U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

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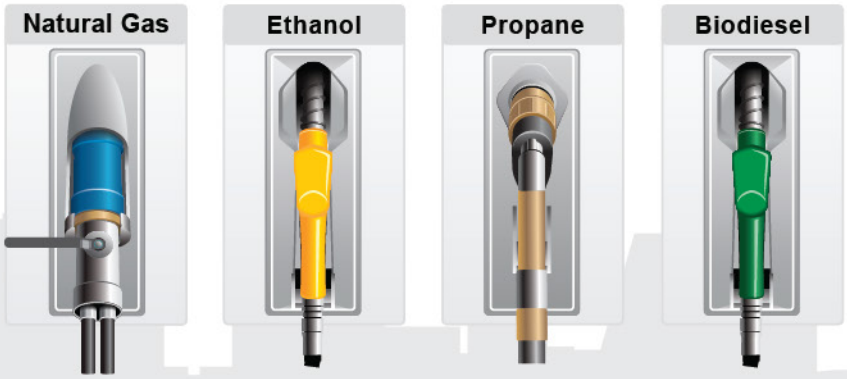


CLEAN CITIES
Alternative Fuel Price Report

Clean Cities
U.S. Department of Energy

Welcome to the April 2019 issue!

The Clean Cities Alternative Fuel Price Report is a quarterly report designed to keep Clean Cities coalitions and other interested parties up to date on the prices of alternative and conventional fuels in the United States. This issue summarizes prices that were submitted between April 1 and April 15, 2019 by Clean Cities coordinators, fuel providers, and other Clean Cities stakeholders.

What's New in This Issue:

For the April 2019 report, 4,640 prices were submitted, an increase of more than 200 data points from January 2019's 4,413 prices. This included 290 prices for lesser-used fuels such as ethanol blends between E15 and E50, biodiesel blends such as B5, B10 and B50, hydrogen and renewable diesel. A total of 36 renewable diesel prices were submitted by 5 coalitions in California. The data submitted for the lesser-used fuels is maintained in the database for possible future use; we do not currently include separate sections addressing those fuels in this publication, due to an insufficient number of data points.

In the April report, we saw increases in the national average retail prices of gasoline and diesel, of $0.49/gallon and $0.11/gallon, respectively, when compared to January 2019. The national average retail price of E85 also saw a significant increase, when compared to January 2019, of $0.32/gallon, while the national average retail prices of compressed natural gas (CNG) and biodiesel (B20) increased slightly, by $0.03/GGE and $0.08/gallon, respectively. See Table 2.

The national average retail prices of liquefied natural gas (LNG) and propane decreased slightly during this period, by $0.03/DGE and $0.01/gallon, respectively, while the national average retail price of B99/B100 decreased by $0.06/gallon.

CNG prices were lower than gasoline in all PADD regions during this period, with a national average retail price difference of $0.54/GGE. The price difference was largest in the West Coast PADD, where CNG was $1.04/GGE less than gasoline. CNG remained less expensive than diesel in all PADD regions, with differences ranging from $0.28/DGE less in the New England region to $0.97/DGE less in the West Coast region. Similarly, LNG was less expensive than diesel by a national average of $0.41/DGE, with the largest difference in the West Coast region, where LNG was $1.17/DGE less than diesel.

Looking Ahead

We will continue to improve the Alternative Fuel Price Report, based on user feedback. We look forward to hearing from you as we implement these upgrades.

Methodology

- This report's prices represent retail, at-the-pump sales prices for each fuel, including federal and state motor fuel taxes.[1]
- Clean Cities coordinators, fuel providers, and other key stakeholders provide prices for fuels in their areas on a voluntary basis.
- Prices were submitted for all major alternative fuels currently in widespread use, i.e. natural gas, propane, biodiesel, and ethanol.
- Prices were submitted for conventional fuels from stations that also sell alternative fuels, or from nearby stations.
- Prices from public and private refueling stations are included.[2]
- Prices were averaged to determine regional price trends by fuel and variability in fuel price within and among regions.[3]
- Some states charge a flat annual fee, in lieu of collecting motor fuel taxes at the pump, usually for large trucks using gaseous fuels like compressed natural gas (CNG) and liquefied petroleum gas (LPG or propane). These flat fees are not included in the prices reported in these pages.
- Consistent with the U.S. Energy Information Administration (EIA) fuel price reporting format, prices are grouped by the Petroleum Administration for Defense Districts (PADD). The PADD districts are illustrated in the map below.

