MAINE STATE LEGISLATURE

Report to the Joint Standing Committee on Environment and Natural Resources

128th Legislature, Second Session

Status of Gasoline Requirements in the State of Maine

April 2018 Update

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Executive Summary

The 128th Maine Legislature requested the Department of Environmental Protection (Department) update the gasoline report that was developed in 2015 per L.D. 1796[1] with any recommended changes to the current gasoline requirements. In preparation of this report, the Department assessed the current gasoline requirements in Maine, conducted analyses of air quality data, and met with industry representatives.

The State of Maine is currently split into two different gasoline requirement areas. As of June 1, 2015, when Maine opted into the federal reformulated gasoline (RFG) program, Maine law requires retailers in the southern seven counties, including York, Cumberland, Kennebec, Androscoggin, Knox, Lincoln, and Sagadahoc Counties, to sell RFG gasoline year-round. Conventional gasoline can currently be sold in the remaining nine counties.

The original implementation requirements of RFG and 7.8 pounds per square inch (psi) Reid vapor pressure (RVP) gasoline in southern Maine were intended to reduce ozone precursors (oxides of nitrogen and volatile organic compounds). Changes to federal gasoline and motor vehicle requirements have resulted in improved air quality using both RFG and conventional gasoline. The 2011 Mobile Source Air Toxics Rule[2] lowered the levels of benzene and other air toxics allowed in either RFG or conventional gasoline, and the 2017 Environmental Protection Agency (EPA) Tier III emissions standards for new vehicles[3] includes a reduced sulfur content in gasoline. Stricter federal gasoline requirements, better emission control requirements on new vehicles, and older vehicles dropping out of the vehicle population over time have led to an improvement in ambient air quality in all areas of Maine. These air quality benefits have been observed independent of the type of gasoline required.

The Department compared the monitored ambient air quality levels for various pollutants in RFG areas with those in areas where conventional gasoline is currently allowed to be sold. This analysis was based on ambient air monitoring data collected throughout the state one year before (used as a baseline) and two years after the implementation of RFG requirements in June of 2015. Results of this comparison did reveal changes in air quality over the three-year period investigated, but these differences were evident in both RFG and conventional gasoline areas. Results did not indicate any statistically significant air quality benefit resulting from the requirement to sell RFG in the southern seven counties of Maine. In addition to the assessment of ambient air quality, the Department used EPA's Motor Vehicle Emissions Simulator (MOVES) to compare modelled emissions from mobile sources for selected years using different types of gasoline. Assuming RFG requirements in southern Maine for 2015 through 2018 and conventional gasoline allowed for sale between 2019 and 2023, modeling results predict Maine's emissions of both oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) will decline by approximately 50% between 2015 and 2023. Modeling results comparing RFG areas with conventional gasoline areas in 2019 show no significant difference in NO_x and VOC emissions. These modeling results echo the monitored ambient air quality analysis results suggesting no additional air quality benefit resulting from the requirement to sell RFG.

[1] Appendix A
[2] Final rule available at https://www.gpo.gov/fdsys/pkg/FR-2007-02-26/pdf/E7-2667.pdf (144 pages).
[3] Final rule available at https://www.gpo.gov/fdsys/pkg/FR-2014-04-28/pdf/2014-06954.pdf (474 pages).

As part of the evaluation of current gasoline requirements in Maine, the Department met with representatives of the Maine Energy Marketers Association (MEMA), terminal operators, refiners, and gasoline distributors. These discussions led to a general agreement that there is a sufficient supply of both RFG and conventional gasoline on the market to meet Maine's needs; however, lifting the RFG requirement in the southern seven counties could reduce both interstate and intrastate border issues and allow distributors to more efficiently use their trucks and other equipment, resulting in fewer transportation related emissions. In addition, eliminating the segregation requirements associated with RFG may increase terminal storage capacity, which may buffer against minor supply disruptions. Industry is overall in favor of lifting the state mandate for RFG in southern Maine due to increased efficiencies, ease of logistics and transportation, likely cost savings, and the flexibility to sell ethanol-free gasoline to recreational markets in southern Maine. Based on industry provided data, the price difference between conventional gasoline and RFG is minimal, and which gasoline type is more expensive fluctuates. Removing the RFG requirement would permit the flexibility necessary to allow the market to drive gasoline distribution in Maine, ensuring the most cost effective gasoline is available to Maine consumers.

Based on discussions with industry as well as the analysis of air quality data, the Department recommends removal of the requirement for RFG in the southern seven counties, allowing the retail sale of either RFG or conventional gasoline throughout the state. Maine is not alone in considering such an option. Several states have recently lifted RFG and boutique gasoline requirements (specialized gasoline formulations unique to an area or state), allowing more flexibility in the gasoline industry. Maine has met the federal ground-level ozone standards since the 2005 ozone season, and is thus not required to be part of the federal RFG program. Because data shows no statistically significant change in ambient air quality, the Department recommends removing the requirement to sell RFG in the southern seven counties.

Per the Clean Air Act (CAA) Section 211 (k)(6)(B)(ii), since Maine opted into the RFG program, it must remain in the program until June 1, 2019. If Maine were to opt out of the RFG program after this four-year period, Maine must demonstrate that emission reductions observed during the four-year program period continue. Initial analysis estimates Maine's declining emissions of NO_x and VOCs in projected future years with the use of conventional gasoline will continue, meeting the EPA requirement of continued emission reductions.

If legislation is approved to remove the RFG requirement, the Department will coordinate with EPA to revise the current State Implementation Plan (SIP) and obtain federal approval for Maine to opt out of the RFG program statewide. This process is expected to take one year or more.

1.0 Introduction

The 126th Maine Legislature enacted L.D. 1359 "An Act to Update and Simplify Maine Gasoline Requirements," [4] which required retailers who sell gasoline in York, Cumberland, Sagadahoc, Androscoggin, Kennebec, Knox, or Lincoln County to sell only federal reformulated gasoline (RFG) commencing May 1, 2014. Maine Energy Marketers Association (MEMA) requested the enacting legislation to ease the price inequity for retailers on the county borders. The requirement to sell RFG in the seven southern counties allowed Maine to discontinue the requirement to sell the "boutique" 7.8 pounds per square inch (psi) Reid vapor pressure (RVP) gasoline during the summer months, which was a previously required alternative gasoline for the State of Maine. The only other area in the northeast that had the same boutique gasoline requirement was western Pennsylvania. The intent in changing the requirement from boutique gasoline to RFG was to switch to a more widely used and available gasoline supply and thereby avoid supply interruption and price volatility. Following the legislation to enact RFG requirements in Maine, industry requested a delay in implementation due to supply concerns with meeting the May 1, 2014, date. In response, the 126th Maine Legislature enacted L.D. 1796 "An Act to Delay Implementation of Reformulated Gasoline Requirements in Maine" [5] extending the implementation date from May 1, 2014, to June 1, 2015, for the sale of RFG in the southern seven counties.

Retailers have been required to sell only RFG in the southern seven counties since June 1, 2015. Per the Clean Air Act (CAA) Section 211 (k)(6)(B)(ii), since Maine opted into the RFG program, it must remain in the program for four years, or until June 1, 2019. Should Maine choose to opt out of the RFG program after the four-year period, the emission reductions from the RFG program must be maintained. Demonstrating these continued emissions reductions will require the Department to work with the Environmental Protection Agency (EPA) to revise the State Implementation Plan, which will include an analysis of current and projected future emissions.

The 128th Legislature voted ought not to pass L.D. 452 "An Act to Remove the Reformulated Gasoline Requirement" in early 2017; however, following this decision, the Legislature requested the Department of Environmental Protection (Department) assess the current gasoline requirements in Maine, update the gasoline report that was developed in 2015 per L.D. 1796, and provide a recommendation on future gasoline requirements.

2.0 Background

As part of Maine's ozone control strategy, Maine opted into the RFG program in 1991 and began selling RFG in the southern seven counties in January of 1995. Initially, to comply with the RFG program, gasoline had to meet a minimum oxygen content requirement. Oxygenates were added to RFG to reduce emissions by improving overall combustion efficiency. Refiners originally complied with the oxygenate requirement by selling RFG containing methyl tertiary-butyl ether (MTBE), a gasoline additive that replaced lead as an octane booster. Previous RFG formulations contained MTBE at levels of approximately 11 percent by volume. In comparison, conventional gasoline mostly contained MTBE in amounts of a few percent by volume. The RFG delivered in

[4] See Appendix A
[5] See Appendix A

Maine contained higher levels of MTBE than gasoline sold in Maine prior to implementing the program, and shortly thereafter, MTBE began appearing in public and private water supplies more frequently and at higher concentrations. MTBE is more water soluble than other gasoline components, is persistent in ground water, and is considered by the EPA as a possible human carcinogen.

These groundwater contamination issues prompted Maine to petition the EPA to allow the state to opt out of the RFG program based on the risk to ground water posed by MTBE. EPA approved the petition provided several conditions were met, including implementing a replacement gasoline program that achieved reductions of certain air emissions, such as volatile organic compounds (VOCs), that were equivalent to the use of RFG. In response, the Maine Board of Environmental Protection adopted Chapter 119, *Motor Vehicle Fuel Volatility Limit*, which required 7.8 psi RVP gasoline in the southern seven counties from May 1st to September 15th of each year. Having met the conditions, the effective date for withdrawal from the RFG program was March 10, 1999. In May of 2001, the Department submitted a fuels waiver request for 7.8 psi RVP gasoline under the authority of 211 (c) of the Clean Air Act (CAA), which became effective on April 5, 2002.

The Maine Legislature banned MTBE as a gasoline additive in the state after January 1, 2007. While Maine has no requirement to blend gasoline with any oxygenate, such as MTBE or ethanol, in the fall of 2007, E10, a fuel mixture of 10 percent ethanol and 90 percent gasoline, began to be distributed throughout Maine to meet federal renewable fuel standards. All terminals in Maine were blending in ethanol to produce E10 gasoline by the end of 2008.

