the worst ozone problems in '95 after the introduction of RFG with MTBE than we've had in quite a few summers.

So as far as MTBE doing anything, the Cal EPA -- or not EPA, the University of California study doesn't verify that MTBE or oxygenates do anything, and neither does this $40 million study.

My own opinion is -- not my opinion, but the opinion of oil producers, or refiners, the automobile industry is that if you do not improve a low-sulfur gasoline in this state, you are polluting our air more than what it needs to be and would be.

I gave Melissa the website on this American Automobile Manufacturer's Association study on low-sulfur fuels for the low-emission vehicles, and their findings are the same as everybody else's. Reduce the sulfur and you will reduce the emissions. Thank

you.

MR. BROOKS: Thank you. Any questions?

MR. SEVERANCE: I just have one comment for Mr. Stevens on his statement about sulfur content in fuels helping pass an emissions-related test. First of all, sulfur, while it has significant impact on nitrogen oxides, has minimal benefit as far as VOC reductions. A car that would change 100 parts per million of sulfur was probably marginal at best, and that change in sulfur would not help it or cause it to fail an emissions-related test.

MR. STEVENS: I'm sorry but a lot of engineers that I talked to wouldn't agree with you.

MR. SEVERANCE: Well, I'm basing it on my experience.

MR. STEVENS: By the way, that study does not say anything about oxygenates doing anything for the air.

MR. BROOKS: Thank you.

MS. MORRILL: Ma'am, do you have a question or a comment?

MS. WIGGLESWORTH: Yeah, I do. I just want to comment briefly on the UC study since it was brought up. That study cost about $100,000 and took ten months, instead of $40 million. That study was basically a

review of the literature. There was little new information and that study is being peer-reviewed right now.

But what that study does say is that they only looked at one auto-oil study, and that's the 1995 auto-oil study, to determine whether or not oxygenates did have a benefit on gasoline in reducing air pollution. Based on that one study, there was no clear benefit, but they attached the study, and the study has a quote within it that says, there was such limited data in this study that this cannot be used to determine whether or not a benefit occurred because there's not enough samples to determine if an error occurred in the data. And I want to make sure that that's very clear, because the study that's quoted says it's not valid.

I just had a question. I understand that EPA is only requiring the replacement fuel to have equivalent VOC benefits and not the air toxics.

MR. BROOKS: That's correct.

MS. WIGGLESWORTH: This really bothers me because of the enormous cancer-reduction benefit that you got from the air toxics. And I just wondered what is the State planning to do to ensure that air-toxics benefits are still in place and they're not lost with the new fuel?

MR. BROOKS: The Governor's message to us is to find fuel that gives us equivalent air-quality benefits, and he didn't specify just ozone benefits or VOC benefits, but equivalent air-quality benefits. Whether we can do that or not, that's the question right now. We found nearly equivalent fuels, but RFG with MTBE having this air-toxics reduction is hard to find in the different fuels we're looking at.

MS. WIGGLESWORTH: Well, I want to commend the staff of DEP for pointing out the enormous air-quality benefit that you have from RFG, because you've been very, very balanced and fair, and I know you're trying very hard to make sure that Maine residents don't lose that enormous benefit. So I thank you for doing that.

And I just have one more question. Do you think there is a time window where maybe the decision isn't made yet? I guess what I'm trying to say is I know we're trying to find a fuel that will give equivalent benefit and deal with air toxics and other issues. And I guess I have a feeling that until that fuel is found, the decision has been made to protect the public. Am I right on that?

MR. BROOKS: That's correct.

MS. WIGGLESWORTH: Okay. I just wanted to understand it, because I think some people think that

this is a shut door, and I don't think it's a shut door as far as we want to find a fuel that is the right choice for Maine for both the air and the water.

MR. BROOKS: The goal has been clearly stated, not quite at 120 decibels, but it's been very clear that the goal is to find an alternative fuel that provides air-quality benefits.

MS. WIGGLESWORTH: Thank you again for your patient and time.

MR. BROOKS: Thank you.

MR. DUFOUR: My name is James Dufour. I'm legal counsel with Irving Oil Corporation. I'll be very brief. I just wanted to bring to the attention of the Department the letter which I had previously sent to the Commissioner on October 12th outlining Irving Oil's position in this entire matter.

To give a brief overview of that, you really have not weighed in on the issue of what's the better environmental health benefit to the state. That's your task, that is, whether MTBE and the benefits which RFG has clearly bestowed on the state's air quality is outweighed by the perceived contamination problem from MTBE.

We have stated that whichever direction the Department heads, we are prepared to work with the State

and supply fuel that can meet the standards that the State sets provided that it's a workable solution, as has been pointed out this afternoon.

We have recommended, or our engineers have recommended, a 7.8 RVP with 150 ppm sulfur and 1 percent benzene cap as being the best approach for a fuel for this region, so that we can both meet federal EPA clean-air standard guidelines and preserve some of the toxic benefits and the toxic-reduction benefits in VOC reduction that were achieved through the RFG program. We think it's a three-prong approach, not simply an RVP issue. But there are more benefits that are achieved than simply the MTBE issue.

I would also state there has been a fair amount of discussion, a little bit this afternoon and a little bit on the news tonight and a little bit more here this evening, with respect to the cost that will face the consumers in the state of Maine if we adopt a gasoline that's different than what's currently in place. I think it's a little bit early to reach a conclusion as to what that impact is going to be to the consumer.

There are certainly some cost savings, as was pointed out earlier by the gentleman to my left, for refiners to have to purchase the MTBE that goes into the gasoline to make the RFG in the first place. There's

certainly a cost that refiners will bear as well to have to formulate a new gasoline. We have not done a conclusive determination at this point as to how those costs balance out, although our engineers tell us it's not a significant difference.

I can say that it's very important in this part of the analysis of where we end up with a gasoline that we control what costs we can. And one of the most significant costs that we're going to face by having a unique gasoline in the state of Maine is that of storage and distribution.

We've had a long history in the state of having a more consistent gasoline distribution network. There hasn't been too much to upset that other than we have gone to the RFG in the southern part of the state and not the northern part of the state.

It would be certainly much more economical, and we've advocated in our letter of October 12th -- and I just wanted to say again tonight that it's very important to contain those costs, that the unique fuel we're talking about for the state of Maine is statewide fuel and that we don't further shrink the region that this fuel is designed to cover, that being used in the southern part of the state or a smaller portion than the entire state.

If we can have a statewide fuel, it certainly, at least in our calculations, presents some cost savings that will make the transition to this fuel much more economical.

MR. BROOKS: Are there any questions? Are there any other members of the audience that wish to speak?

MR. MOXCEY: Darryl Moxcey. Relating to a possible time frame, I think we've got some general idea as to -- I know the date of May 1st we'd like to, if possible, have whatever fuel available, and a date of February was mentioned, and we've also mentioned a time of 90 days.

Just ballparking, if a decision is reached by the end of February and presented to the EPA, is it possible that an alternative could be in place by May 1st?

MR. BROOKS: It is a possibility. Are there any other questions?

MR. STEVENS: The Tech Bulletin that Ms. Wigglesworth was referring is Tech Bulletin 17, which is a comparison between conventional gasoline, California Phase 2 gasoline without MTBE and Phase 2 gas with MTBE.

The EPA ran off for us a runoff on the Maine baseline conventional gas, Maine RGV California Phase 2

without MTBE, California Phase 2 with MTBE. Not an awful lot of difference between the two. And when you consider the formaldehyde in there, as the Tech Bulletin points out, it comes out a wash. So it's not just the technical -- their own complex model shows it.

MR. BROOKS: Thank you, Ralph. Are there any other questions?

MS. SINNETTE: I was going to say in addition to what I said before that I told my father -- before he died I told him a number of times that I believe that there is a known source of energy that would give us all the energy we wanted that's out there someplace if we could get our hands on it. Because what is going in people's furnaces and in their gasoline tanks of the automobile was here on this planet when the last dinosaur died.

There have been fossil fuels that were there when the fossils were made, but it wasn't until the mid-1800s that oil was discovered in Pennsylvania. But it was there. It was there back at the time of the Roman Empire theoretically. If the Romans had known about it, they would have been driving around all over the place and having this discussion we're having now.

I think -- and I've always maintained this -- I think there is something there now that, like the

Romans, we just don't know. And I would say -- and I don't know if any of you are into the New Age or know anything about it -- but I would say to you to network with the New Age people, network with psychics, some of these people that are dealing with knowledge from the 4th, 5th, 6th, 7th, 8th on up to the -- what have I heard of? Maybe 11 different dimensions. On those higher dimensions they might just be able to give you knowledge out of which you could sit down and put it into a mathematical formula and then change that mathematical formula into a material that could be used.

I don't care as far as the car goes or for that matter people's furnaces in their houses. I don't care what runs it, whether it runs on soap bubbles or a can of beer. The important thing is that it runs. For one thing the automobile is the backbone of the economy of a good part of, not all, but a good part of the world because an automobile doesn't just go on pleasure trips, and it's not a luxury. It is out there doing the banking, doing the merchandizing, buying the groceries. The automobile's doing a lot of other things than just taking people on vacation and being a luxury just driving around town.

Nine-tenths -- maybe not nine-tenths of it but a

good part of my driving -- where do you go? You go to the bank. You put money in, take money it out. Where else do you go? You go to the grocery store. You need to get something. You're doing some other kind of an errand. This is what the automobile does. You take that thing off the road, and you're going to see something that make the '30s look like a Sunday school picnic.