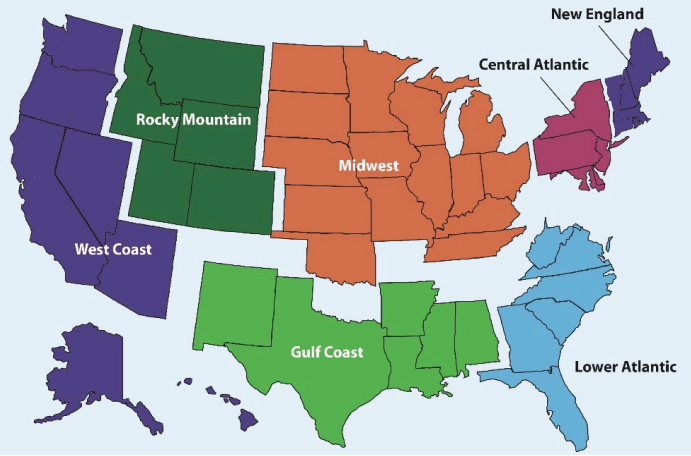


FIGURE 1
PETROLEUM ADMINSTRATION FOR DEFENSE DISTRICTS (PADD)

Source: U.S. Energy Information Administration

TABLE 1
Number of Data Points Submitted

Region	Gasoline	Diesel	CNG	LNG	Ethanol	Propane	B20	B99/B100
New England	24	26	22	1	5	39	8	2
Central Atlantic	69	72	91	0	77	53	29	3
Lower Atlantic	150	139	57	2	147	66	12	7
Midwest	486	368	157	2	440	108	35	0
Gulf Coast	123	109	71	6	153	159	9	1
Rocky Mountain	55	78	56	0	46	75	5	1
West Coast	149	144	138	15	78	166	25	15
TOTAL	**1056**	**936**	**592**	**26**	**946**	**666**	**123**	**29**

[1] In some cases, prices were submitted by government refueling facilities, and motor fuel taxes were not included in the prices reported to Clean Cities. In these instances, the appropriate federal and state motor fuel taxes have been added to the reported prices to provide a more representative basis for comparison.
[2] Public refueling stations are open to the public, while private fueling stations are privately-owned or available only to selected fleets.
[3] Fuel price averages for this report are determined by simply averaging the individual data points received. A comparison of average fuel prices for private and for public stations by region can be found on pages 22-23.

Summary of Current Report Information

Table 2 shows national average retail fuel prices for this report and the previous report. Changes in average retail prices from one quarter to another may be due to a number of factors, including an actual change in price, different sample sizes, the inclusion of different locations, and seasonal variations in demand.

Prices in this report were reported in the units in which they are typically sold, for example, dollars per gallon of gasoline or dollars per gasoline gallon equivalent (GGE) of CNG.

Consumer interest in alternative fuels generally increases when the alternative fuel price is less than the conventional fuel price on a per gallon basis, even if that differential does not directly translate to savings on an energy-equivalent basis.

TABLE 2
National Average Retail Fuel Prices
Conventional and Alternative Fuels, April 2019 *

Fuel Type	January 2019	April 2019	Change in Price January-April	Units of Measurement
Gasoline	$2.27	$2.76	$0.49	per gallon
Diesel	$2.98	$3.09	$0.11	per gallon
CNG	$2.19	$2.22	$0.03	per GGE
LNG	$2.71	$2.68	-$0.03	per DGE
Ethanol (E85)	$1.99	$2.31	$0.32	per gallon
Propane**	$2.91	$2.90	-$0.01	per gallon
Biodiesel (B20)	$2.80	$2.88	$0.08	per gallon
Biodiesel (B99/B100)	$3.57	$3.51	-$0.06	per gallon

*Includes public and private stations
**Includes primary and secondary stations

TABLE 3
National Average Retail Fuel Prices on an Energy-Equivalent Basis, April 2019 *

	Per Gasoline Gallon Equivalent ($/GGE)	Per Diesel Gallon Equivalent ($/DGE)	Per Million British Thermal Units ($/MBtu)
Gasoline	$2.76	$3.12	$24.15
Diesel	$2.75	$3.09	$24.01
CNG	$2.22	$2.50	$19.42
LNG	$2.38	$2.68	$20.82
Ethanol (E85)	$3.00	$3.39	$34.25
Propane**	$3.97	$4.46	$47.54
Biodiesel (B20)	$2.59	$2.94	$20.49
Biodiesel (B99/B100)	$3.44	$3.86	$29.38

*Includes public and private stations
**Includes primary and secondary stations

Liquid fuels have differing energy contents per gallon, so the price paid per unit of energy content can differ somewhat from the price paid per gallon. Table 3 shows fuel prices from Table 2 normalized to an energy-equivalent basis.