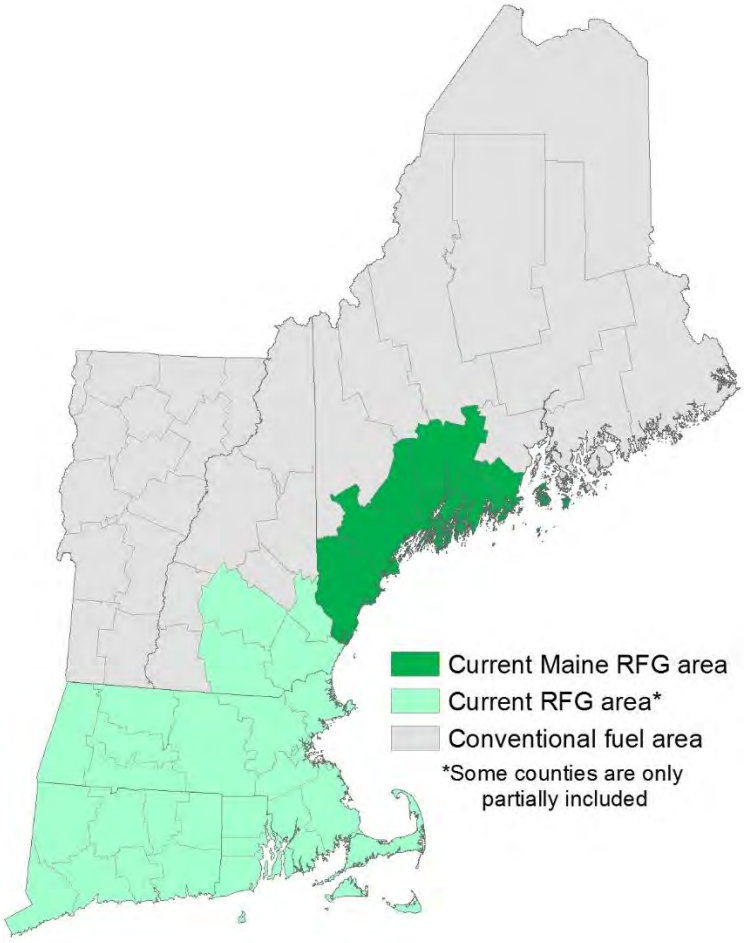
The 7.8 psi RVP gasoline adopted in 2002 was classified as a "boutique" gasoline per the EPA in the Federal Register in December 2006. A boutique gasoline is a specialized gasoline formulation unique to an area or state. Originally intended to assist areas in meeting local air quality requirements, the uniqueness of these boutique gasolines have led to supply issues and price volatility. Maine opted out of boutique gasoline in 2015 due to limited supply and opted back into the federal RFG program as an alternative.

2.1 Existing Conditions

The State of Maine is currently split into two different gasoline requirement areas. As of June 1, 2015, Maine law requires retailers in York, Cumberland, Kennebec, Androscoggin, Knox, Lincoln, and Sagadahoc Counties to sell RFG gasoline. The rest of the state allows the sale of conventional gasoline year-round, similar to Northern New Hampshire and all of Vermont. The rest of New England sells only RFG throughout the year.

RFG is readily available and used in counties that have opted into the RFG program throughout New England. The status of RFG requirements throughout New England is shown in Figure 1.

Figure 1. Current RFG requirements in New England



2.2 EPA Regulatory Requirements

The Clean Air Act (CAA) prohibits the sale of conventional gasoline in certain areas of the country that did not meet the federal 1990 ground-level ozone standards. In addition to these areas of mandatory RFG sales, Section 211(k)(6)(A) and (B) of the CAA allows areas that are classified as marginal, moderate, serious, or severe ozone nonattainment, or areas within the Ozone Transport Region to opt into the RFG program at the request of the Governor.

Since Maine is in the Ozone Transport Region as established under Section 184 of the CAA, the Governor can petition EPA to prohibit the sale of conventional gasoline to any area in the state pursuant to Section 211(k)(6)(B) of the CAA. Under 40 CFR Part 80.27 (Controls and Prohibitions on Gasoline Fuel Volatility), and the CAA under Section 211 (h), the EPA regulates the RVP of gasoline in each state. Maine petitioned EPA for approval to opt into the RFG program in the southern seven counties beginning on June 1, 2015. EPA issued the final rule on January 23, 2015. The minimal period of applicability for the RFG program is no less than four years after the commencement date; therefore, the southern seven Maine counties must remain in the RFG program until June 1, 2019.

In addition to the federal RFG program, several more federal requirements have been implemented with the goal of reducing emissions from mobile sources. The Mobile Source Air Toxics Rule[6], which lowered air toxics such as benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and naphthalene in conventional gasoline, became effective in 2011, and the 2017 EPA Tier 3 Motor Vehicle Emissions and Fuel Standards[7] limit the sulfur content in gasoline to 10 ppm. As vehicle emission controls become more stringent, the fuel standards have been revised accordingly to ensure new required controls are most effective. The Tier 3 reduction in the sulfur content of gasoline allows vehicle catalysts to operate more efficiently, reducing emissions from both existing and new vehicles.

3.0 Air Quality Evaluation

While Maine was in nonattainment of the federal ground-level ozone standard through 2004, Maine has met the standard since the 2005 ozone season and has been officially in attainment status since the beginning of 2007 (based on the 2003-2005 three-year averaging period). Maine's attainment status was most recently reaffirmed in a letter from the EPA Administrator dated November 6, 2017, regarding the 2015 ground-level ozone standards. Oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) are the primary contributors to the formation of ground-level ozone. The federal RFG program as well as the conventional gasoline requirements are designed to reduce emissions of VOCs, NO_x, and air toxics from vehicles. The Department conducted air quality analyses based on both ambient air quality monitoring of VOC data and EPA's Motor Vehicle Emissions Simulator (MOVES) NO_x and VOC modeling data to quantify any changes in emissions resulting from the use of RFG in southern Maine.

3.1 Ambient Air Monitoring of VOCs

To assess the air quality benefits of requiring RFG in southern Maine, the Department expanded its existing ambient air pollutants monitoring program to include an additional site, increased sampling frequency, and analysis of additional pollutants. These monitoring enhancements were intended to capture ambient air quality changes, if any, to the pollutant composition associated with the transition to RFG. Air quality before and after the implementation of the RFG requirement was compared in both RFG and conventional gasoline areas. Results did reveal fluctuations in air quality over the period investigated; however, the concentration differences were relatively small, do not suggest a public health impact, and were observed independent of the type of gasoline required. As detailed later in this section, results did not indicate any additional air quality improvement in RFG areas compared to conventional gasoline areas. It is likely the additional benefits of RFG are not evident in Maine's air quality due to the always improving controls on vehicles, stricter federal regulations on all gasolines, and older vehicles dropping out of the vehicle pool. Maine's relatively low population density may also play a role.

[6] Final rule available at https://www.gpo.gov/fdsys/pkg/FR-2007-02-26/pdf/E7-2667.pdf (144 pages).
[7] Final rule available at https://www.gpo.gov/fdsys/pkg/FR-2014-04-28/pdf/2014-06954.pdf (474 pages).

3.1.1 Ambient Air Assessment of VOCs: Methods

To investigate if emissions from vehicles combusting RFG lead to different ambient air quality than from those combusting convention gasoline, the Department began collecting 24-hour ambient air samples at six existing monitoring sites on June 1, 2014 as a baseline, i.e., ambient air quality conditions during vehicle combustion prior to RFG requirements. Table 1 summarizes the locations and the gasoline requirement at each location. Samples were collected in preparation for comparison of ambient air quality before and after the implementation of RFG in southern Maine.

Table 1. Monitoring locations

Site	2014 Gasoline	Current Gasoline	County
Cape Elizabeth	7.8psi RVP	RFG	Cumberland
Portland	7.8psi RVP	RFG	Cumberland
Lewiston	7.8psi RVP	RFG	Androscoggin
Rumford	Conventional	Conventional	Oxford
Bangor	Conventional	Conventional	Penobscot
Presque Isle	Conventional	Conventional	Aroostook

Sample analysis was completed using a high-resolution gas chromatograph coupled to a mass spectrometer. Fourteen indicator analytes were chosen to best assess changes in ambient air quality related to gasoline combustion/vehicle emissions (isobutane, n-butane, n-pentane, 2,3-dimethylbutane, 3-methylpentane, n-hexane, toluene, ethylbenzene, m,p-xylenes, o-xylene, benzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and naphthalene). Background analysis illustrated these compounds account for approximately 80% of the total concentration of pollutants in ambient air monitoring samples. Table 2 details the Maine Ambient Air Guideline (MAAG) values, if any, for each of these compounds[8] and whether they are included in the Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants.[9]

[8] Maine Center for Disease Control, Department of Health and Human Services (updated April 2010, http://www.maine.gov/dhhs/mecdc/environmental-health/eohp/air/documents/aagtable.pdf)
[9] The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants (https://www3.epa.gov/airtoxics/orig189 html)

Table 2. Maine Ambient Air Guideline (MAAG) values

Compound	MAAG (ppm)	Toxicity	Hazardous Air Pollutant
Isobutane		Nontoxic	
n-Butane		Nontoxic	
n-Pentane		Nontoxic	
2,3-Dimethylbutane		Nontoxic	
3-Methylpentane		Nontoxic	
n-Hexane	2.E-01	Noncarcinogenic Effects	X
Toluene	1.E+00	Noncarcinogenic Effects	X
Ethylbenzene	9.E-04	Carcinogenic Effects	X
m,p-Xylenes	2.E-02	Noncarcinogenic Effects	X
o-Xylene	2.E-02	Noncarcinogenic Effects	X
Benzene	4.E-04	Carcinogenic Effects	X
1,3,5-Trimethylbenzene	6.E-02	Noncarcinogenic Effects	
1,2,4-Trimethylbenzene	6.E-02	Noncarcinogenic Effects	
Naphthalene	6.E-05	Carcinogenic Effects	X

3.1.2 Ambient Air Assessment of VOCs: Results

The results of data analysis comparing ambient air quality before and after the RFG requirement do not indicate an additional environmental benefit resulting from the implementation of RFG in the southern seven counties. Results show concentrations of most of the 14 indicator analytes were lower at RFG sites than at conventional gasoline sites; however, this trend held true for both the before and after data, suggesting the implementation of the RFG requirement may not be the driver of detected spatial ambient air quality differences. The concentration differences noted were negligible, and the averages over the three-year period were well below the Maine Ambient Air Guideline values.