We don't want that but do get the knowledge, and do get an alternative fuel that we can use and see. Get a hold of the New Age people. They would love to network with you. And some of these psychics would because they get knowledge that we don't have. Thank you.

MR. BROOKS: Thank you. Are there any questions? Dick.

UNIDENTIFIED SPEAKER: Yes. What will be the scenario if you can't decide on what type of fuel to replace the MTBE by May 1st? Will we continue on with the MTBE for another year? Or wait until the following VOC season? Or will you implement it in the middle of VOC season? If you don't come up with an alternative fuel by May 1st and get it all approved and everything, we get to May 1st, what's the plan?

MR. BROOKS: I think that's a big question mark. I don't know exactly what would happen. I mean,

there's several options. You sort of heard it today. You can replace RFG or you could continue with the RFG program, just continue on the right fuel. And I think we'll just -- right now the goal is to go for an alternative fuel. That means equivalent air-quality reductions such as RFG with MTBE. That's in our sights right now, and it hasn't changed.

UNIDENTIFIED SPEAKER: So basically are we going to have something to fall back on if you don't reach a conclusion on which fuel to go with? What I mean is you go through all these petitions -- I know you're on a schedule to move along as fast as you can -- but if it comes down to the date that it has to be decided, and you have not got something in place --

MR. BROOKS: We would stay in the RFG program.

MR. SEVERANCE: Just as a follow-up to that, one of the charts that we showed you, the pie chart. It shows that the RFG program accounts for about 40 percent of the emissions reduction in that air-quality plan that we have. In order to get out of the RFG program, we have to find a strategy to substitute all of those reductions that RFG accounts for.

As Jim said, that could be testing cars, controlling gas-station vapors or a fuel or a

combination of those. But in order to get out of that RFG program, we have to find equivalent VOC reductions. So that's the key.

When we did that 15 percent plan, we were really scraping the barrel coming up with emission-reduction strategies to come up with that total. At the time we had decided to stay with the Reformulated Gasoline program and the old car-test program. And the car-test program has since been repealed by the Legislature, so that puts even more pressure on the Reformulated Gas program because it constitutes so much emission reductions in the plan.

MR. BROOKS: Any other questions?

Okay. I want to thank everyone for attending, and if you do want a copy of the transcription of this hearing and the other hearing, please see Melissa, and she'll take down your name and address and send you one.

(SESSION II WAS ADJOURNED AT 7:15 P.M.)

REPORTER'S HEARING CERTIFICATE

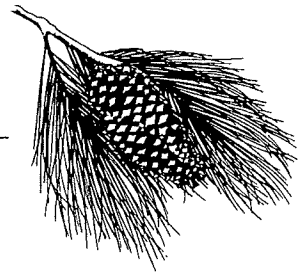
STATE OF MAINE
COUNTY OF CUMBERLAND

I, SUSAN A. BAYER, court reporter, certify that I was authorized to and did stenographically report the foregoing hearing; and that the transcript is a true record.

I further certify that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

Dated this 19th day of December, 1998.

Susan A. Bayer
Court Reporter



Maine Petroleum Association

TESTIMONY

BEFORE THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

INTERIM ALTERNATIVE FUELS REPORT

DECEMBER 1, 1998

Thank you for soliciting public comments pertaining to the *Interim Alternative Fuels Report* issued, October 1998. We appreciate your willingness to seek public input on the *Interim Report*. I am Patricia Aho, Executive Director of the Maine Petroleum Association. MPA is a division of the American Petroleum Institute and represents over 400 companies engaged in all aspects of the oil and gas industry, including exploration, production, transportation, refining and marketing.

The *Interim Alternative Fuels Report*, represents an analysis of the various issues and implications surrounding motor vehicle fuel choices for the State of Maine. The analysis, which was conducted in an accelerated time frame, can now be updated to incorporate recent changes at both the national, regional and state level. I will discuss these more in detail as I proceed through the comments.

- "*Conventional gasoline contains between 3 and 8% MTBE by volume...*" On average conventional gasoline is considered to contain only 2% by volume MTBE. Premium grades of gasoline may contain more MTBE by volume as an octane enhancer, but the majority of gasoline sales represent regular and mid-grades.

- "*Oxygenates in use in the United States are ethers...*" Not all oxygenates are ethers. Some oxygenates such as ethanol are alcohols.

45 Memorial Circle • Augusta, Maine 04330 • (207) 622-5881 • FAX (207) 622-3938

II "*Achieve other air quality benefits, particularly reduction of air toxics.*" The reduction of air toxics is not part of the 15% VOC reduction plan. In fact there is not a national ambient air quality standard for air toxics.

II "*Effects on vehicle performance and vehicle mileage.*" Reference from one source regarding the data used for this criteria was mentioned, however in some instances in the *Report*, sources of data regarding effects on vehicle performance and fuel economy were not indicated.

III "*Fuels with other oxygenates may pose some of the same risks associated with fuels with MTBE.*" This is because fuel spills or leaks place gasoline on and in the ground. It is not because of any special quality inherent in oxygenates.

III "*Oxygenates are ethers...*" Not all oxygenates are ethers. There are alcohols which are used as oxygenates such as ethanol.

III "*Low volatility fuels...*" Industry is conducting an independent review of the state's 15% reduction plan model and cooperating with DEP in reviewing low volatility fuels. We believe a 7.8 RVP southern grade conventional gasoline is the appropriate replacement fuel for the State of Maine rather than a boutique or niche fuel.

III "*A fuel with lower sulfur than current conventional or RFG would achieve emissions reductions.*" Emissions reductions which are realized from lowering the sulfur content are primarily reductions in NOx with only a de minimus VOC reduction.

III "*Fuel with a benzene cap...would be achievable without any price impact.*" The Department did not request any information regarding estimated additional production costs of a fuel with a benzene cap. We disagree that there would not be additional production costs.

III *Conclusions, item #1.* This item needs to be expanded to include the serious logistic issues which have been raised regarding a boutique fuel. The possibility of fewer suppliers participating in the Maine market, higher manufacturing costs, logistical issues such as supply disruptions, run-outs and refinery shutdowns, all need to be explained as the associated risks the State would encounter when using a niche fuel.

IV "*Additional analysis is needed to determine the optimal fuel specifications.*" Further explanation should be added regarding U.S. EPA's expected lower sulfur fuel regulation. This regulation is expected to be proposed shortly, and will address the sulfur content of gasoline on a national and regional level.

3 "*VOC reductions and the 15% plan.*" There is no discussion regarding the use of RFG in the four counties in addition to the use in York, Cumberland and Sagadahoc Counties. This section should be expanded to include discussion regarding the use of the fuel in all the seven required counties.

8 "*...engine performance may be affected during the spring or fall because of temperature variations.*" More explanation should be provided in this section regarding the issues surrounding engine performance, RVP and temperature variations. It is critical that the section include the explanations regarding the risks associated with the "shoulder season" months, and the possibility that the Department will pursue an RVP strategy on a statewide basis.

8 "*Southern fuel vs. northern fuel.*" As written, this section is confusing to the reader. It may be helpful to explain that there is a current EPA regulation regarding RVP in addition to regulations regarding RFG.

9 "*Phase II RFG scheduled to begin in 2000 has an RVP of 6.8 psi.*" Phase II RFG has no specific RVP requirement, rather the regulation requires that a VOC reduction be accomplished on a percentage basis.

9 "*Currently there are fuels available at different RVPs.*" Further explanation should be provided regarding that these fuels at different RVP specifications are located in different portions of the country, and in certain situations are provided in very limited markets. For example, Kansas City utilizes a 7.2 RVP conventional gasoline, while the Atlanta area uses a 7.0 RVP on the Colonial Pipeline. Obviously these products are not "readily available" for the Maine market.

9 "*Oxygenates are required by federal law in both RFG and Oxyfuels...*" It would be helpful to the reader to explain that the Oxyfuel program is not used or required in the State of Maine.

9 "*The addition of oxygenates to a base gasoline...*" Oxygenates added to base gasoline also provide oxygen that helps to further the combustion reaction in engines.

10 *Many states that use gasoline oxygenated with ethanol have a waiver from EPA...*" If the State were to pursue a strategy seeking a waiver to increase the vapor pressure by 1.0 psi, we would have serious concerns with such a strategy. Especially since the State is attempting to pursue fuel strategies which satisfy the 15% VOC reduction plan. Additionally, this sentence is confusing because the 1.0 psi ethanol waiver is applicable for conventional gasoline. For RFG, the governing specification is in the complex model, and it calls for a percentage reduction in VOC on a per gallon basis in the summer.

11 "*Sulfur.*" This section should have a discussion regarding EPA's anticipated proposed lower sulfur regulation. It should also contain discussion regarding the petroleum industry's proposal for a lower sulfur regulation for gasoline. The industry's proposal would significantly benefit the Northeast region and the State of Maine, and discussion regarding the fact that soon a national regulation will provide further reductions in sulfur should be included in this report.

12 "*...Alabama fuel with an average of 310ppm sulfur.*" Reference should be made that the Alabama fuel was used strictly in the 1998 summer ozone season, and was not a fuel strategy which the state sought a state implementation plan amendment, nor a waiver from EPA. You should also note that the Atlanta, Georgia fuel is a 150ppm sulfur average over the summer season, not a per gallon standard.

12 "*Low sulfur/low RVP.*" The last two sentences of this section should be moved to the previous section regarding sulfur. Additionally, it should be noted that the American Petroleum Institute proposal also includes a rebuttal standard of an 80/30 in the year 2010.