Note that, for the alternative fuels, prices on an energy-equivalent basis, ie, $/GGE or $/DGE, are generally higher than the prices per gallon, due to their lower energy content.[5]

Propane prices include information from both "primary" and "secondary" stations. Primary stations have dedicated vehicle services and tend to be less expensive than secondary stations, which mostly serve the propane tank and bottle market.

Prices for Table 3 were calculated using the nominal lower heating values in BTUs per gallon of fuel from the Oak Ridge National Laboratory's Transportation Energy Data Book.[6]

[4] A very small sample (11 points) of hydrogen information was received, with an average price of $15.83/GGE.
[5] For ethanol flexible-fuel vehicles (FFVs), the actual difference in fuel used per mile is somewhat less than would be calculated simply on the difference in energy content of the fuels. Some sources have noted that some FFVs can achieve better energy efficiency (miles per unit of energy) on E85 than on gasoline. This effect is not currently included in these calculations as the magnitude of the effect varies by specific FFV model.
[6] http://cta.ornl.gov/data/appendix_b.shtml A listing of the conversion factors used appears as an appendix at the end of this report.

Gasoline and Diesel Prices: Clean Cities and EIA Data

Table 4, below, shows gasoline and diesel prices submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019, compared to prices from the petroleum information section of the Energy Information Administration (EIA) website, for the week of April 8, 2019.

Clean Cities prices for conventional fuels were obtained from retail stations providing alternative fuel price information, or from nearby stations, so data collection was not uniform across the regions of the country; however, the information is representative of refueling stations selling both alternative fuels and conventional fuels.

The EIA data shows weekly average prices from a sample of approximately 800 retail gasoline and 400 retail diesel outlets across the country. The EIA data points are weighted to reflect the quantity of fuel being sold at that price.

The Clean Cities data is not weighted, and represents simple averages of reported prices. While there is some variation, the EIA average prices match relatively closely with the average prices reported by Clean Cities coordinators.

TABLE 4
Average Retail Gasoline and Diesel Prices by Region, in $/gal from Clean Cities and EIA* Sources

	Gasoline Prices			Diesel Prices		
Region	**Clean Cities**	**EIA****	**Difference*****	**Clean Cities**	**EIA****	**Difference*****
New England	$2.71	$2.59	$0.12	$3.22	$3.19	$0.03
Central Atlantic	$2.62	$2.74	-$0.12	$3.16	$3.32	-$0.16
Lower Atlantic	$2.64	$2.61	$0.03	$2.95	$3.00	-$0.05
Midwest	$2.66	$2.67	-$0.01	$2.97	$2.99	-$0.02
Gulf Coast	$2.44	$2.45	-$0.01	$2.72	$2.88	-$0.16
Rocky Mountain	$2.62	$2.54	$0.08	$2.96	$3.03	-$0.07
West Coast	$3.57	$3.42	$0.15	$3.83	$3.59	$0.24
NATIONAL AVERAGE	**$2.76**	**$2.75**	**$0.01**	**$3.09**	**$3.09**	**$0.00**

*EIA = Energy Information Administration

**EIA prices are from the petroleum information section of the EIA website, week of 04/08/2019.
http://www.eia.gov/dnav/pet/xls/PET_PRI_GND_A_EPMR_PTE_DPGAL_W.xls
http://www.eia.gov/dnav/pet/xls/PET_PRI_GND_A_EPD2D_PTE_DPGAL_W.xls

***Negative numbers represent average Clean Cities prices that are lower than EIA prices.

Compressed Natural Gas (Relative to Gasoline)

TABLE 5 Compressed Natural Gas (CNG) and Gasoline Average Retail Prices by Region			
Region	CNG Prices ($/GGE*)	Gasoline Prices ($/gal)	Price Difference**
New England	$2.60	$2.71	-$0.11
Central Atlantic	$2.25	$2.62	-$0.37
Lower Atlantic	$2.16	$2.64	-$0.48
Midwest	$2.05	$2.66	-$0.61
Gulf Coast	$2.09	$2.44	-$0.35
Rocky Mountain	$1.92	$2.62	-$0.70
West Coast	$2.53	$3.57	-$1.04
NATIONAL AVERAGE	**$2.22**	**$2.76**	**-$0.54**

*GGE = gasoline gallon equivalent
**Negative numbers represent average CNG prices that are lower than gasoline, on a $/GGE basis.