Data in Figures 2 and 3 illustrate the differences between average compound concentrations before (gray) and after (blue and green) the implementation of RFG in both RFG and conventional gasoline locations. (Additional results and details of this analysis are available in Appendix B.) Average concentrations of some indicator compounds may have increased rather than decreased with RFG use (e.g., n-pentane and 2,3-dimethylbutane), although no differences were found to be statistically significant and meaningful. The implementation of RFG in the southern seven counties has not resulted in a statistically significant difference in air quality compared to that of conventional locations. There are many additional factors affecting ambient air quality, such as meteorological conditions, vehicle controls, and other forms of combustion at various locations around the state.

Figure 2. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for RFG locations (average concentrations for each compound)

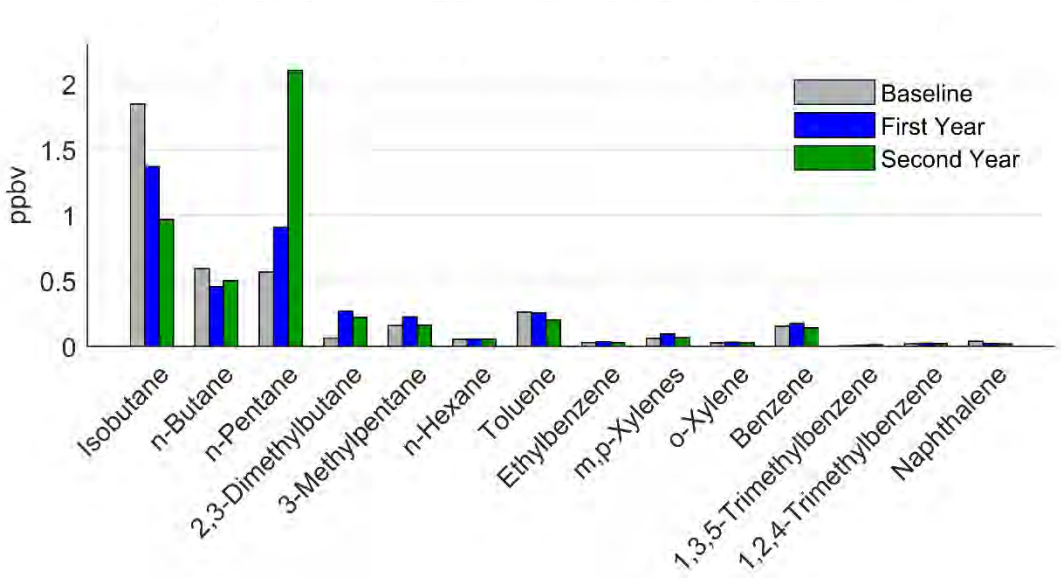
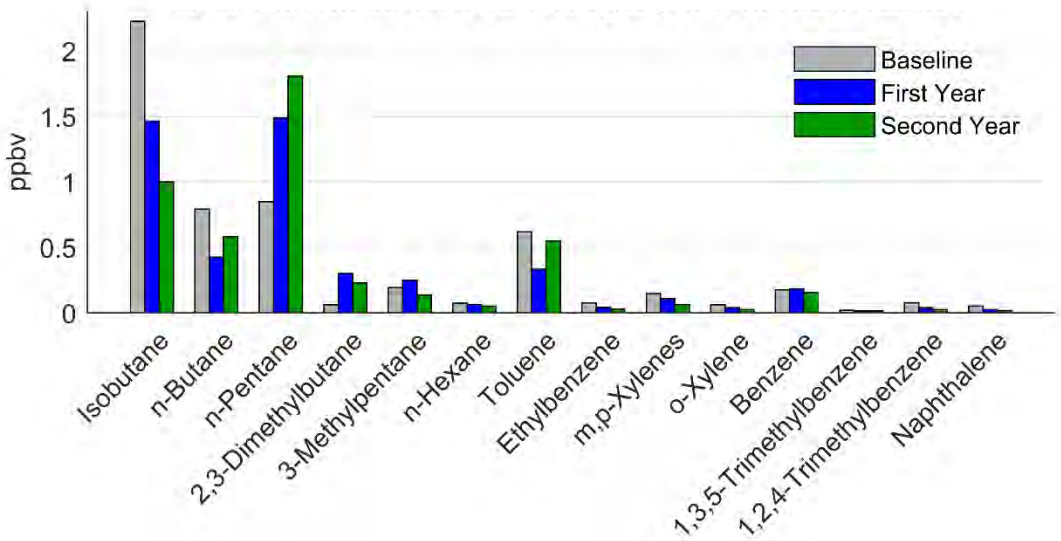


Figure 3. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for conventional gasoline locations (average concentrations for each compound)



3.2 Modeling of NO_x and VOCs

Using EPA's Motor Vehicle Emissions Simulator (MOVES) program, the Department compared modelled emissions from mobile sources in Maine over selected years using different gasoline types. The analysis was completed for nine Maine counties, seven counties where RFG is currently required to be sold (Androscoggin, Cumberland, Kennebec, Knox, Lincoln, Sagadahoc, and York) along with two additional counties directly to the east (Hancock and Waldo) to include Acadia National Park, which is an area of interest for ground-level ozone. Modelled emissions estimates predict Maine's emissions of NO_x and VOCs declining in the future with the use of conventional gasoline, meeting the EPA requirement of continued emission reductions if Maine chooses to opt out of the RFG program. These emissions reductions were projected using modelled increases in both the vehicle population and vehicle miles traveled as listed in Table 3.

Table 3. Vehicle population and VMT projections used in MOVES model for 2015 and 2023

County	Vehicle Populations		VMT Projections	
	2015	2023	2015	2023
Androscoggin	93,094	97,894	945,652,786	994,416,019
Cumberland	274,655	289,776	3,277,003,982	3,457,415,044
Hancock	54,555	57,923	705,030,394	748,545,301
Kennebec	117,181	122,601	1,468,393,025	1,536,309,262
Knox	38,313	40,101	358,620,884	375,349,780
Lincoln	36,465	37,909	380,557,377	395,624,444
Sagadahoc	34,679	35,727	470,717,582	484,937,862
Waldo	37,545	39,834	399,826,136	424,199,226
York	202,079	210,172	2,360,809,357	2,455,358,052
RFG Area Total	888,567	931,936	10,366,611,521	10,872,154,989
Maine Total	1,264,689	1,324,830	14,828,805,345	15,531,250,173

Figure 4 highlights an example of this preliminary analysis for the on-road sector in Cumberland County, the likely worst-case scenario in terms of NO_x and VOC emissions, and clearly shows emissions reductions in both pollutants. Figure 5 shows a similar declining trend in both NO_x and VOCs for all nine counties included in the analysis. For the model run assuming RFG requirements in southern Maine for 2015 through 2018 and conventional gasoline allowed for sale between 2019 and 2023, modeling results predict Maine's emissions of both NO_x and VOCs will decline by approximately 50% between 2015 and 2023. Modeling results comparing RFG use with conventional gasoline use in 2019 show no statistically significant difference in NO_x and VOC emissions (see Tables B4 and B5 in Appendix B for specific values). These modeling results echo the ambient air analysis results suggesting no additional air quality benefit resulting from the use of RFG.

Figure 4. Total emissions of NO_x and VOCs from the vehicles in Cumberland County with RFG and conventional gasoline (tons per typical summer day)

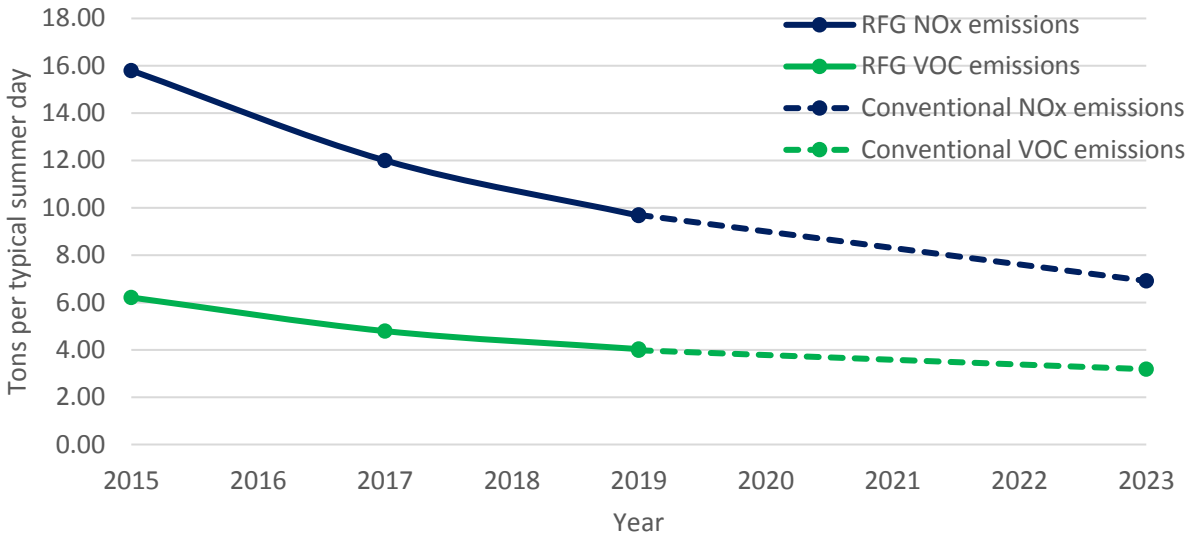
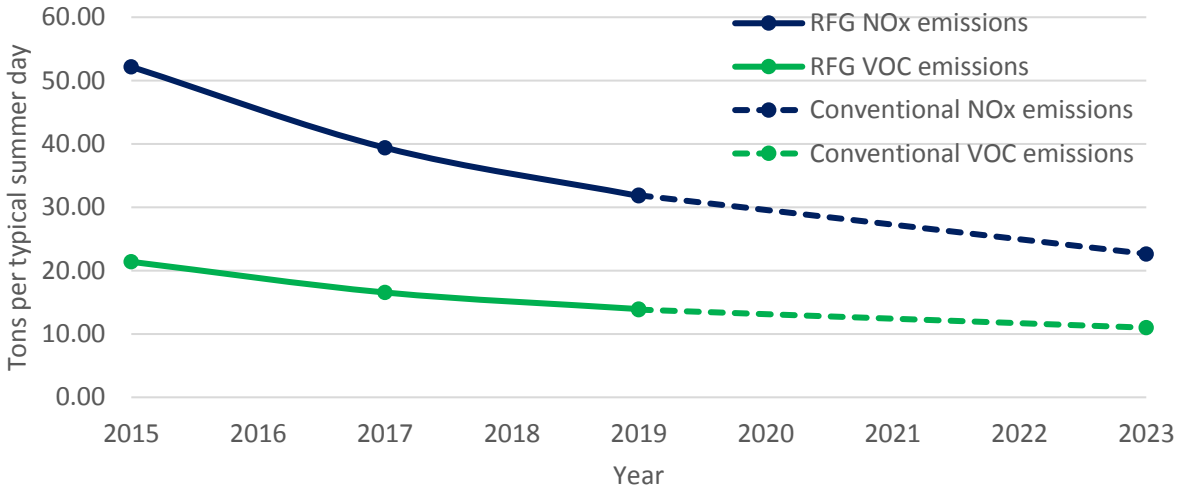