12 "*The use of a low sulfur fuel would not require a waiver from EPA...*" We disagree with this statement. In fact, a waiver is needed from EPA in order to regulate the sulfur parameter of fuel. Under the antidumping regulations, conventional gasoline is subject to a NOx control. Sulfur is the predominant factor in the NOx equations under the complex model. Therefore, sulfur is related to NOx. Moreover, use of the complex model is limited by sulfur levels. Although EPA hasn't come forward to tell states that sulfur is preempted, they have advised states, like Georgia that the state should demonstrate that a sulfur control is necessary to achieve a NAAQS. This assumes that sulfur is preempted.

12 "*Aromatics.*" Aromatic concentrations have increased in gasoline, due to restrictions on lead and other gasoline components.

12 "*Benzene.*" This item refers to a benzene concentration in RFG of 1.0% by volume. Actually, RFG areas must average 1.0% volume benzene as a maximum. For refiners who produce "averaged" RFG, the per gallon specification is 1.3% and the annual average specification is 0.95 volume percentage.

13 "*MMT.*" The phraseology in this section is troubling since lead has not been used in gasoline for many years. The section implies that MMT is currently replacing lead, which is not correct since almost all refineries refuse to use MMT.

16 "*Health risks and potential for groundwater contamination.*" The *Report* may wish to include the recent work released by the International Agency for Research on Cancer which is part of the World Health Organization regarding MTBE.

17 "*Phase II RFG is predicted to cost an additional $0.02 per gallon.*" Is this additional predicted cost over conventional gasoline or over RFG I?

17 "*Federal tests of RFG in cars show a 3% reduction in gasoline mileage.*" The percentage reduction in gasoline mileage was 1-3% on average.

17 "*Banning the use of a particular oxygenate would lead to the substitution of other oxygenates.*" The banning of a particular oxygenate would require the use of other oxygenates not "lead to." Further, this section needs a discussion regarding the legality of the limitation or ban on a particular oxygenate, and whether a waiver from EPA would be required. Finally, a ban on the use of MTBE would provide no flexibility for refiners.

17 "*...substituting a gasoline that uses ethanol...*" I believe the author is discussing substituting a RFG gasoline that uses ethanol, not a conventional gasoline. This language needs to be clarified both in the "*VOC reduction*" section and in the "*other pollutant reduction*" section. Additionally, refiners would have trouble, especially in the summertime, using ethanol to meet volatility standards.

18 "*Ethanol is a substance found in alcoholic beverages.*" Actually, ethanol that is found in fuels is denatured, so it is not specifically the ethanol found in alcoholic beverages.

18 "*Availability.*" Further explanation should be added to this paragraph regarding the serious logistics issues such as the need for increased storage at terminals, required permits to construct additional storage, permitting schedules, permitting costs, whether changes in fire-fighting equipment at the terminals as well as at gas stations would be required if pursuing this fuel strategy, and whether there are associated increased cost to consumers for this strategy.

18 "*The Maine Petroleum Association surveyed its member gasoline producers to determine the expected retail costs...*" The Maine Petroleum Association never surveyed its members regarding retail costs. The surveyed information we provided to the Department was very clear that we were providing "estimated additional production costs." Further, we have requested the Department to correct this section and all other sections in the *Interim Report* which have incorrectly referred to the information provided to the Department.

18-19 "*Enforceability.*" Further analysis should be undertaken to determine the additional enforceability costs specific to the State of Maine. Estimates used from other states may not be similar for what the State of Maine would experience by pursuing its own fuel program.

19 "*Replace MTBE with other ethers (ETBE and TAME).*" This section should specify that the Department is analyzing the use of a RFG gasoline with other oxygenates, not a conventional gasoline.

19 "*Costs.*" We request that the language pertaining to the Maine Petroleum Association's survey be corrected to reflect the supplied information pertaining to an estimated range of additional production costs.

19 "*A 3% loss in mileage...*" We believe that adding oxygenates results in a 1-3% loss of mileage, so the reference to the 3% number is on the high end of the estimate. We are also unclear as to the reference of "*reduced power.*" Octane levels are the same in conventional gasoline and RFG. It is octane which provides power.

19-20 "*Enforceability.*" Further analysis needs to be undertaken to determine what the associated additional enforcement costs would be for the State to undertake a state-specific program. Estimated costs from other states may not provide a true comparison for a Maine-specific fuel program.

21 "*Health risks - ...may or may not contain an oxygenate.*" The discussion in this section pertains to a low RVP gasoline, in which refiners would use certain methods to increase octane, not necessarily an oxygenate.

21 "*Costs.*" This section does not reflect the information provided by the Maine Petroleum Association pertaining to the Department's request to answer the question what is the range of cost implications for the State requiring use of a low-RVP fuel in the non-attainment areas and attainment areas? The answer provided was: "Respondents indicated a range of 1-4cpg production costs over RFG. Respondents assumed a low-RVP such as southern grade conventional rather than a boutique fuel for the purposes of the estimates. Further, they indicate that in general each psi reduction in RVP results in additional production costs of 1cpg, until 7.5 RVP, further RVP reductions below 7.5 result in greater production costs. Respondents also indicate concern with engine performance for very low-RVP such as 7.0."

22 "*...levels of the BTEX compounds...*" This item is a typographical error and should refer to BTX, which stands for benzene/toluene/xylene.

22 "*Availability.*" Refiners have spent capital for hydro-treating capacity in preparation for RFG II demand. Additional low sulfur gasoline volume wasn't typically planned for. The "national fuel" low sulfur regulation expected shortly from EPA will allow refiners approximately a four-year lead time in order to plan and reconfigure accordingly.

22 "*Enforceability.*" Further analysis is needed to determine the approximate costs associated for the State of Maine to undertake its own fuel program. See comments pages 18-19 and 19-20.

22 "*Low Sulfur Fuel – Costs.*" Once again we request that this section be reworded to reflect the actual information provided by the Maine Petroleum Association. We did not nor would we provide information pertaining to the retail costs of the fuel. Information provided to the Department pertained to the estimated range of additional production costs.

22-23 "*Low Sulfur Fuel.*" This section needs to contain information regarding the U.S. EPA's anticipated regulation pertaining to lower sulfur content of gasoline. This section should also contain information pertaining to the petroleum industry's proposal for lower sulfur gasoline.

23 "*Other pollutant reductions.*" The statement made in this section indicates that a 1% benzene cap would provide air toxic reductions at a level significantly less than with RFG. But on page 24, the first paragraph states that the 1% benzene cap would maintain the same air toxics benefit provided by RFG. This inconsistency should be clarified.

23 "*Availability.*" The statement is made in this section that some refiners are currently providing conventional fuel which contains low benzene. Analysis needs to be undertaken to determine whether 100% of the volume being supplied is low benzene.

23 "*Enforceability.*" This section needs to contain further analysis pertaining to the estimated additional costs for the State of Maine for establishing its own fuel program. See also comments pages 18-19, 19-20 and 22.

24 "*Low Sulfur/low RVP/benzene cap.*" The second paragraph of this section indicates that an RVP fuel option of 7.8 does not provide sufficient VOC reductions to meet the 15% plan. Ongoing work by the Department as well as by others involved in modeling the emissions reductions indicate that a 7.8 RVP fuel option may likely provide the necessary VOC reductions to meet the 15% plan. While this work is ongoing, it still should be reflected in the *Interim Report.*

24 "*Availability.*" Further analysis needs to be undertaken in this section to determine whether the State's total demand for gasoline could be made available by those gasoline suppliers/refiners who have indicated that such a product could be produced. Further, it is important that the analysis also indicate whether all three grades of gasoline (regular, mid and premium) could be supplied. Otherwise, the State would experience associated risks with run-outs, supply disruptions, and possibly shortages.

25 "*Costs.*" At what point did the Department request additional production cost estimates be given for this fuel option? The Maine Petroleum Association did not provide any information regarding this fuel strategy, because it was not requested by the Department. Further, no gasoline refiner/supplier would ever provide <u>retail</u> cost estimates.

25 "*Dual-fuel option.*" Most fuel suppliers indicated that a dual-fuel option would not provide flexibility, but would further exasperate storage requirements at the terminals to provide the various grades of gasoline, diesel fuel, home heating oil and other petroleum products that are currently in storage. This section also needs significant analysis regarding whether the dual-fuel option would require waivers from EPA, and other legal, technical, and enforcement issues in regards to additional production costs. *

25-26 "*Market incentives.*" Unless further analysis is provided in this section regarding the various legal issues surrounding either taxing a particular oxygenate or subsidizing a particular oxygenate, it should be deleted from the Report.

27 "*Summary of alternative fuel strategies.*" On the horizontal axis the fuel option of "low sulfur fuel", does this analysis mean a summer only fuel, is it a 150ppm average or a per gallon specification, and is the RVP specification 9.0 psi? On the horizontal axis the fuel option

listed as "benzene cap", does this mean a 1% benzene limit with a 9.0 RVP, with no sulfur specification for the summer season only? On the vertical axis the item listed as "cost" lists uncertain cost for the "low sulfur/low RVP" fuel. Maine Petroleum Association did provide the Department with estimated ranges of additional production costs for this fuel.

29 "*Items numbered 1.B, 1.C, 1.E.*" We disagree with the statements that no waivers would be required for these particular fuel options. We believe that waivers from EPA would be required for all three of these fuel options.