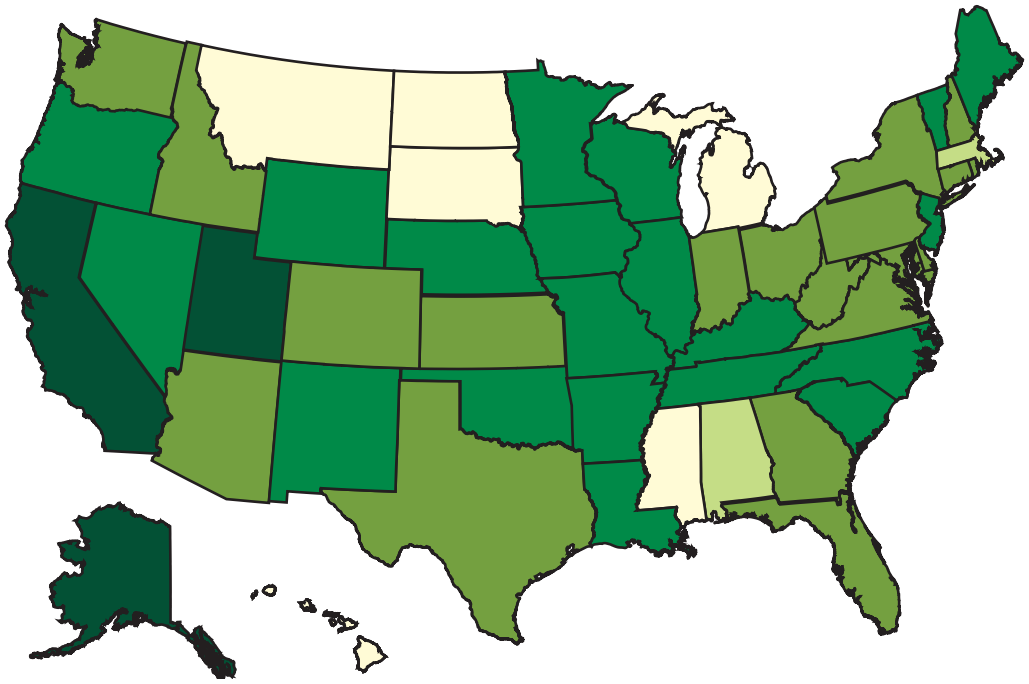
The prices shown in Table 5 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

CNG prices in Table 5 were obtained from the "price at the pump," given in $/gasoline gallon equivalent (GGE), and averaged for each region.

As with other fuels, the energy content of natural gas can vary. CNG dispensers are calibrated for local gas compositions and dispense an accurate GGE for the actual gas being sold.

On average, during this reporting period, CNG cost about $0.54 less than gasoline on a per gasoline gallon equivalent (GGE) basis.

Note: The Alternative Fuel Price Report is a snapshot in time of retail fuel prices. Alternative fuel fleets can obtain significantly lower fuel prices than those reported in the AFPR by entering into contracts directly with local fuel suppliers. Contract prices will vary, depending on fleet size and amount of fuel to be purchased, distance from the supplier, region of the country and other factors.



In this map, negative numbers represent prices for CNG that are lower than gasoline, on a per gasoline gallon equivalent basis. States not highlighted with a color did not have any CNG data points in the current report.

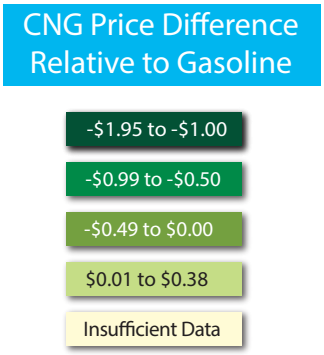


FIGURE 2
PRICE DIFFERENTIALS BY STATE FOR COMPRESSED NATURAL GAS (CNG) RELATIVE TO GASOLINE

Compressed Natural Gas (CNG), cont.