Figure 5. Total emissions of NO_x and VOCs from the vehicles in nine southern Maine counties with RFG and conventional gasoline (tons per typical summer day)



4.0 Summary of Discussions with Gasoline Suppliers and Distributors

In seeking to better understand the effects of current gasoline requirements and the gasoline supply in Maine, the Department met with members of the regulated community during the summer of 2017. These entities included representatives of Maine Energy Marketers Association (MEMA), terminal operators, refiners, and gasoline distributors. The Department began its investigation by meeting with operators and corporate management of multiple terminals in Maine, including Cold Brook Energy, Inc., Citgo Petroleum Corporation, Buckeye Terminals, LLC, Gulf Oil Limited

Partnership, and Irving Oil Terminals Inc. (Irving Oil also owns and operates a refinery in St. John, New Brunswick, which currently has a significant role in Maine's gasoline supply.) The Department spoke with gasoline distributors, including representatives of Dead River Company, H.A. Mapes, Inc., Fabian Oil, Maritime Energy, and C.N. Brown Company, to gain a more complete understanding of the transportation logistics involved with gasoline. The Department also met with MEMA, a trade group representing various entities involved with the supply and distribution of gasoline in Maine. These meetings provided valuable insight into the benefits and challenges of the current gasoline requirements. While concerns were not consistent, and there was no consensus on a mandate for a single type of gasoline, whether RFG or conventional, industry agreed added flexibility in the gasoline market would be beneficial. Lifting the RFG requirement in the southern seven counties would provide this added flexibility and allow the market to drive the gasoline supply, ensuring the most cost-effective gasoline is available to Maine consumers.

4.1 Supply and Storage

Most terminals rely on a single large supplier in New Brunswick for the majority of their gasoline supply, although some gasoline is acquired from New York Harbor, a supply source originating from a variety of refiners. Terminal owners and operators have differing views on Maine's gasoline requirements and have different terminal configurations and operations to manage the current variety of gasoline stocks. During discussions with the Department, all terminals indicated there is currently sufficient supply of both RFG and conventional gasoline to meet their customers' needs; however, there are some concerns about limited "premium" gasoline supply due to tank availability. The "premium" gasoline supply is primarily a concern during summer months and over holiday weekends when demand for this product peaks. Lifting the RFG requirement could allow more efficient use of tank storage space and would provide more flexibility for terminals to adjust tank storage to best meet the needs of their customers.

RFG is a year-round program, so terminals are required to maintain segregated gasoline storage capacity for both RFG and conventional gasolines year-round. Easing storage constraints by lifting the RFG requirement could enable terminals to more easily remove tanks from service for inspection, cleaning, repair, or upgrade without disrupting operations. Without a need for segregation, terminals could have increased storage capacity for conventional gasoline and thereby realize greater operational flexibility. This increase in storage flexibility may help to buffer against minor irregularities in supply where smaller interruptions currently could impact part of the state. Increased storage flexibility may also allow Maine-based businesses to expand their distribution range, and simplifications in terminal operations could result in lower operating costs.

Distributors in Maine primarily source their supply from Maine terminals in Hampden, Searsport and South Portland; however, some distributors obtain stock from out-of-state sources, including locations in Massachusetts, New York, and Montreal, primarily to service out-of-state customers, such as those in Massachusetts, Vermont, New York, and New Hampshire. Some terminals feel they have a competitive advantage by being able to offer multiple gasoline types to distributors both inside and outside the state and may continue to store and supply both RFG and conventional gasoline if the RFG requirement is lifted.

While the availability of RFG was a concern prior to the June 1, 2015, implementation date, refiners have been able to increase the production of RFG, and supply has not been an issue. In

fact, with the retail sale of RFG required in Maine's most populated counties, the volume of conventional gasoline produced by Maine's primary supplier has decreased, causing price volatility. Conventional gasoline is also available to Maine terminals through New York Harbor and other refiners, so supply has not been limited. Without a state gasoline mandate for either RFG or conventional gasoline, the market would drive the gasoline distribution in Maine and mitigate supply-based price fluctuations.

4.2 Refinery Supply

The closest refinery to Maine is in St. John, New Brunswick and is a major supplier of gasoline sold in Maine. This refinery currently produces 14 grades of gasoline, including seasonal variations of both RFG and conventional gasoline, to supply customers in New England and Canada. The refinery currently transports conventional gasoline to Searsport and supplies both RFG and conventional gasoline to terminals in South Portland. RFG and conventional gasoline each have year-round dedicated systems at the refinery, with segregated tanks, pipes, and trucks to service each type of gasoline.

At its meeting with the Department, the refinery operator noted that lifting the RFG requirement in Maine would allow more flexibility in the gasoline market. Such flexibility would improve efficiencies, decrease complexity, and increase the reliability of the gasoline supply. When the refinery is taken offline for maintenance, upgrades, or repairs in the event of malfunctions, Maine would be dependent on other sources of gasoline for the duration of the shutdown. These other sources could be constrained by several transportation-related factors, including capacity limitations on the Colonial Pipeline from the Gulf Coast; the limited availability of Jones Act vessels out of New York Harbor; and an ever-shifting demand for oil barges due to the changes in domestic crude oil production volumes. Removing the RFG requirement statewide could result in a diversification of gasoline suppliers, lessening the impact from downtime of a single major supplier. Regardless of Maine's gasoline requirements, the New Brunswick refiner will likely continue to produce both RFG and conventional gasoline to meet market demands outside of Maine.

4.3 Distribution

The industry participants whom the Department met with generally agreed lifting the RFG requirement in the southern seven counties would allow the flexibility to distribute either gasoline, benefiting gasoline haulers operating in Maine.

The segregation requirements of having to distribute two different gasoline formulations extends past separate tanks to include the need for separate distribution equipment, such as trucks and hoses. Distribution logistics are complicated by the need to distribute multiple grades of each type of gasoline. It takes longer to pump off multiple grades of two types of gasoline, and trucks, hoses, and other distribution equipment must also be thoroughly cleaned prior to shifting use between RFG and conventional gasoline. The increased complexity of distribution has also created an employment issue. Distributors mentioned it is now more difficult to attract and retain employees, especially drivers, due to the complexities of dealing with multiple gasoline requirements.

Currently, a year-round, intrastate border issue exists between areas required to sell RFG and those not required to sell RFG. Small gasoline transporters operating near this border cannot use a

single truck to simultaneously transport gasolines and supply stations on both sides of the border. The RFG requirements and the cost difference between the two gasolines mean that it is either illegal or cost prohibitive to distribute gasoline intended for the other side of this border; specifically, it is illegal to distribute or sell conventional gasoline in an RFG area. If this barrier is removed by lifting the RFG requirement, it may allow local gasoline delivery businesses to more efficiently service more stations with existing equipment. The gasoline border also poses a logistical challenge to long-range haulers; if it is eliminated, they could distribute gasoline anywhere in the state, resupply their trucks, and back haul without running into issues created by a gasoline border. For both local and long-haul distribution, eliminating the intrastate gasoline border could permit Maine businesses to use their existing equipment more effectively and increase delivery efficiencies.

Distributors raised the issue of the interstate boundary competition at discussions with the Department. Current gasoline tax differences between Maine and New Hampshire combined with the difference in the retail prices of RFG and conventional gasoline lead consumers to price shop over state borders to obtain the lowest prices on gasoline.

Some distributors felt they have a competitive advantage by distributing two types of gasoline. The implementation of Maine's RFG requirement opened unforeseen distribution opportunities in neighboring states, such as Southern New Hampshire and even into Massachusetts, which both require RFG. Maine distributors also currently supply conventional gasoline outside of the state to northern New Hampshire and Vermont. Should Maine's RFG requirement be lifted, many distributors would likely retain distribution of these two gasoline supplies to allow them to continue to benefit from these out-of-state market opportunities.

4.4 Ethanol-free Gasoline

The federal RFG formulation contains ethanol as an octane enhancer, and currently there is no non-ethanol-blended RFG available in the market. Ethanol may be problematic for use in some recreational and non-road vehicles. While aircraft and race cars are excluded from the RFG legislation, the RFG requirement in the southern seven counties does not allow exceptions for non-road vehicles, such as boats and snowmobiles. During discussions with the Department, both the New Brunswick refiner and terminal operators mentioned receiving requests for ethanol-free gasoline. In counties where conventional gasoline can be sold, ethanol-free gasoline is available to these specialized markets, including marinas and retailers servicing snowmobiles. These recreation-based markets currently have an unmet demand for ethanol-free gasoline in southern Maine. Lifting the current RFG requirement would enable the sale of ethanol-free gasoline in the southern seven counties, reopening a small, but valuable, market for distributors.

4.5 Price Difference between RFG and Conventional Gasoline

Prior to the implementation of the RFG requirement in 2015, estimates comparing the price of conventional 9.0 psi RVP gasoline to RFG ranged from "a few cents" up to eight to ten cents, with the possibility of spikes during potential supply irregularities. While RFG did demand a premium price initially, the price difference between RFG and conventional gasoline has equilibrated. Industry members provided the Department with rack prices, the cost of gasoline at the terminal, for both conventional gasoline and RFG (see Table 4). The price difference between

conventional gasoline and RFG fluctuates and has been trending down, likely due to market forces such as economies of scale.