30 "*Supply Issues.*" Further information needs to be provided in this section to explain the amount of fuel which presently comes into Maine, but goes to other states such as New Hampshire, Vermont and Massachusetts. The discussion regarding the fungible nature of the industry needs to be placed in this section with an explanation regarding the associated impacts the State will experience if a boutique or niche fuel is required in the State of Maine. Further discussion regarding run-outs, supply shortages, and other logistic issues should be contained in this section as well.

31 "*Low volatility fuels.*" The statement regarding a low volatility fuel would be required during the summer months, needs clarification whether the State is pursuing a strategy to supply such a fuel in the seven counties currently using RFG or whether the State anticipates pursuing a strategy to supply a low volatility fuel on a statewide basis during the summer ozone season.

32 "*Low Sulfur Fuel.*" The statement that "*...RFG would achieve emissions reductions.*" needs to be clarified that emissions reductions associated with a lower sulfur content are primarily NOx and only a de minimus amount of VOC reductions are associated. It is also necessary to point out that the issues with a lower sulfur/lower volatility fuel is not just the supply, but also the changes to the distribution system because a low sulfur/low RVP fuel would create a different fuel in the system in addition to RFG and conventional.

32 *"Benzene cap.*" We disagree that most suppliers indicated providing a benzene cap fuel would be achievable without any additional production costs.

32 "*Conclusions – B.*" Discussion needs to be added that based on the U.S. EPA's anticipated lower sulfur regulation which will provide benefits at both the regional and national level. Also, the entire conclusion section should be reanalyzed based on recent modeling data undertaken by the Department, and whether all associated risks that the State will experience based on a boutique fuel have been adequately addressed in the *Interim Report*.

34 "*Alabama.*" The statement is made that a sulfur cap of 310ppm is used in Alabama. This is not correct, the fuel requirement for 1998 was a sulfur average over the entire summer season. Also no waiver was granted.

34 "*California.*" California enjoys special status under the Clean Air Act for both vehicle and fuel regulations. Because different rules apply to California, California isn't a good model for what other states can do.

35 "*Maryland.*" The statement is made of an RVP of "around 8.4 psi." Please note it is 8.3 psi.

We appreciate the opportunity to provide comments on the *Interim Alternative Fuels Report*, and request that the *Interim Report* be redrafted based on the comments the Department receives. I appreciate the opportunity, and would be happy to answer any questions that you may have.

Statement of The

OXYGENATED FUELS ASSOCIATION

Presented to The

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Concerning the:

INTERIM ALTERNATIVE FUELS REPORT

December 1, 1998
Portland, Maine

Good morning, I am Terry Wigglesworth, Executive Director of the Oxygenated Fuels Association (OFA). OFA is a national trade association that was established in 1983 to advance the use of oxygenated fuel components. These components not only improve the combustion performance of motor vehicle fuels, thereby significantly reducing automotive emissions and air pollution, they also replace or dilute many of the cancer causing compounds historically associated with gasoline emissions.

OFA member companies produce and market the majority of the United State's oxygenate compounds for use in cleaner burning gasoline such as federal reformulated gasoline (RFG), wintertime oxygenated fuels and California's Phase II reformulated gasoline program. Nationwide, the oxygenate used most often by refiners is methyl tertiary butyl ether (MTBE). MTBE is the prime pollution-fighting component in these cleaner burning gasoline programs.

The membership of OFA appreciates this opportunity to present its comments on the Maine Department of Environmental Protection's (MDEP) *Interim Alternative Fuels Report*. We request that both our oral and written statements become part of the official record of this proceeding. Today we will limit our comments to this interim report. OFA will have additional comments concerning Maine's proposed gasoline specifications at the scheduled January 20, 1999 hearing.

The MDEP staff is to be commended for their efforts in development of this interim report. The report is balanced in its presentation of the significant air quality benefits Maine now enjoys because of use of RFG with MTBE and Maine's concern over groundwater contamination due to gasoline leaks and spills. OFA' s comments will add additional new scientific information to MDEP' s open process. Use of this information will help Maine elected officials make a decision based on science. We believe that this open process will help policy makers see that: 1) The enormous air quality improvements and significantly reduced risk of cancer that Maine residents now enjoy because of reformulated gasoline with MTBE can not be reproduced with any other currently available fuel. 2) All other ozone non-attainment areas that have relied upon "cleaner gasoline" other than RFG have been disappointed due to continued violations of the federal ozone standard. 3) The water contamination problem is being addressed by MDEP' s tremendous success in implementing the federal gasoline underground storage

tank replacement program. 4) Maine elected officials can continue to successfully manage the water contamination program with less costly measures than those, which would be needed to address the unsatisfactory repercussions of eliminating the RFG program. No one wants increased cancer risk, higher gasoline prices, decreased fuel performance, or other unpopular and costly pollution control measures such as statewide stage II vapor recovery systems at gasoline stations and enhanced automobile inspection and maintenance programs. And 5) If Maine elected officials choose to leave the RFG program they give up the additional benefits of Phase II RFG beginning in 2000

1. THE AIR QUALITY AND REDUCED CANCER RISK BENEFITS OF RFG ARE ACKOWLEDGED BY MAINE, EPA AND NESCAUM, BUT THE BENEFITS OF OXYGENATES ARE UNDERSTATED.

The report "MTBE in Maine, Summary of Five Point Plan, October 13th, 1998" by MDEP and Maine Department of Human Services, (MDHS) states: "The RFG program is considered one of the most successful initiatives ever undertaken in the Northeast to reduce ground-level ozone as well as air toxics. Federal law requires that emissions resulting from the use of RFG contain 15 per cent less volatile organic compounds and 15 percent less toxic air pollutants than conventional gasoline. EPA has verified that these reductions have been met and surpassed. In addition, violations of the federal one hour ozone standard have declined steadily in Maine and other parts of New England during the RFG program despite an increase in ambient temperature – a factor which would otherwise lead to an *increase* in the number of air quality violations.

Possibly the most significant benefit, however, is that the monitored levels of ambient air toxics have declined dramatically during the period since introduction of RFG in Maine and in other areas of the country. (Specifically benzene has declined by 31 per cent between 1994 and 1997, with ethyl benzene declining by 52 per cent.) On a related note, NESCAUM recently issued a study documenting a 12 percent decrease in cancer risk due to exposure to air toxics from RFG as compared to the risk from exposure to conventional gasoline."

Table 2 of the Interim Alternative Fuels Report shows significant average toxics reductions from 1994 to 1997. USEPA has reported that most areas that use Phase I RFG are exceeding the Phase II RFG standards for toxics reductions. MDEP attributes the reduction in toxics to an MTBE dilution effect. This understates their full benefits.

Oxygenates do more than dilute toxic gasoline components.

Oxygenates do more than dilute toxic gasoline components they also, due to their high octane, cause refiners to remove another high octane component, heavy aromatics, that contributes to emissions and poor driveabilty. If one simply blended fifteen percent MTBE into the National Statutory Baseline Gasoline, the dilution effect would reduce the aromatics content from 32.0 to 27.2 volume percent and NOx, Toxics and CO emissions would decrease 2.1, 19.2 and 13.1 percent from Baseline emissions respectively. If octane is balanced like refiners do in the real world, the aromatics content will fall to 20.9 volume percent and the emissions reductions from Baseline gasoline become 3.4 percent NOx, 31.1 percent Toxics and 15.3 percent CO. If Maine is to preserve the air quality progress it has made; whatever Maine replaces MTBE with must replace all the MTBE benefits, not just the dilution effects.

2. OZONE NONATTAINMENT AREAS THAT HAVE RELIED UPON "CLEANER GASOLINES" OTHER THAN RFG HAVE BEEN DISAPPOINTED DUE TO CONTINUED VIOLATIONS OF THE FEDERAL OZONE STANDARD.

OFA believes that no backsliding or degradation of Maine's air quality should be accepted and that any replacement fuel must demonstrate performance equal to or better than RFG with MTBE not just on paper but in the real world.

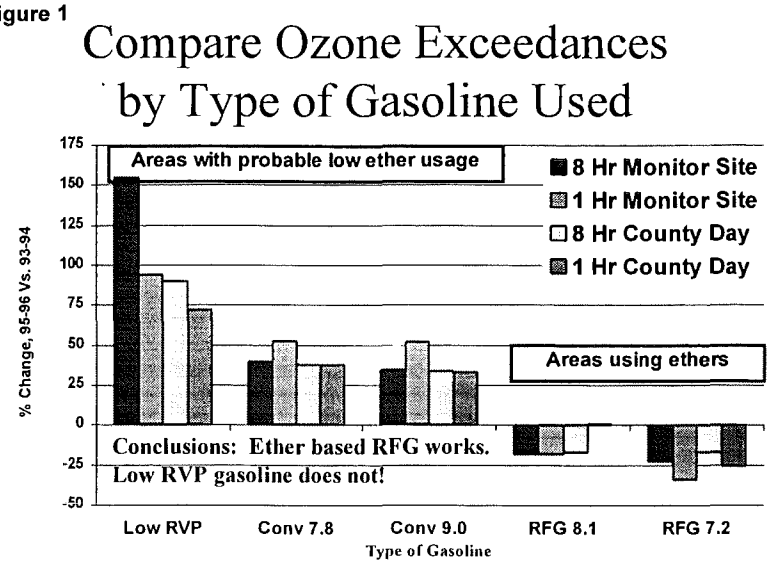
Other ozone non-attainment areas that have relied upon "cleaner gasoline" other than RFG have been disappointed due to continued violations of the federal ozone standard. Birmingham, Alabama experienced an increase in ozone violations after beginning to use a low RVP (7.0-psi)/low sulfur (310-ppm) gasoline. Both Phoenix and St Louis tried low (7.0) RVP gasoline but decided to switch to RFG after experiencing increased ozone violations. Additional failures of "cleaner gasoline" other than RFG are detailed in the Q & A section.