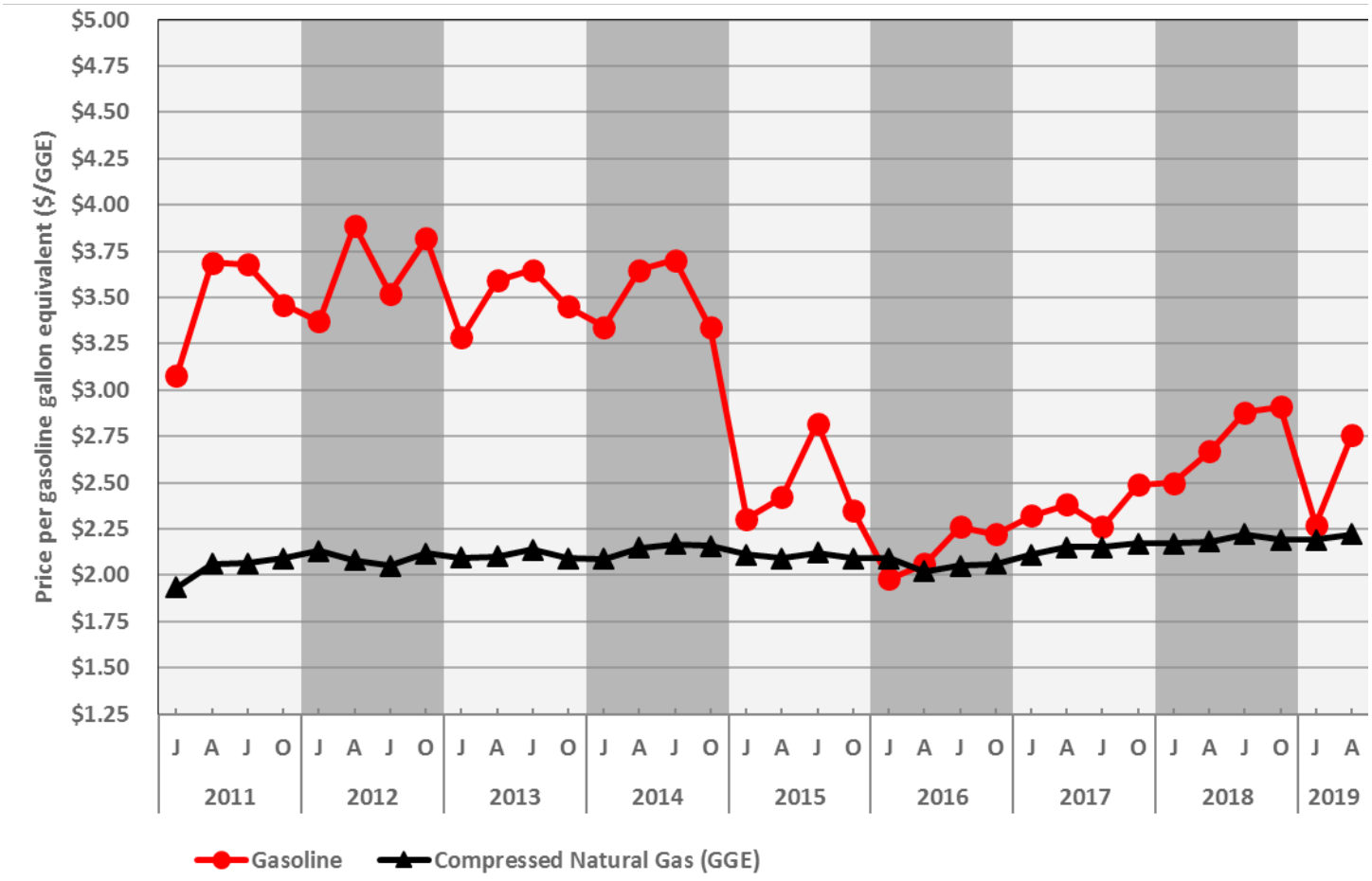


FIGURE 3
HISTORICAL COMPRESSED NATURAL GAS (CNG) PRICES VERSUS GASOLINE

Compressed Natural Gas (Relative to Diesel)