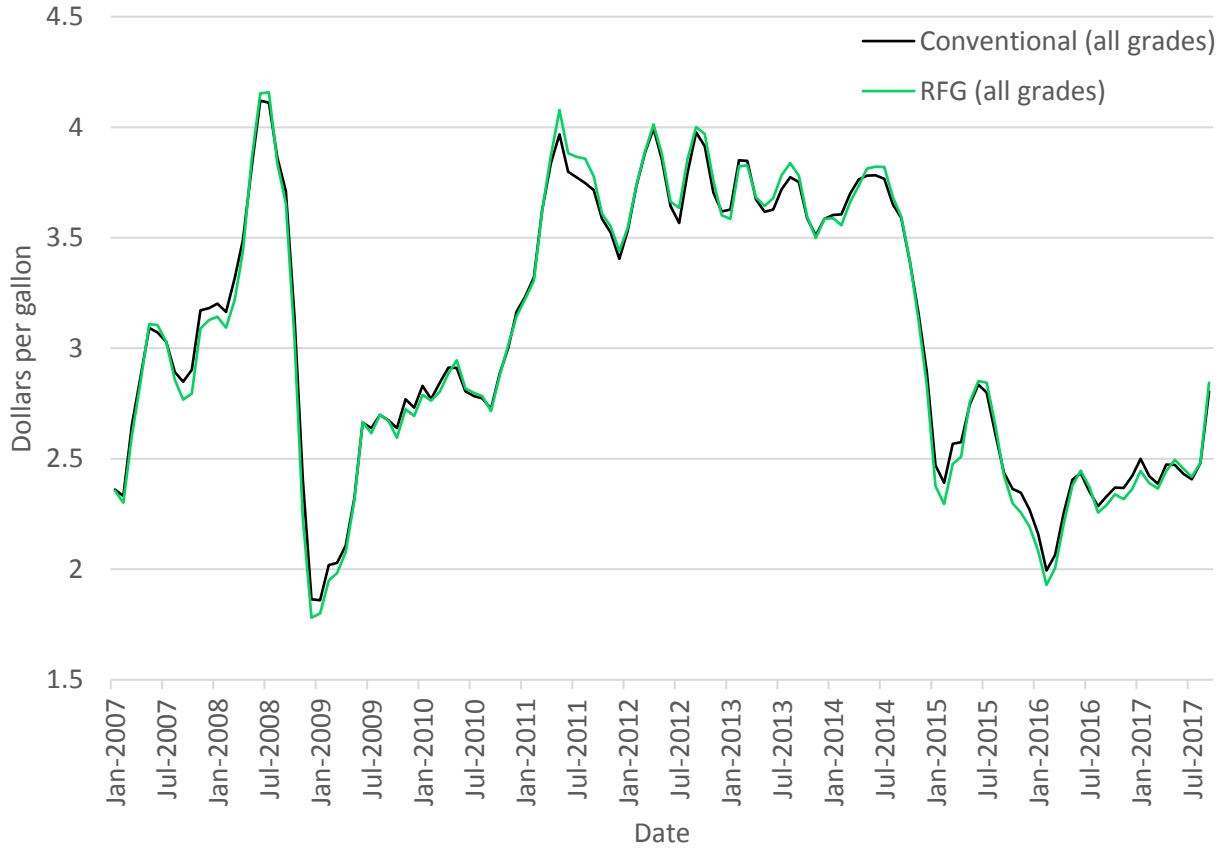
Table 4. Average daily rack prices for RFG and conventional gasoline (in dollars per gallon)

	2012	2013	2014	2015*	2016	2017*
RFG	$3.01	$2.97	$2.93	$1.74	$1.45	$1.64
Conventional (9.0) Gasoline	$2.92	$2.91	$2.92	$1.71	$1.47	$1.66
RFG Price Difference	+$0.09	+$0.06	+$0.01	+$0.03	-$0.02	-$0.02

*Partial year: January – September 2017; May – December 2015

The United States Energy Information Administration (EIA) collects the retail prices of gasoline across the country and sorts the data by region, illuminating the price difference between conventional gasoline and RFG. Like the rack pricing, it has shortcomings. The EIA only collects data for conventional gasoline and RFG and does not distinguish between conventional gasoline RVPs. The average retail price difference in New England (PADD 1A) for all grades of RFG and conventional gasoline was 1.1 cents from January 2007 – September 2017 (see Figure 6 for EIA price trends). While RFG was frequently more expensive than conventional gasoline between 2011 and 2015, Figure 6 illustrates that these price differences are continuously fluctuating.

Figure 6. New England (PADD 1A) gasoline retail prices (2007-2017).



Source: U.S. Energy Information Administration

5.0 Conclusions and Recommendation

There is currently an adequate supply of both RFG and conventional gasoline to meet demand; however, the need for terminals and distributors to segregate the two types of gasolines and their multiple blends leads to logistical challenges and reduced operational flexibility. While price differences were a concern prior to the implementation of the RFG requirement, data provided by both industry and the EIA indicate RFG and conventional gasoline have been, on average, similarly priced.

Based on discussions with industry as well as the analysis of ambient air VOC monitoring data and modeled NO_x and VOC data comparing air quality before and after the implementation of the RFG requirement, the Department's recommendation is to remove the requirement for RFG in Maine's southern seven counties and allow the unencumbered retail sale of both conventional gasoline and RFG throughout the state. Maine has consistently met the federal ground-level ozone standards since the 2005 ozone season, and thus is not required to be part of the federal RFG program.

Maine is not alone in assessing the effectiveness of state gasoline requirements and altering the regulations, where and when it is deemed appropriate. Several other cities and states have transitioned from RFG or 7.8 psi RVP (boutique) gasoline to conventional gasoline in recent years (see Table 5).

Table 5. Recent transitions from RFG or 7.8 RVP (boutique) requirements to conventional gasoline requirements

Effective Date	Location	Previous Gasoline	Current Gasoline
Proposed: 2018	Pennsylvania: Pittsburgh-Beaver Valley Area	Boutique	Conventional
February 2017	Ohio: Cincinnati and Dayton areas	Boutique	Conventional
October 2015	North Carolina: Mecklenburg and Gaston Counties	Boutique	Conventional
July 2015	Alabama: Birmingham area	Boutique	Conventional
March 2014	Georgia: Atlanta area	RFG	Conventional
May 2014	Florida: Miami, Jacksonville, Tampa	Boutique	Conventional
May 2014	North Carolina: Raleigh-Durham, Greensboro, Winston, Salem, Highpoint areas	Boutique	Conventional

A flexible gasoline requirement statewide would lead to increased efficiencies, ease of logistics and transportation, and the flexibility to sell ethanol-free gasoline to recreational markets in southern Maine. Improvements in efficiencies, logistics, and transportation are expected to result in both fewer transportation-related emissions as well as cost savings. Removing the RFG requirement

would allow the market to drive gasoline distribution in Maine, e.g., if RFG is less expensive or more convenient to distribute for some distributors during some parts of the year, that would be an option; if conventional gasoline is less expensive or more convenient, that would also be an option. The Department recommends the RFG requirement be lifted so that supply and demand governs the sale of RFG and conventional gasoline throughout the state. This would ensure the most cost-effective gasoline is available for Maine consumers.

If legislation is approved to remove the RFG requirement, the Department will coordinate with EPA to revise the State Implementation Plan. Preliminary discussions with EPA have clearly outlined this straight-forward revision process, which will include an assessment of Maine's emissions of NO_x and VOCs from all sectors (point, non-point, on-road, and non-road sources) for selected Maine counties. The goal of this assessment is to compare emissions during the years RFG was required in the southern seven counties with projected future emissions assuming the sale of conventional gasoline. Initial estimates project Maine's emissions of NO_x and VOCs declining in the future with the use of conventional gasoline, meeting the EPA requirement of continued emission reductions if Maine chooses to opt out of the RFG program. With older vehicles dropping out of the vehicle population over time, stricter federal gasoline requirements, and better emission control requirements on new vehicles, NO_x and VOC emissions are continuing to decline throughout Maine independent of the gasoline required. Without a measurable environmental benefit, the Department does not recommend the continued requirement to sell RFG in Maine's southern seven counties. EPA will need to approve changes to Maine's SIP to allow Maine to opt out of the RFG program, a process that is expected to take one year or more.

6.0 Appendices

Appendix A

L.D. 1359 and L.D. 1796

An Act To Update and Simplify Maine Gasoline Requirements

Emergency preamble. Whereas, acts and resolves of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas, in order to meet federal Clean Air Act requirements, from May 1st to September 15th, retailers who sell gasoline in 7 southern counties in the State may sell only gasoline that has a Reid vapor pressure no greater than 7.8 psi; and

Whereas, before the State can require the 7 counties to sell only reformulated gasoline during the summer months, the Department of Environmental Protection must submit a request to the United States Environmental Protection Agency; and

Whereas, sufficient lead time is necessary for submittal of the State's request by the Department of Environmental Protection and review of the State's request by the United States Environmental Protection Agency prior to the 2014 summer season; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health and safety; now, therefore,

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §582, sub-§10-B is enacted to read:

10-B. Reformulated gasoline. "Reformulated gasoline" has the same meaning as in 40 Code of Federal Regulations, Section 80.2(ee) (2012).

Sec. 2. 38 MRSA §585-N is enacted to read:

§ 585-N. Reformulated gasoline

Beginning May 1, 2014, a retailer who sells gasoline in York, Cumberland, Sagadahoc, Androscoggin, Kennebec, Knox or Lincoln County may sell only reformulated gasoline in those counties.

Sec. 3. Report. The Department of Environmental Protection shall study the feasibility of easing the multiple gasoline requirements in this State and achieving the use of a single type of gasoline for all of the State. The Department of Environmental Protection shall submit a report and implementing legislation directing the State to use a single type of gasoline to the Joint Standing Committee on Environment and Natural Resources by December 4, 2013. The Joint Standing Committee on Environment and Natural Resources may report out a bill on the subject matter of the department's report to the Second Regular Session of the 126th Legislature.

Emergency clause. In view of the emergency cited in the preamble, this legislation takes effect when approved.

Effective 90 days following adjournment of the 126th Legislature, First Regular Session, unless otherwise indicated.