RFG with MTBE works to control ozone.

OFA is pleased that MDEP noted "Exceedances of the one hour Federal health standard for groundlevel ozone have declined during the use of RFG with MTBE in Maine and throughout the region."

OFA' s analysis of nationwide ozone data (See Figure 1) confirms MDEP's finding. OFA summarized exceedances of the one-hour Federal standard as well as calculated exceedances of the new eight-hour ozone standard for ozone monitors that were in service throughout the 1993 through 1996 time period. We summarized the number of times each monitor logged an exceedance as well as the number of times each county had at least one monitor report an exceedance. The ozone exceedance data were sorted based upon the type of gasoline used. The number of ozone exceedances during the two years following the fuel change was compared to the number of exceedances from the two years before the fuel change by calculating a percent change in exceedances for each of the six gasoline categories. Gasoline quality was not required to change in the areas using conventional gasoline with Reid Vapor Pressure (RVP) limits of 7.8 and 9.0 pound per square inch (psi). Therefore the increases in observed exceedances in those areas tend to be due to changes in weather, vehicle fleet, economic activity, etc which makes them suitable for use as controls. The RFG areas using ethers like MTBE showed reductions in ozone exceedances. Unfortunately, one of MDEP's possible alternative gasolines, Low RVP gasoline, has demonstrated ineffectiveness as an ozone

Figure 1



reducing strategy. There is no ambient ozone data to prove the effectiveness of the low sulfur gasoline that MDEP is proposing as an alternative as none of that product is now available. OFA will elaborate on possible causes of the increased ozone exceedances in areas using low RVP gasoline later. However, given the apparent failure of this candidate, we urge Maine to stay with the proven RFG with MTBE program.

3. THE WATER CONTAMINATION PROBLEM IS BEING ADDRESSED BY MDEP'S TREMENDOUS SUCCESS IN IMPLEMENTING THE FEDERAL GASOLINE UNDERGROUND STORAGE TANK REPLACEMENT PROGRAM.

The water contamination problem is manageable and should be accomplished whether or not oxygenates are in Maine's gasoline. Every gallon of MTBE released to the environment has nine gallons of gasoline, which is considered to be a possible carcinogen with it. The extent of contamination is limited according to MDEP's water monitoring program. Therefore future potential future contamination is even further limited. MTBE was detected above Maine's health-based drinking water standard (35 ppb) in 1.1 percent of the private wells sampled. All of these wells now have filters. MTBE was not detected above Maine's health-based drinking water standard in any of the public drinking water supplies sampled.

The report entitled "*MTBE in Maine, Summary of Five Point Plan*", dated October 13th, 1998 and authored by the MDEP and Maine Department of Human Services, (MDHS) states " Current levels of MTBE in Maine public drinking water systems do not appear to pose a significant human health risk. Monitoring of MTBE in public drinking water systems should continue, in part because of the apparent low odor and taste thresholds for this compound, and in part to monitor for any evidence of increased contamination."

A further, more careful reading of this report demonstrates its inability to conclude that small spills are the actual cause of contamination or that this phenomenon will translate to widespread contamination. Here the report affirms: "While the exact causes of these incidents has not been definitively established, each of them seem to be related to a spill of a small quantity of gasoline..."

Finally this same report indicates Maine leads the nation in the implementation of the federal gasoline underground storage tank replacement program – a program that significantly reduces gasoline releases into the environment. This program requires that all tanks be upgraded by December 22, 1998. Specifically, Maine has removed more than 30,000 or 98 percent of the bare steel gasoline tanks and replaced them with double lined tanks with leak detection capabilities. The Oxygenated Fuels Association commends Maine DEP for committing significant resources to solve this problem. OFA urges the state to further ensure compliance with the federal gasoline underground storage tank replacement program by putting in place a thorough and comprehensive follow-up program which mandates that any future leaks are quickly detected and responded to.

The National Science and Technology Council stated in a June 1997 report entitled *Interagency Assessment of Oxygenated Fuels*: "The current improvement in the physical condition of Underground Storage Tanks and release-detection capabilities, coupled with a reduction in the population of tanks, should contribute to a considerable

reduction in the annual volume of oxygenated gasoline released to natural waters from this subset of point sources."

It is important that Maine elected officials and citizens understand that MDEP's success in implementing the federal gasoline underground storage tank replacement program has made the water contamination problem manageable by virtually eliminating the primary source of gasoline spills to the environment – leaking underground storage tanks. It is not necessary to discontinue Maine's highly effective air pollution control program to solve a problem that Maine has already solved.

4 MAINE ELECTED OFFICIALS CAN CONTINUE TO SUCCESSFULLY MANAGE THE WATER CONTAMINATION PROGRAM WITH LESS COSTLY MEASURES. A HIGHER PRICED SPECIAL GASOLINE PROGRAM WITH INCREASED CANCER RISK, MORE OZONE EXPOSURE AND DECREASED FUEL PERFORMANCE MAY REQUIRE ADDITIONAL PROGRAMS LIKE THE STATEWIDE STAGE II VAPOR RECOVERY SYSTEMS OR THE POLITICALLY UNPOPULAR ENHANCED AUTOMOBILE INSPECTION AND MAINTENANCE PROGRAMS TO ADDRESS INCREASED CANCER RISK AND LIKELYHOOD OF OZONE EXCEEDANCES.

The water contamination problem is manageable. Maine has concluded that water contamination may be occurring from spills such as overfilling of gasoline tanks and citizen mishandling of gasoline. It is premature to reach this conclusion without additional investigation to uncover other potential sources of leaking underground storage tanks in the vicinity of these spills.

Regardless of the source of the problem, gasoline does not belong in the water, either through leaking underground storage tanks or small spills due to mishandling. Elimination of RFG or MTBE will not stop gasoline spills from reaching the water. The previously referenced October 13th report states that benzene was detected in Maine's water monitoring study above the health-based standard. Benzene is a known human carcinogen and is a component of all the alternative fuels that MDEP is considering.

It is significantly less costly to require spill collection systems at gasoline stations and public education regarding proper gasoline handling techniques than the expensive stage II gasoline vapor recovery systems which may be needed if the RFG program is eliminated.

It is significantly less costly to contain gasoline, which Maine should do anyway, than to raise the cost of gasoline to Maine's motorists by requiring an unproven but more costly special gasoline for Maine if the RFG program is eliminated.

Maine's CarTest program, a costly auto emissions testing program involving centralized facilities and use of a dynamometer to test cars during operation, had been initiated during the McKernan Administration. The program was strongly opposed by the driving public including collection of 50,000 signatures to force a referendum to end the program. Governor King responded to public concern and suspended this program at an enormous cost. Today Maine citizens enjoy a less burdensome vehicle-testing program due to the benefits of RFG. A gasoline program that allows any backsliding in air quality makes it more likely that the politically unpopular CarTest program or some other form on enhanced inspection and maintenance program may need to be re-instated if the RFG program is eliminated.

It is also possible that additional industry and small business sources may be required to reduce emissions if the RFG program is eliminated. Areas that have chosen to use a less effective emission reduction fuel than RFG have continued to experience ozone violations and are now considering additional controls on these various stationary sources.

5. IF MAINE CHOOSES TO LEAVE THE RFG PROGRAM THE ADDITIONAL BENEFITS OF PHASE II RFG BEGINNING IN 2000 WILL BE FORFEITED.

To stay even with the air quality benefits provided by the RFG program the replacement gasoline would need to capture the full benefits of oxygenate addition. The addition of oxygenates cause reduced carbon monoxide emissions. Even though Maine may be in compliance with CO standards, these reduced CO emissions (about 15 %) will continue to help cardiac patients and expectant mothers. The displacement of aromatics by oxygenates has caused toxic emissions to be reduced by significantly more than the minimum reduction requirement. Phase II RFG with its oxygenate standard in place should experience a similar over compliance. Any replacement fuel will need a 30 % reduction in toxics emissions to stay even. The more restrictive NOx standard (about 7 %) of Phase II RFG needs to be matched if Maine is to stay on course for ozone attainment. As we will explain later in our comments, emissions from oxygenated gasoline are less likely to form ozone than emissions from non-oxygenated gasoline. Therefore, to stay even with the RFG program the VOC reduction standard needs to be about 110 percent of the Phase II VOC standard or over 30 percent for Maine's replacement fuel.

Questions the Proposed Fuels Do Not Answer

To determine what gasoline options may be appropriate for Maine, MDEP posed a series of questions. OFA would like to comment on those questions and pose some additional questions that should also be answered.

Q. Would the fuel enable Maine to meet its VOC reduction obligation... or would additional strategies need to be employed?

A. Maine could devise a fuel specification that will meet its VOC reduction obligation on paper. It is important that Maine achieve real world reductions. In addition to ozone controls, fuel quality controls that maintain Maine's significant air toxic reductions must be in place to prevent deterioration of air quality. There is significant danger that Maine's reduced cancer risks could be forfeited and Maine's ozone exceedances could increase as they did in St. Louis, Phoenix, Atlanta, Kansas City and Birmingham when these cities implemented low RVP gasoline. The ozone exceedance data indicates low RVP gasoline did not work in those cities. If Maine simply makes up a 15 percent VOC reduction plan for EPA rather than seeking to reduce ozone exceedances Maine may have to eventually implement politically unattractive strategies such as Stage II gasoline vapor recovery on all gasoline stations or an enhanced automobile inspection and maintenance program.