TABLE 6 Compressed Natural Gas (CNG) and Diesel Average Retail Prices by Region			
Region	CNG Prices ($/DGE*)	Diesel Prices ($/gal)	Price Difference**
New England	$2.94	$3.22	-$0.28
Central Atlantic	$2.54	$3.16	-$0.62
Lower Atlantic	$2.45	$2.95	-$0.50
Midwest	$2.31	$2.97	-$0.66
Gulf Coast	$2.37	$2.72	-$0.35
Rocky Mountain	$2.17	$2.96	-$0.79
West Coast	$2.86	$3.83	-$0.97
NATIONAL AVERAGE	**$2.5**	**$3.09**	**-$0.59**

*DGE = diesel gallon equivalent
** Negative numbers represent average CNG prices that are lower than diesel, on a $/DGE basis.

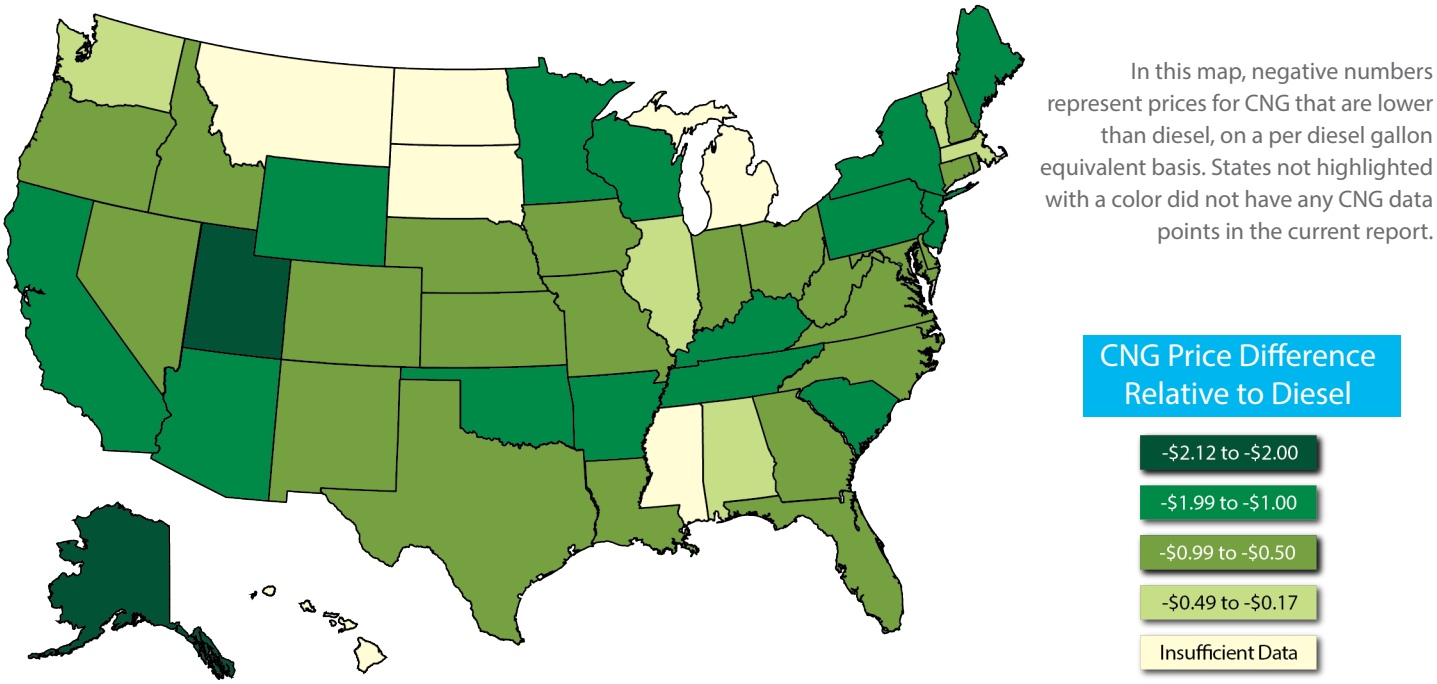
The prices shown in Table 6 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

Table 6 shows the prices from Table 5, converted to $/diesel gallon equivalent ($/DGE), for easy comparison with diesel prices.

As with other fuels, the energy content of natural gas can vary. CNG dispensers are calibrated for local gas compositions and dispense an accurate GGE for the actual gas being sold.