An Act To Delay Implementation of Reformulated Gasoline Requirements in Maine

Emergency preamble. Whereas, acts and resolves of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas, current law requires the sale of reformulated gasoline in 7 southern counties in the State beginning on May 1, 2014; and

Whereas, due to recent developments in the gasoline supply network, gasoline distributors in the State are unable to meet this requirement without significant expense, which could impact pricing across the State; and

Whereas, in order to meet federal Clean Air Act requirements, from May 1st to September 15th, retailers who sell gasoline in 7 southern counties in the State may sell only gasoline that has a Reid vapor pressure no greater than 7.8 psi; and

Whereas, before the State can require the 7 counties to sell only reformulated gasoline during the summer months, the Department of Environmental Protection must submit a request to the United States Environmental Protection Agency; and

Whereas, sufficient lead time is necessary for submission of the State's request by the Department of Environmental Protection and review of the State's request by the United States Environmental Protection Agency prior to the 2015 summer season; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health and safety; now, therefore,

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §585-N, as enacted by PL 2013, c. 221, §2, is amended to read:

§ 585-N. Reformulated gasoline

Beginning ~~May 1, 2014~~ June 1, 2015, a retailer who sells gasoline in York, Cumberland, Sagadahoc, Androscoggin, Kennebec, Knox or Lincoln County may sell only reformulated gasoline in those counties.

Sec. 2. Report. The Department of Environmental Protection shall study the feasibility of easing the multiple gasoline requirements in this State and achieving the use of a single type of gasoline for all of the State. The Department of Environmental Protection shall submit a report and implementing legislation directing the State to use a single type of gasoline to the joint standing committee of the Legislature having jurisdiction over environment and natural resources matters

by January 30, 2015. The joint standing committee may report out a bill on the subject matter of the department's report to the First Regular Session of the 127th Legislature.

Emergency clause. In view of the emergency cited in the preamble, this legislation takes effect when approved.

Effective 90 days following adjournment of the 126th Legislature, Second Regular Session, unless otherwise indicated

Appendix B

Air Quality Evaluation
(Additional Results)

Ambient Air Quality Analysis (Additional Results)
See Section 3.1 Ambient Air Monitoring for additional results and discussion.

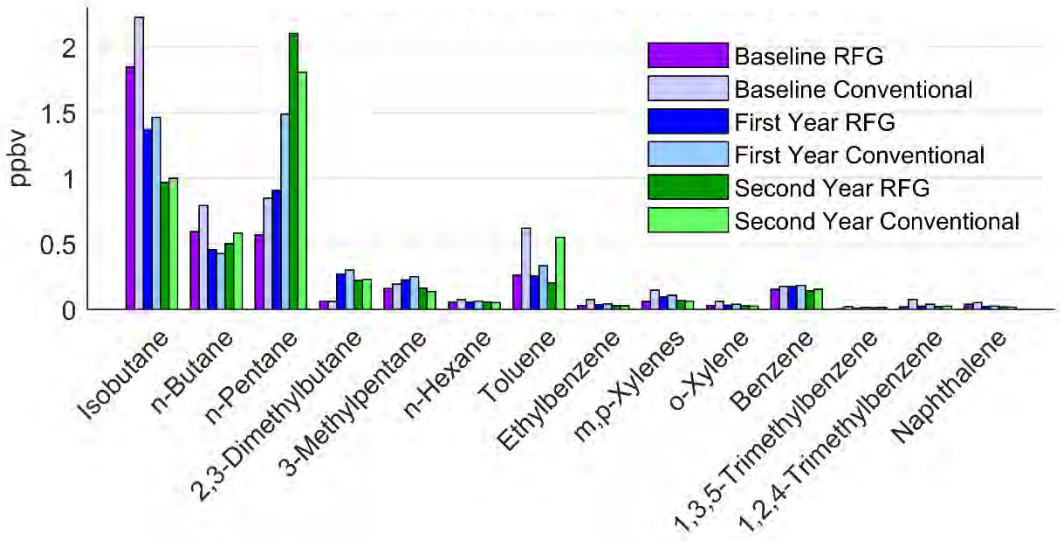


Figure B1. Annual average concentrations before (baseline) and during the first and second years after RFG implementation separated by RFG and conventional locations (average concentrations for each compound)

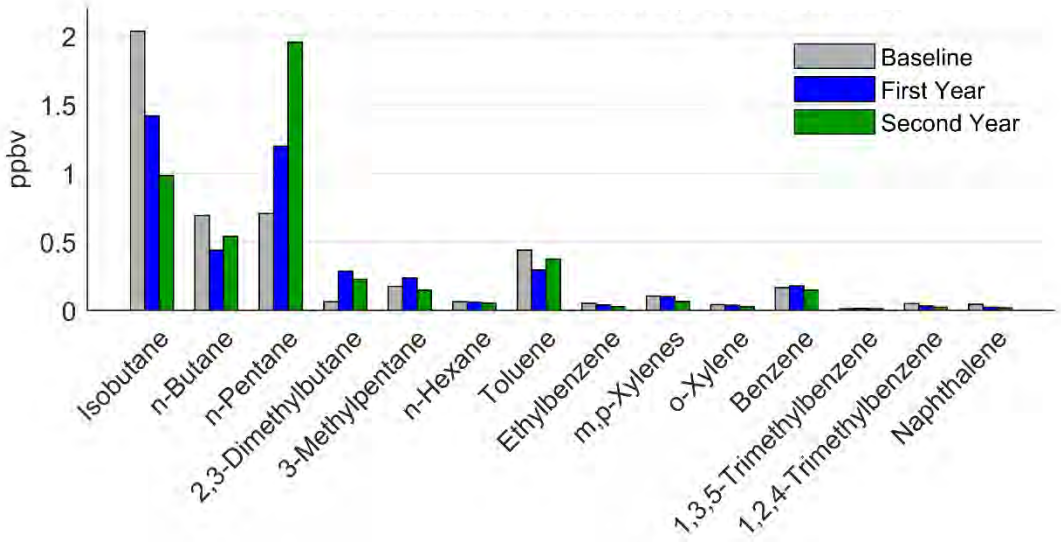


Figure B2. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation (all locations averaged, average concentrations for each compound)

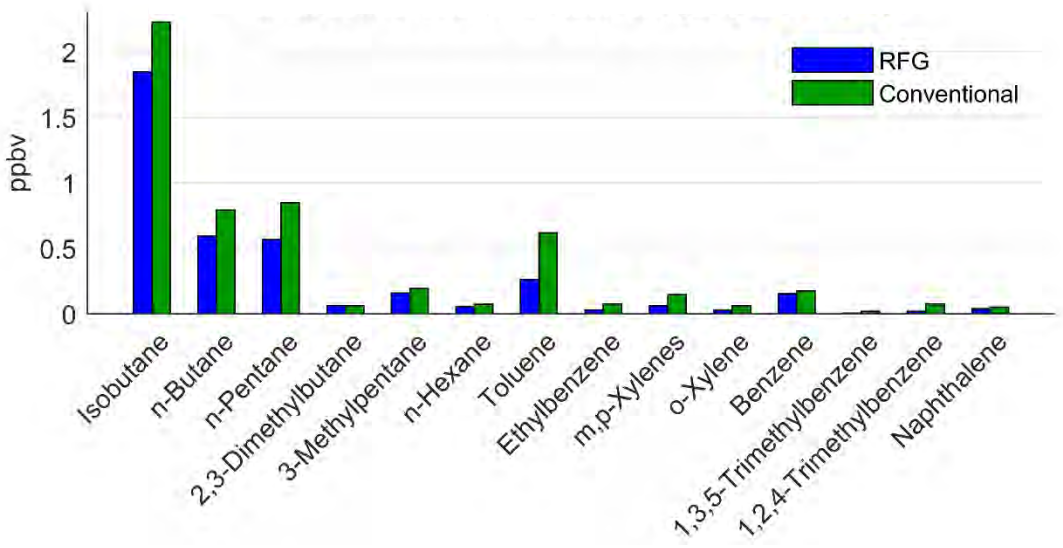


Figure B3. Annual average concentrations in RFG and conventional locations before (baseline) RFG implementation (average concentrations for each compound)

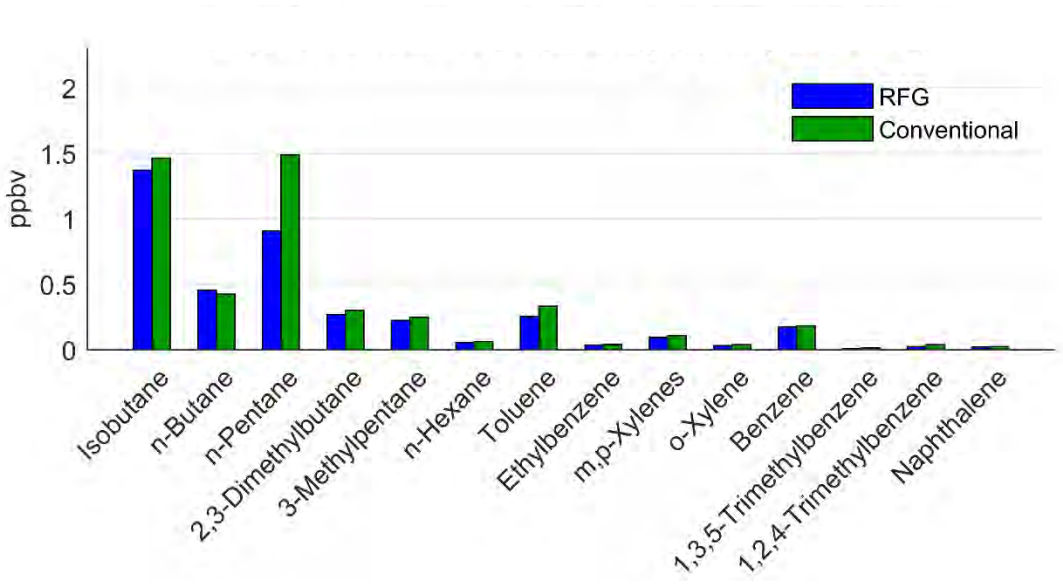


Figure B4. Annual average concentrations in RFG and conventional locations during the first year after RFG implementation (average concentrations for each compound)