Q. Would Maine see other air quality benefits, including reductions in NOx and air toxics, by using the fuel?

A. The answer depends upon the fuel specifications that Maine actually adopts. When MTBE is added to gasoline it causes most of the parameters that predict gasoline emissions to move in the direction that causes lower emissions. In other words, MTBE displaces or dilutes the harmful components of gasoline like benzene and other aromatics, olefins and sulfur.

When refiners offset the octane that MTBE contributes, they make other changes in gasoline composition and quality that further reduces emissions. To see reductions from current emissions, the specifications Maine adopts must capture the full impact of MTBE, reflect actual Phase I RFG toxics and carbon monoxide (CO) performance as well as satisfy the minimum VOC and NOx reduction standards for Phase II RFG. That means the gasoline Maine selects must meet the minimum year phase II RFG standards for NOx and VOC reductions as well as have a 15 percent reduction in carbon monoxide and a 30 percent reduction in toxics emissions if Maine is to see other air quality benefits. To preserve the Phase II RFG benefits that would be theirs for staying in the program, Maine's special gasoline would also need a 7% NOx reduction and a 30% VOC reduction.

Q. What health risks are posed by direct exposure to the fuel before and after combustion and what is the fuel's potential for contaminating ground water?

A. Regarding exposure to gasoline before combustion, the International Agency for evaluating risk from cancer (IARC) has determined that MTBE is a Group 3 compound (not classifiable as a human carcinogen). Thus, according to IARC, MTBE posses less health risks (lower cancer risks) than either gasoline or alcoholic beverages (ethanol). Gasoline is ranked in IARC's Group 2B (possible human carcinogen) and alcoholic beverages containing ethanol along with benzene are ranked in IARC's Group 1 (known human carcinogen) categories. There are no gasoline components in IARC's Group 4 (not a human carcinogen) category. Therefore, no MTBE replacement component can reduce the cancer health risk relative to RFG with MTBE.

Regarding exposure to gasoline combustion products, monitored levels of ambient air toxics, including carcinogens have declined dramatically during the period since introduction of RFG in Maine and in other areas of the country. (Specifically benzene has declined by 31 per cent between 1994 and 1997, with ethyl benzene declining by 52 per cent. Both are known human carcinogens.) Also, NESCAUM recently issued a study documenting a 12 percent decrease in cancer risk due to exposure to air toxics from RFG as compared to the risk from exposure to conventional gasoline.

Regardless of the type of gasoline used in Maine, if gasoline storage tanks are leaking, gasoline will eventually reach the water. The real cure for groundwater contamination is to eliminate leaks and spills of gasoline.

Q. Is the fuel readily available to Maine or could it be made available?

A. Readily available fuels are federal RFG made with ethers and conventional gasoline. Maine is a relatively small market with no refining capacity. Convincing an outside gasoline supplier to produce a relatively exotic special blend for Maine can be done if the price is right. It is unlikely that refiners would want to risk additional stranded

investments by investing capital to make a special gasoline that may not be required in the future.

Q. How much would the fuel cost Maine drivers?

A. OFA cannot answer that question until we know the specifications of Maine's replacement fuel. We do know however that it will cost more for several reasons. 1) Refiners have chosen MTBE because it is the most cost-effective way to make cleaner burning gasoline. 2) Competition is required to control retail prices. If Maine does not line up 4 or 5 gasoline producers (not retailers) to supply Maine's replacement fuel; Maine is inviting lack of competition and higher retail gasoline prices. 3) Maine will need to lobby EPA not to change their current lax policy on antidumping. Currently EPA appears to be willing to let Atlanta get a lower sulfur Georgia gasoline (GAg) at the expense of other areas getting higher sulfur gasoline. As more areas ask for boutique gasoline like Maine and Georgia, EPA may have to reconsider their interpretation of the antidumping statutes.

Q. Does the fuel affect vehicle mileage or engine performance?

A. To preserve engine performance MDEP needs to include some distillation point limits in their fuel specifications. The addition of MTBE to gasoline shifts the distillation properties in a direction that typically improves driveability. Analysis of the best fit driveability equations from the recent Coordinating Research Council work on driveability indicates gasoline containing 15 volume percent MTBE has about the same driveabilty as gasoline containing 100 volume percent hydrocarbons with the same distillation properties. Therefore, Maine's replacement fuel will need to reduce midpoint and ninety percent point distillation specifications to preserve performance. Auto/Oil data suggests caps of about 220 and 325 degrees Fahrenheit for the midpoint and ninety- percent point specifications to prevent exponential increases in VOC emissions. The auto manufacturers have sought a maximum driveability Index (DI) of 1200 where DI=1.5*T10+3.0*T50+1.0*T90 for years to prevent cold start problems. California Phase 2 gasoline caps these distillation points at 220 and 330 respectively and requires refiners to average 200 and 290 whenever they produce any gasoline with distillation points above 210 and 300. The Phase II RFG test that MDEP cited was with gasoline containing MTBE that helped control these distillation points. If Maine's replacement fuel is an all hydrocarbon fuel and there is no significant driveability problem the consumer may experience about a 2 % increase in mileage relative to RFG.

Q. Would the resulting fuel program be enforced by the state or by EPA?

A. OFA agrees with MDEP that the state would be responsible for enforcing non-RFG programs or special modifications to RFG programs. However, MDEP' s estimated enforcement costs seem too low. In addition to relying upon self-enforcement by the industry with oversight by the state MDEP should consider a budget that allows MDEP to actually test an adequate number of samples of retail and bulk terminal gasoline.

Q. Would the use of the fuel in Maine require a special waiver from EPA?

A. A special waiver would be required and it would be difficult to acquire. MDEP could probably get waivers to control gasoline properties that contribute to VOC and NOx emissions. But, based upon various statements by EPA staff, a waiver to preserve the approximately 30 percent reduction in toxics emissions that Maine citizens have been enjoying with Phase I RFG would, be very difficult to obtain. MDEP might be able to limit aromatics (precursors to benzene emissions) based upon a need to reduce VOC and NOx emissions. But, a benzene cap less than the current ASTM five percent standard is very unlikely to be approved. General refining/petrochemical economics should prevent excessive benzene contents from being a problem. But, in Alaska, blood benzene contents increased when MTBE was removed from Fairbanks' gasoline.

Q. Why abandon a working air quality improvement program that is scheduled to get even better in 2000 when Maine has already managed the gasoline containment problem that created the water contamination issue?

A. OFA does not have a logical answer for this question.

Q. What are other states using and why?

A. OFA would like to supplement MDEP' s answer to this question.

Alabama- Birmingham experienced a significant increase in ozone exceedances in 1998 after beginning to use their low RVP/Low Sulfur gasoline. Limiting the sulfur content of the gasoline to 310-ppm did not prevent Birmingham from becoming the fifth city to have this experience with Low RVP (7.0 psi or less) gasoline. The RVP reduction helped Alabama meet their VOC reduction plan but probably increased their ozone exceedances.

Arizona- Phoenix experienced increased ozone exceedances following the implementation of a low RVP gasoline program. Following opting into RFG in 1997, Phoenix's ozone exceedances decreased to zero and their retail gasoline price decreased. Due to their unique gasoline supply situation Phoenix needs to attract cleaner burning gasolines from either Texas or California to keep their retail prices reasonable. Therefore, they have replaced the Federal RFG program with a state program that lets them use either fuel. They can now use a 7.0 psi RVP gasoline because the California RFG controls the 50 and 90 percent distillation points that preserve cold start driveability and the Federal RFG requires the use of oxygenates that indirectly control the 50 and 90 percent distillation points and cold start driveability. If MDEP limits the use of MTBE it must add distillation controls to preserve driveability and reduce emissions.

California- Federal RFG used in California must also meet all of the Phase II California RFG requirements. MTBE is the oxygenate of choice in California and the California Air Resources Board has reported 11 to 12 percent reductions in ozone due to their Phase II gasoline as well as a 40 percent net reduction in cancer risk. The California Energy Commission is in the process of estimating the cost of removing oxygenates from California's gasoline. The preliminary cost range is 1 to 9 cents per gallon. The low cost assumes a six-year phase in and the availability of clean burning imported components. CEC found: "Immediate Phase Out Would Be Drastic With Catastrophic Impact On Consumers" (Staff Presentation of Supply And

Cost Of Alternatives To MTBE IN Gasoline, November 13, 1998). If Maine and California were to eliminate oxygenate they would be competing for the same components and the high end of the cost range would be more likely.

Georgia- Atlanta also experienced increased ozone exceedances after implementing a low (7.0) RVP gasoline program without EPA approval in 1995. They initially attributed the failure to hot weather but after continuing to experience exceedances, Atlanta will be implementing an experimental low sulfur (averaging 150 ppm) program during the summer of 1999. EPA's Complex Model indicates this program may help. But refiners will have a natural economic driving force to add heavy reformate (a stream that is low in both sulfur content and RVP) to Georgia gasoline (GAg). This will increase both the toxicity and the ozone forming potential of GAg's emissions. It remains to be seen whether or not there will be a net benefit. Georgia is prepared to further reduce sulfur to 30 ppm and control aromatics and olefins beginning in 2003. They would be wise to also control the Midpoint and ninety percent points to prevent refiners from doing what is economic without the limits, that is using heavy aromatics that are low in both sulfur content and vapor pressure but high in toxic emissions and poor in driveability.