On average, during this reporting period, CNG cost about $0.59 less than diesel on a per diesel gallon equivalent basis.

Note: The Alternative Fuel Price Report is a snapshot in time of retail fuel prices. Alternative fuel fleets can obtain significantly lower fuel prices than those reported in the AFPR by entering into contracts directly with local fuel suppliers. Contract prices will vary, depending on fleet size and amount of fuel to be purchased, distance from the supplier, region of the country and other factors.



In this map, negative numbers represent prices for CNG that are lower than diesel, on a per diesel gallon equivalent basis. States not highlighted with a color did not have any CNG data points in the current report.

FIGURE 4
PRICE DIFFERENTIALS BY STATE FOR COMPRESSED NATURAL GAS (CNG) RELATIVE TO DIESEL

Compressed Natural Gas (CNG), cont.

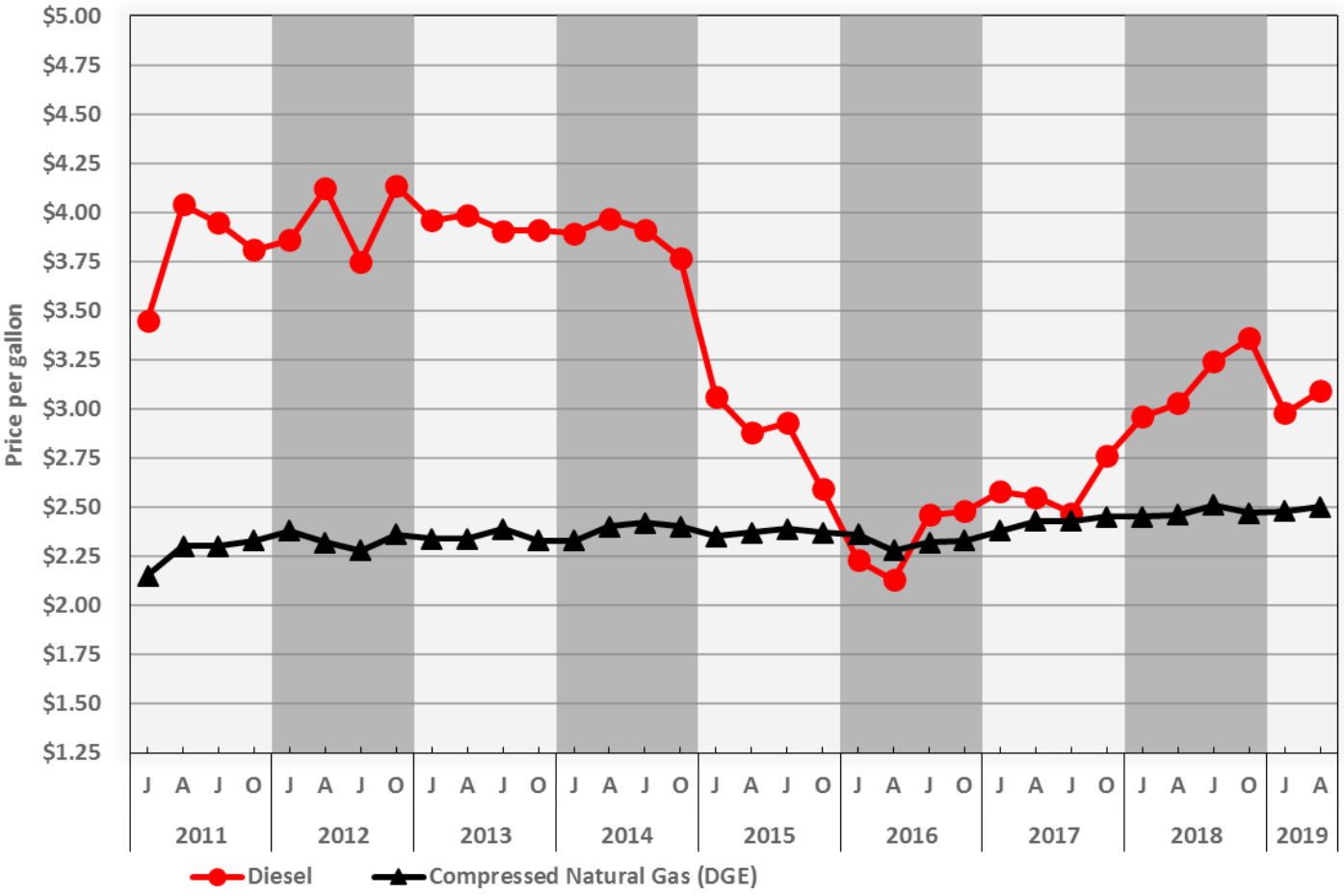


FIGURE 5
HISTORICAL COMPRESSED NATURAL GAS (CNG) PRICES VERSUS DIESEL

Liquefied Natural Gas (LNG) Relative to Diesel

TABLE 7 Liquefied Natural Gas (LNG) and Diesel Average Retail Prices by Region			
Region	LNG Prices ($/DGE*)	Diesel Prices ($/gal)	Price Difference**
New England	$2.85	$3.22	-$0.37