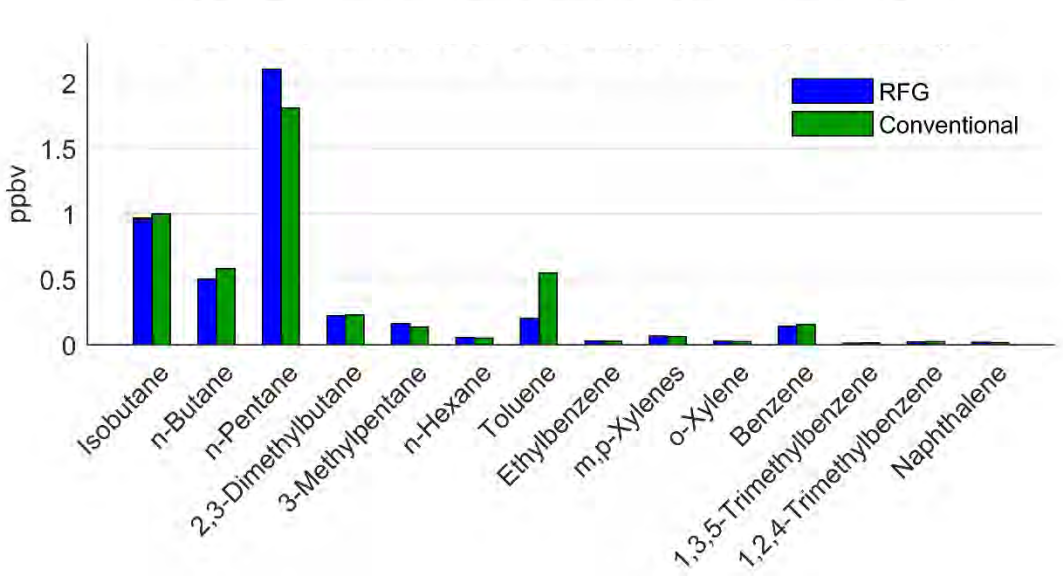


Figure B5. Annual average concentrations in RFG and conventional locations during the second year after RFG implementation (average concentrations for each compound)

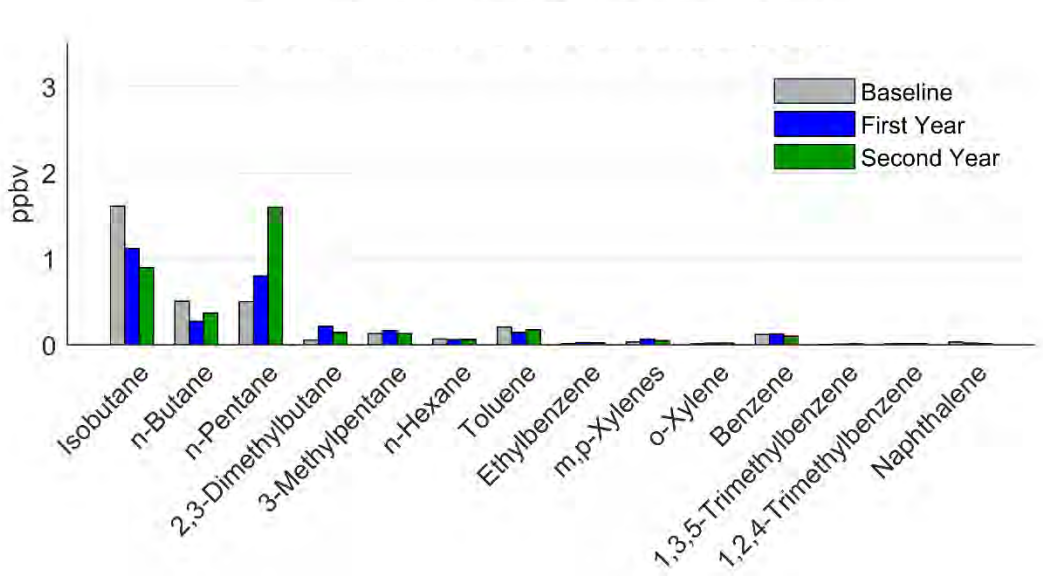


Figure B6. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Cape Elizabeth (average concentrations for each compound)

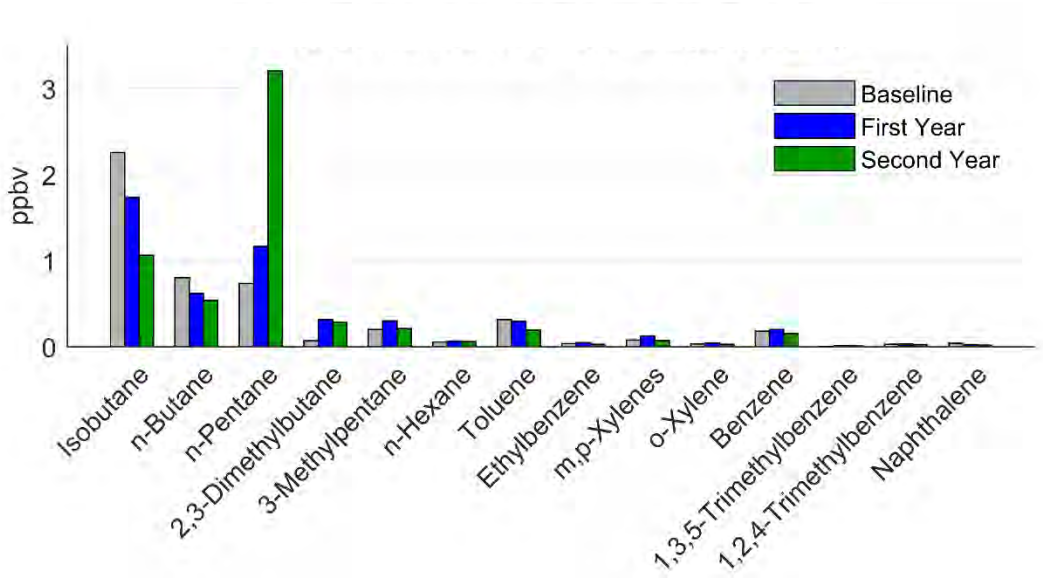


Figure B7. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Portland (average concentrations for each compound)

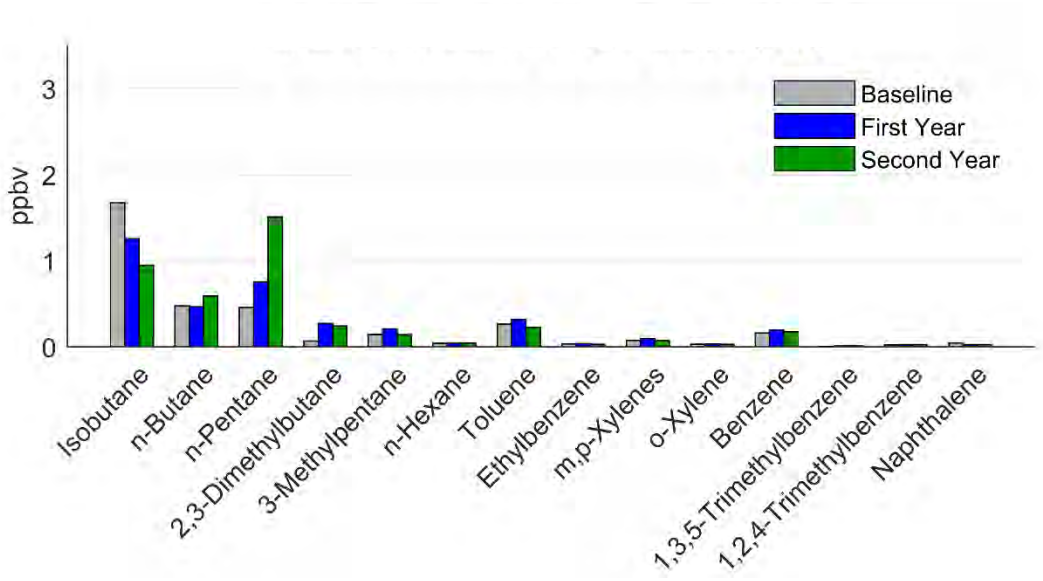


Figure B8. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Lewiston (average concentrations for each compound)

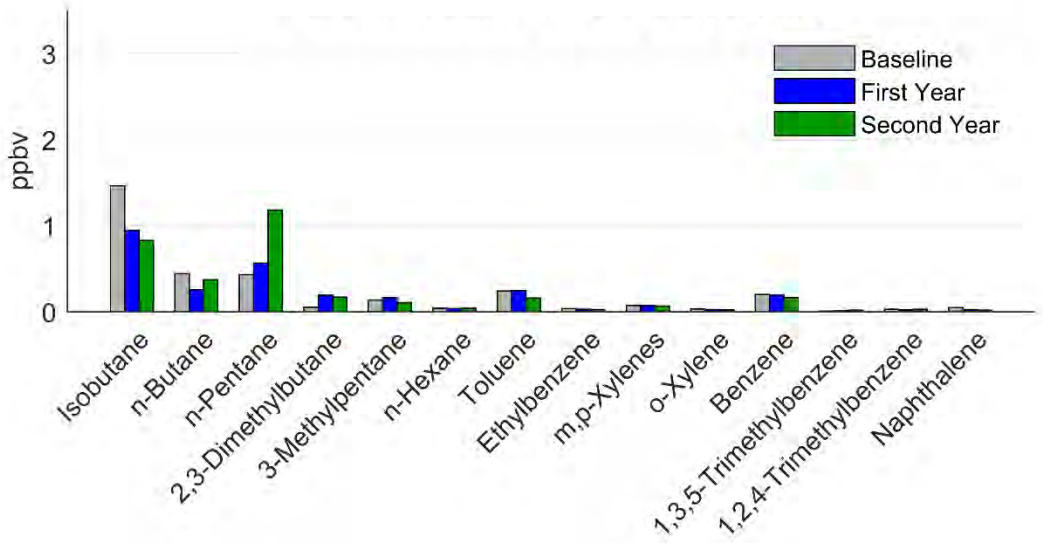


Figure B9. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Rumford (average concentrations for each compound)