Illinois/Missouri (St. Louis)- St. Louis was the first city to experience increases in ozone exceedances following the implementation of a 7.2-psi low RVP gasoline program in 1994. Reducing the vapor pressure to 7.0 psi in 1995 did not solve the ozone problem. While weather was initially named as the cause of the increases the gasoline selection mistake will be corrected in the summer of 1999 when St. Louis will begin using RFG. St. Louis made up a State Implementation Plan (SIP) but the chosen gasoline did not get the job done and St. Louis suffered more ozone exceedances and the SIP had to be revised.

Kansas/Missouri (Kansas City)- Kansas City implemented a 7.2 psi RVP program in 1997 and became the fourth city to experience increased ozone exceedances. Admittedly the increase was not as dramatic as it was in the other cities that implemented low RVP programs but exceedances did increase. Missouri will opt to use RFG in Kansas City if EPA will allow Missouri to do so.

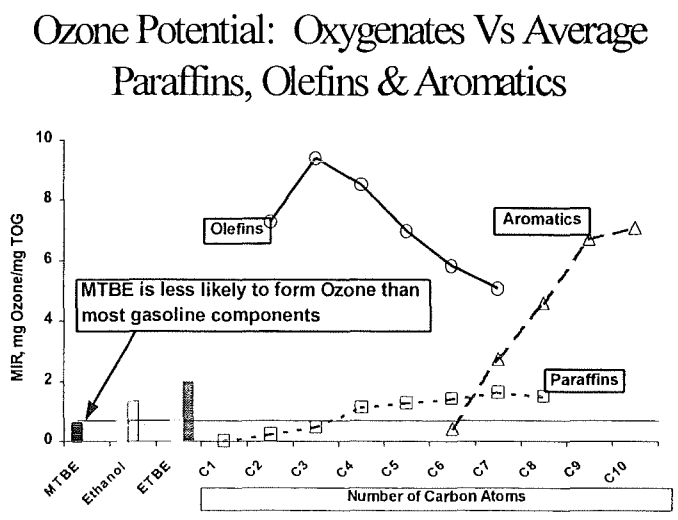
Michigan and Pennsylvania- Both states have areas where they have elected to use a medium vapor pressure conventional gasoline with a 7.8-psi RVP. It looks good on a SIP but does not seem to affect ozone levels. 7.8 psi is the lowest vapor pressure MDEP should consider without additional controls on distillation points and aromatics.

Texas- Dallas/Fort Worth opted into the RFG program while El Paso adopted a Low RVP strategy. El Paso is the only city using very low RVP (7.0 psi) gasoline that has not had an increase in ozone exceedances. Beaumont/Port Arthur, which is eligible to opt into the RFG program, did not because industrial emissions far out-weigh mobile source emissions. Texas Natural Resources Conservation Commissioners have instructed staff to draft a regulation calling for the use of a 7.8 RVP 150-ppm sulfur gasoline in the eastern half of the state. OFA advised the commissioners that the very low RVP gasoline needed additional controls and they chose to use a medium RVP control strategy.

Q. Why did the very low RVP (7.0 to 7.2 psi) strategies not work?

A. MDEP needs to know the answer to this question before they finalize their decision to abandon the RFG program and adopt an alternative program that damages air quality. The two main factors are 1) Refinery economics cause refiners to satisfy very low vapor pressure standards by rejecting butane and adding heavy components. 2) VOC emissions vary in their potential to form ozone. On page 20 of their report MDEP cited a 0.4 percent NOx reduction and a 2.2 percent air toxics reduction for a 7.2-psi fuel. This matches EPA's Complex Model output when all the user does is lower the RVP input to 7.2 psi. Unfortunately, there is no component that lowers RVP without changing something else. If a refiner simply rejected butane to lower the RVP to 7.2 psi, T50 and T90 would increase and sulfur, olefins and aromatics would increase in concentration as butane's dilution effect was eliminated. There would be a net reduction in tons of emissions. But both calculated and actual VOC, NOx, Toxics and CO emissions reductions would be less than those calculated by just lowering RVP. If refiners chose to add heavies to depress the RVP emissions other than VOCs can actually increase. Also because butane is one of the least reactive hydrocarbons in the gasoline boiling range, the tendency of those emissions to form ozone would be greater. Another factor that must be considered is that Volatile Organic Compounds (VOC) are not created equal. The Complex Model does not correct for variations in ozone reactivity of VOC. For example the Auto/Oil study that compared oxygenated and non-oxygenated reformulated gasoline showed 2 to 3 percent more VOC emissions from the non-oxygenated blend than from the oxygenated blend. When the VOCs from each blend were reactivity-weighted the ozone potential of the non-oxygenated blend was 5-7 percent more than that of the oxygenated blend. (Had Auto/Oil matched octane on the two blends, the emissions and the ozone reactivity differences of the two blends would have been greater.) However because there were only two blends, there were not enough degrees of freedom to calculate statistical significance. Some non-scientists have interpreted this to mean there is no difference in emissions between oxygenated and non-oxygenated gasoline. But it actually means that if MDEP wants to reduce ozone exceedances they should correct for ozone reactivity as they design a fuel to replace RFG. Figure 2 shows the ozone potential of oxygenates and hydrocarbons. The bars on the left of the graph show oxygenates' potential to form ozone. A gram of MTBE vapor would form about 0.6 grams of ozone. Ethanol and ETBE would form about 1.3 and 2.0 grams of ozone for each gram of vapor respectively. To simplify the chart, the ozone forming potentials of paraffins, olefins and aromatics were averaged by number of carbon atoms and plotted as lines. MTBE has the lowest ozone-forming potential of gasoline boiling range components. Evaporative emissions are definitely less likely to form ozone if they come from a

Figure 2



gasoline fully oxygenated with MTBE than if they come from a partially or non-oxygenated gasoline. Exhaust emissions share the same bias. Milford and Yang using Auto/Oil data and Carter MIR factors have calculated that the probable specific ozone reactivity of emissions from oxygenated gasoline is 7 to 15 percent less than the specific ozone reactivity of emissions from non-oxygenated gasoline. In 1996 Southwest Research Institute measured and speciated exhaust and evaporative emissions from composites of 10 RFG samples that were oxygenated primarily with MTBE and 10 low RVP conventional gasoline samples. The conventional gasoline had negligible oxygen content. The specific ozone reactivity of the exhaust emissions from the RFG was 8 percent less than the specific ozone reactivity of the non-oxygenated conventional gasoline. The evaporative emissions were 22 percent less reactive. This is in line with Milford & Yang as well as the Auto/Oil data on Tier 1 and advanced vehicles. Therefore, Maine needs to correct the Complex Model's calculated change in VOC emissions for ozone potency before they abandon a proven ozone fighting strategy. Based upon CARB's work on the ethanol test fleet data and the Predictive Model last summer, CARB recognizes the importance of reactivity. A simple correction for reactivity could be to simply require non-oxygenated gasoline to have about 10 percent less VOC emissions than the oxygenated gasoline that has worked. Again Maine must decide if they want to reduce ozone exceedances or simply file an amended SIP.

Summary

It is important that Maine policy makers understand that: 1) The enormous air quality improvements and significantly reduced risk of cancer that Maine residents now enjoy because of reformulated gasoline with MTBE can not be reproduced with any other currently available fuel. 2) All other ozone non-attainment areas that have relied upon "cleaner gasoline" other than RFG have been disappointed due to continued violations of the federal ozone standard. 3) The water contamination problem is being addressed by MDEP' s tremendous success in implementing the federal gasoline underground storage tank replacement program. 4) Maine elected officials can continue to successfully manage the water contamination program with less costly measures than those, which would be needed to address the unsatisfactory repercussions of eliminating the RFG program. By staying in the RFG program they can avoid increased cancer risk, higher gasoline prices, decreased fuel performance, and the need for other unpopular and costly pollution control measures such as statewide stage II vapor recovery systems at gasoline stations and enhanced automobile inspection and maintenance programs. And 5) If Maine elected officials choose to leave the RFG program they give up the additional benefits of Phase II RFG beginning in 2000.

Low RVP gasoline has yet to demonstrate an ability to reduce ozone exceedances. Phoenix, Atlanta and St. Louis who pioneered the use of very low RVP (7.2 psi or less) gasoline all either have or are in the process of changing to other gasoline formulations because the low RVP product did not lower ozone exceedances. Optimization economics drove refiners to produce a fuel that met specifications but did not work. MDEP must make sure their alternative gasoline does not fall into the same economic trap.

OFA urges MDEP to continue use of RFG. However, if Maine continues with the decision to opt-out of the RFG program, the state should set specifications on their

replacement fuel that will preserve the performance and air quality gains that Maine has derived from RFG with MTBE. In order to accomplish this, MDEP will need to set distillation point specifications to assure good driveability and reduced emissions. MDEP will need to limit the aromatics content of the replacement fuel to control VOC and NOx emissions in order to preserve the approximately 30 percent reduction in toxics emissions Maine enjoys with RFG. It is unlikely that EPA will grant a waiver to control aromatics or benzene for toxics control. Finally MDEP will need to overshoot the Phase II RFG VOC reduction target (27.4%) by about 10 percent (Maine's VOC reduction target will have to be over 30%.) in order to offset the increased ozone reactivity of emissions from non-oxygenated gasoline. If MDEP adopts an ineffective gasoline formulation, such as the low RVP gasoline which has not worked in other non-attainment areas, then the state may be forced to implement costly strategies such as Stage II vapor controls at all filling stations or politically unpopular enhanced automobile inspection and maintenance program like CarTest.

RFG has helped reduce ambient levels of both air toxics and ozone in Maine and the surrounding region. Maine leads the nation in gasoline storage tank replacement. Maine has shown that the water contamination problem is not a danger to public health. Maine has the resources to adequately manage this problem. Yet Maine is under political pressure to abandon a successful air quality improvement program which is required by law to become even better in 2000. OFA urges Maine to ignore emotional pleas and stay with the scientific facts which show that the proven program of RFG with MTBE is working in Maine and should be continued.

Maine Oil Dealers Association
Representing Maine's Petroleum Marketers

COMMENTS OF

THE MAINE OIL DEALERS ASSOCIATION

REGARDING THE

INTERIM ALTERNATIVE FUELS REPORT

OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION - DATED OCTOBER 1998

December 1, 1998

25 Greenwood Road • P.O. Box 249 • Brunswick, Maine 04011-0249 • (207) 729-5298 • Fax (207) 721-9227 • oilman@meoil.com

COMMENTS OF THE MAINE OIL DEALERS ASSOCIATION REGARDING THE *INTERIM ALTERNATIVE FUELS REPORT* OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION DATED OCTOBER 1998

December 1, 1998

Good afternoon, my name is Jamie Py, I am the Legal Counsel for the Maine Oil Dealers Association. I thank you for your attention as I stand before you today in order to comment on the Interim Alternative Fuels Report. I would like to state at the outset that we are committed to helping the Governor, the DEP and the citizens of this state achieve our goal of providing Maine with an alternative gasoline which has a reduced level of the additive MTBE. First however, I would like to briefly describe what MODA is.

MODA represents Maine businesses and their 8,000 Maine-based employees that market petroleum products at the retail level. Our members include 240 of the approximately 275 companies engaged in the retail sale of home heating oil to 332,000 consumers. These companies also provide the majority of propane gas sold in the State of Maine. Our members own or operate 1,250 of the roughly 1,300 retail gasoline outlets in Maine. Our members sell over 95% of the heating oil and gasoline in Maine.

The study does a very good job of outlining the issues and I wish to commend the department for putting together a comprehensive and very useful document. We have minor concerns on some of the topics but they are not something I wish to discuss here today because they can be resolved with the Department. On many of the issues dealt within the Report, we are not an authority on the subject and therefore have no ability to effectively comment.

While the majority of our members are retailers, we also represent 10 of Maine's largest refiners/suppliers. The refiner/supplier segment of our membership shares the concerns that we bring you today. The first question when considering a new gasoline for Maine will be whether or not someone can make it. While we cannot adequately answer that question, we are nevertheless concerned about the ramifications of having a new gasoline

for Maine. This is what I would like to speak to you about today. While the study indicates that certain things "could" be done and that "possibly" other things may occur, we would like to back up and comment about the general situation involving the possibility of a new fuel and what issues should be discussed in the context of procuring an alternative fuel.

We have six basic concerns about the substitution or replacement of RFG:

1) New gasoline must work;
2) The environment;
3) Price;
4) Supply;
5) Competition;
6) Maine's economy.

1. The New Gasoline Must Work!

This simply means that cars, trucks, buses, snowmobiles, outboard motors and small engines must be able to start and run as efficiently and must function equally as they do now using RFG with MTBE. Clearly, a Maine only gasoline that has not been tested and/or is problematic when used in the internal combustion engine is not an alternative.

2. The Environment.

The new gasoline must continue to reduce our VOC's by the federally mandated amount in order to stay in compliance with the federal Clean Air Act requirements. This will ensure that our ozone exceedance days remain as low as they have been for the last few years. Also, the new gasoline must not have some other ingredient or effect which may cause a problem in some other area of the environment. We are here today because of this very problem. While RFG does a great job of cleaning the air, the price for the MTBE contamination was not adequately calculated. We believe that throwing out RFG and finding its replacement should take time and be carefully scrutinized so as to avoid another possible train wreck.

3. Price

Maine, according to the U.S. Department of Energy, is the 45th (with 50th being the lowest) lowest State in the U.S. as to the cost of its petroleum products to its consuming people. While this fact may not be widely known, it is something that we should all be proud of, especially when considering that we are at the end of the pipeline. How are Maine's marketers able to deliver the 45th lowest price to all of us? There are a lot of reasons, some of which may point to the character, industriousness and innovativeness of the Maine marketer of petroleum products. Much however, has a lot to do with the variety and number of supply options available. Currently there are 18 to 20 different wholesale suppliers operating or through-putting gasoline through Maine terminals. A like number are available to Maine marketers outside of Maine – in New Hampshire, Massachusetts, Quebec, and St. John. This variety of purchase options for wet gallons keeps the supply to Maine marketers very price competitive. One supplier cannot and will not remain high priced for very long if it is to survive.

In addition, paper gallons can be purchased, traded, and hedged on the New York Mercantile Exchange (MERC). All of this is possible with a standardized, globally bought and sold commodity. This local, national and international competition keeps the price down and allows marketers to offer the 45th lowest price in the U.S.. This competition would not be possible with a specialized, non-standardized, limited production alternative Maine only fuel – a boutique fuel. It is likely that there would be only one supplier, not 20, no MERC trading, in essence no competition. It is unlikely, with Maine only representing less than ½ of 1% of the gasoline sold nationally, that very many will invest in reconfiguring their refining, transportation and storage systems in order to make, deliver and store a product with such a limited demand unless the price is commensurate with this high level of capital expenditures.

The conclusion for the boutique fuel is that a "Maine only" fuel is likely to be expensive, and will be higher priced than our neighboring states and perhaps even as high as

Canada's, thus making those living, doing business, and recreating in Maine pay the price.

4. Supply.

Whenever one deals with a specialized, non-standardized product, which is manufactured in limited quantities and by limited numbers (perhaps only one), options will be non-existent. When this singular supply source has a problem, and they do have them, supply will be unavailable. Problems could be in refining (fire, labor, storm), transportation (weather, breakdown, accident, labor), or storage (not enough, storm, accident). Maine has only a seven-day supply in storage. This storage is for other states as well, because the terminals in South Portland supply New Hampshire, Vermont, and to a lesser extent Massachusetts. Adding another gasoline to the unexpandable storage capacity at these terminals means that there will be even a smaller supply of gasoline in storage for Maine. Problems will and do occur. If there is no gasoline, Maine is at a standstill. Should we decide that Maine must have a boutique fuel, then we must carefully develop and implement a contingency plan to alleviate the likely supply disruptions, otherwise, we expose ourselves to a very precipitous position.

Gasoline is a commodity that is generally exchangeable amongst suppliers. Maine gets cargoes from all over the world including: the U.S.; Canada; Venezuela; St. Croix; Russia; Europe, and Africa. Gasoline is a global commodity. Global supply means adequate choices at competitive prices. Global supply means competition.

5. Competition.

For years our Maine market has been very competitive with many dealers and marketers supplying Maine with low priced petroleum products. These low prices, as reported by the U.S. Department of Energy, have been the result of the intense competition within this state. In fact, the Maine Attorney General has had a keen interest in seeing that the competitiveness remains in our industry. The Maine Attorney General's office has specific legislation, the Petroleum Market Share Act (10 MRSA section 1677) to oversee the industry and to ensure that it stays competitive with many diverse players. The

limiting effect on competition will be quite obvious whenever supply options are reduced to only one or two suppliers/refiners, especially if those one or two suppliers are also major players in other levels of the marketplace, i.e. the retail level. Competition at all levels will be effected dramatically. Lack of competition would be a negative outcome for other marketers and for the consumers of this state.

6. Weakened Economy.

With low petroleum prices being one of the only costs actually lower than other costs associated with living and doing business in Maine when compared to the other states, high gasoline prices would further reduce Maine's ability to compete and may threaten our positive economy.

In conclusion, while the Maine Oil Dealers Association is very willing to help in any way that we can to assist the state with addressing the options of an alternative fuel, we are nonetheless concerned that unless careful consideration and planning address the aforementioned issues, Maine may be placing itself in a very precarious position. We suggest that any gasoline chosen to replace RFG should have the fungible nature of a commodity to thus ensure a reasonable price and adequate competition and supply.

Thank you for your attention to this complicated matter. I will be available for any questions or comments.

[1] Public Law, 1998, Chapter
[2] Relative Cancer Risk of Reformulated Gasoline and Conventional Gasoline sold in the Northeast.
[3] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[4] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[5] Ibid.
[6] Ibid
[7] EPA Fact Sheet, EPA-822-F-97-009, Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary-Butyl Ether (MTBE)
[8] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[9] Eric Vaughn at the Renewable Fuels Association, per a telephone conversation on June 26, 1998
[10] Ibid
[11] Ibid
[12] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[13] EPA Staff Paper on Gasoline Sulfur Issues - EPA420-R-98-004
[14] EPA Staff Paper on Gasoline Sulfur Issues - EPA420-R-98-004
[15] Ibid
[16] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[17] Relative Cancer Risk of Reformulated Gasoline and Conventional Gasoline sold in the Northeast.
[18] Changes in Gasoline III, Technicians Manual, Downstream Alternatives.
[19] Conversation with Janice Rayburn on 10/05/98.