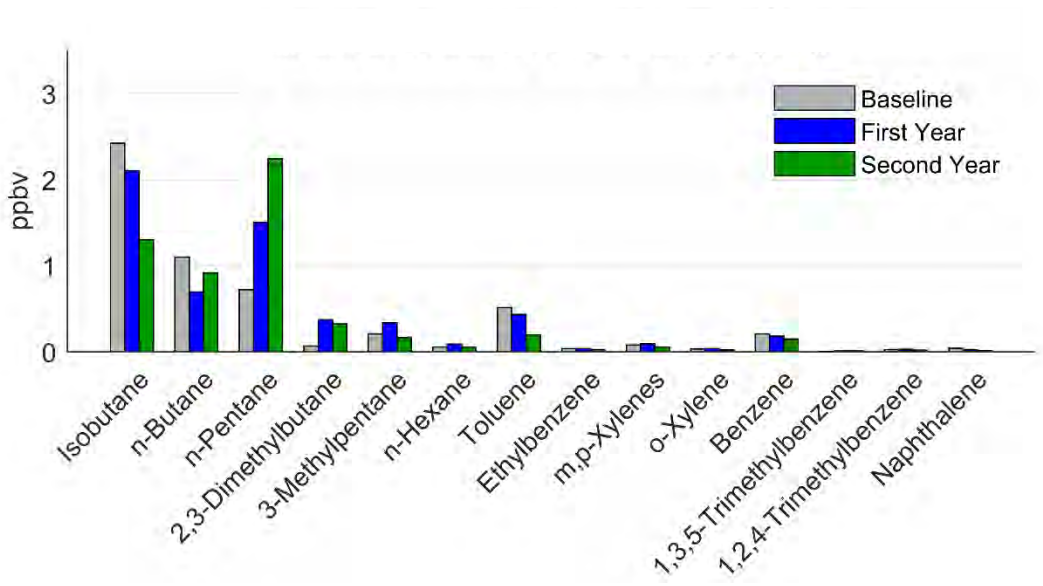


Figure B10. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Bangor (average concentrations for each compound)

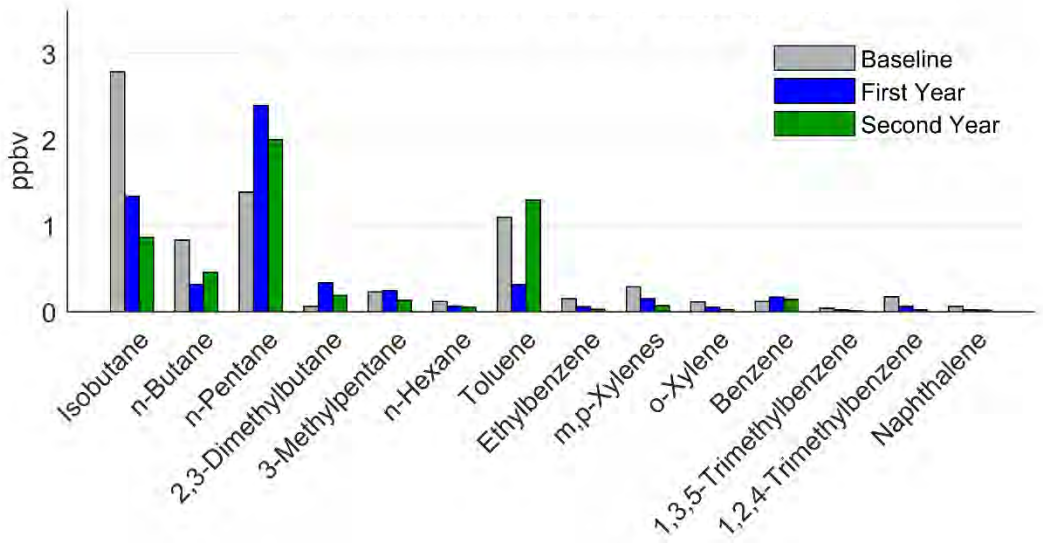


Figure B11. Annual average concentrations before (baseline: June 2014 – May 2015) and after (first year: June 2015 – May 2016; second year: June 2016 – May 2017) RFG implementation for Presque Isle (average concentrations for each compound)

Mann-Whitney statistical analysis comparing analytes in RFG and Conventional areas
Statistical results summary: There were no statistically significant differences in all RFG or all conventional locations that were not also measurable in the other gasoline areas. This lack of clear pattern for any analyte suggests the ambient air quality differences detected were site-specific or statewide and not specifically related to the differences between RFG and conventional gasoline.

Table B1. P-values from the Mann-Whitney test comparing baseline (June 2014 – May 2015) and first-year (June 2015 – May 2016) concentrations for each analyte by location. Red values indicate a statistically significant difference between years based on a 5% significance level.

	RFG locations			Conventional locations		
Analytes in elution order	Cape Elizabeth	Portland	Lewiston	Rumford	Bangor	Presque Isle
Isobutane	0.00	0.00	0.01	0.00	0.00	0.37
n-Butane	0.00	0.00	0.08	0.00	0.00	0.47
n-Pentane	0.72	0.48	0.18	0.17	0.18	0.00
2,3-Dimethylbutane	0.00	0.00	0.00	0.00	0.00	0.00
3-Methylpentane	0.81	0.45	0.06	0.43	0.17	0.00
n-Hexane	0.21	0.40	0.32	0.08	0.97	0.70
Toluene	0.06	0.67	0.78	0.25	0.48	0.02
Ethylbenzene	0.03	0.54	0.69	0.03	0.26	0.57
m,p-Xylenes	0.93	0.35	0.54	0.42	0.34	0.56
o-Xylene	0.00	0.60	0.89	0.22	0.19	0.62
Benzene	0.15	0.13	0.02	0.31	0.51	0.00
1,3,5-Trimethylbenzene	0.00	0.00	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	0.00	0.04	0.15	0.39	0.60	0.19
Naphthalene	0.00	0.17	0.01	0.00	0.01	0.01

Table B2. P-values from the Mann-Whitney test comparing baseline (June 2014 – May 2015) and second-year (June 2016 – May 2017) concentrations for each analyte by location. Red values indicate a statistically significant difference between years based on a 5% significance level.

	RFG locations			Conventional locations		
Analytes in elution order	Cape Elizabeth	Portland	Lewiston	Rumford	Bangor	Presque Isle
Isobutane	0.00	0.00	0.00	0.00	0.00	0.01
n-Butane	0.16	0.00	0.68	0.03	0.01	0.21
n-Pentane	0.00	0.00	0.00	0.00	0.00	0.00
2,3-Dimethylbutane	0.00	0.00	0.00	0.00	0.00	0.00
3-Methylpentane	0.45	0.26	0.75	0.11	0.36	0.75
n-Hexane	0.14	0.28	0.95	0.66	0.71	0.58
Toluene	0.00	0.00	0.07	0.00	0.00	0.39
Ethylbenzene	0.01	0.03	0.31	0.00	0.00	0.17
m,p-Xylenes	0.95	0.02	0.14	0.00	0.00	0.43
o-Xylene	0.00	0.04	0.33	0.01	0.00	0.75
Benzene	0.16	0.09	0.72	0.15	0.18	0.08
1,3,5-Trimethylbenzene	0.00	0.00	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	0.00	0.80	0.46	0.22	0.37	0.05
Naphthalene	0.00	0.00	0.00	0.00	0.00	0.00

Table B3. P-values from the Mann-Whitney test comparing first-year (June 2015 – May 2016) and second-year (June 2016 – May 2017) concentrations for each analyte by location. Red values indicate a statistically significant difference between years based on a 5% significance level.

	RFG locations			Conventional locations		
Analytes in elution order	Cape Elizabeth	Portland	Lewiston	Rumford	Bangor	Presque Isle
Isobutane	0.07	0.01	0.01	0.02	0.01	0.00
n-Butane	0.03	0.41	0.02	0.07	0.47	0.27
n-Pentane	0.00	0.00	0.00	0.00	0.00	0.08
2,3-Dimethylbutane	0.24	0.11	0.34	0.56	0.19	0.00
3-Methylpentane	0.68	0.05	0.02	0.02	0.02	0.00
n-Hexane	0.93	0.93	0.36	0.03	0.74	0.20
Toluene	0.04	0.00	0.05	0.00	0.00	0.07
Ethylbenzene	0.52	0.01	0.12	0.23	0.05	0.15
m,p-Xylenes	0.74	0.00	0.04	0.04	0.01	0.08
o-Xylene	0.63	0.02	0.37	0.13	0.09	0.24
Benzene	0.03	0.00	0.06	0.05	0.01	0.06
1,3,5-Trimethylbenzene	0.01	0.79	0.29	0.05	0.66	0.96
1,2,4-Trimethylbenzene	0.68	0.02	0.30	0.65	0.08	0.29
Naphthalene	0.30	0.00	0.00	0.04	0.00	0.04

Modeling Results (Additional Results)
See Section 3.2 Modeling Results for additional results and discussion.

Table B4: Onroad NO_x emissions for Maine counties (tons per typical summer day)

County	7.0 psi RVP (RFG)			9.0 psi RVP (Conventional)	
	2015	2017	2019	2019	2023
Androscoggin	4.17	3.03	2.39	2.40	1.63
Cumberland	15.8	12.0	9.67	9.70	6.91
Hancock	2.98	2.16	1.68	1.68	1.09
Kennebec	8.11	6.20	5.08	5.09	3.72
Knox	1.53	1.11	0.86	0.86	0.56
Lincoln	1.64	1.19	0.92	0.93	0.60
Sagadahoc	2.66	2.02	1.63	1.67	1.17
Waldo	1.68	1.22	0.95	0.95	0.62
York	13.6	10.48	8.60	8.62	6.35
Total	52.17	39.4	31.79	31.89	22.64

Note: 7.0psi RVP is representative of RFG and 9.0psi RVP is representative of conventional

Table B5: Onroad VOC emissions for Maine counties (tons per typical summer day)

County	7.0 psi RVP (RFG)			9.0 psi RVP (Conventional)	
	2015	2017	2019	2019	2023
Androscoggin	2.18	1.68	1.41	1.41	1.11
Cumberland	6.21	4.79	4.03	3.98	3.18
Hancock	1.37	1.05	0.88	0.88	0.69
Kennebec	3.13	2.43	2.05	2.05	1.62
Knox	0.85	0.66	0.55	0.55	0.43
Lincoln	0.82	0.63	0.53	0.53	0.41
Sagadahoc	0.89	0.68	0.58	0.57	0.45
Waldo	0.86	0.67	0.56	0.56	0.44
York	5.08	3.96	3.36	3.32	2.66
Total	21.39	16.55	13.93	13.84	10.99

Note: 7.0psi RVP is representative of RFG and 9.0psi RVP is representative of conventional