Central Atlantic	---	$3.16	---
Lower Atlantic	$2.75	$2.95	-$0.20
Midwest	$2.99	$2.97	$0.02
Gulf Coast	$2.56	$2.72	-$0.16
Rocky Mountain	---	$2.96	---
West Coast	$2.66	$3.83	-$1.17
NATIONAL AVERAGE	**$2.68**	**$3.09**	**-$0.41**

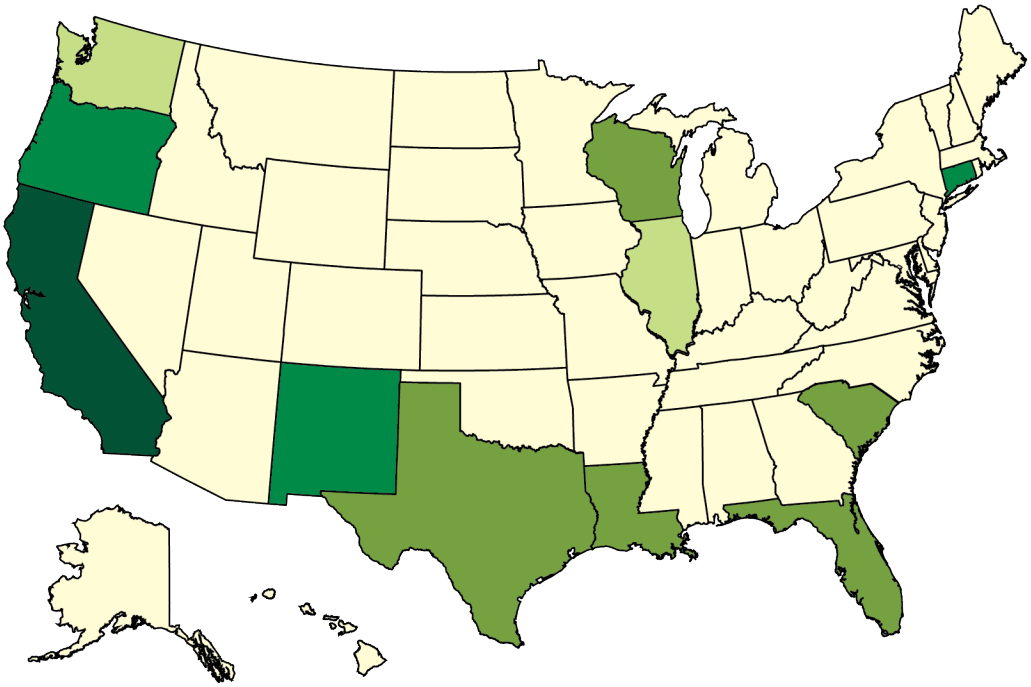
*DGE = diesel gallon equivalent
** Negative numbers represent average LNG prices that are lower than diesel, on a $/DGE basis.

The prices shown in Table 7 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

LNG prices in Table 7 were obtained from the "price at the pump," given in $/diesel gallon equivalent (DGE), and averaged for each region.

As with other fuels, the energy content of natural gas can vary. LNG dispensers are calibrated for local gas compositions and dispense an accurate DGE for the actual gas being sold.

On average, during this reporting period, LNG cost about $0.41 less than diesel on a per diesel gallon equivalent (DGE) basis.



In this map, negative numbers represent prices for LNG that are lower than diesel, on a per gallon basis. States not highlighted with a color did not have any LNG data points in the current report.

FIGURE 6
PRICE DIFFERENTIALS BY STATE FOR LNG RELATIVE TO DIESEL

Liquefied Natural Gas (LNG), cont.

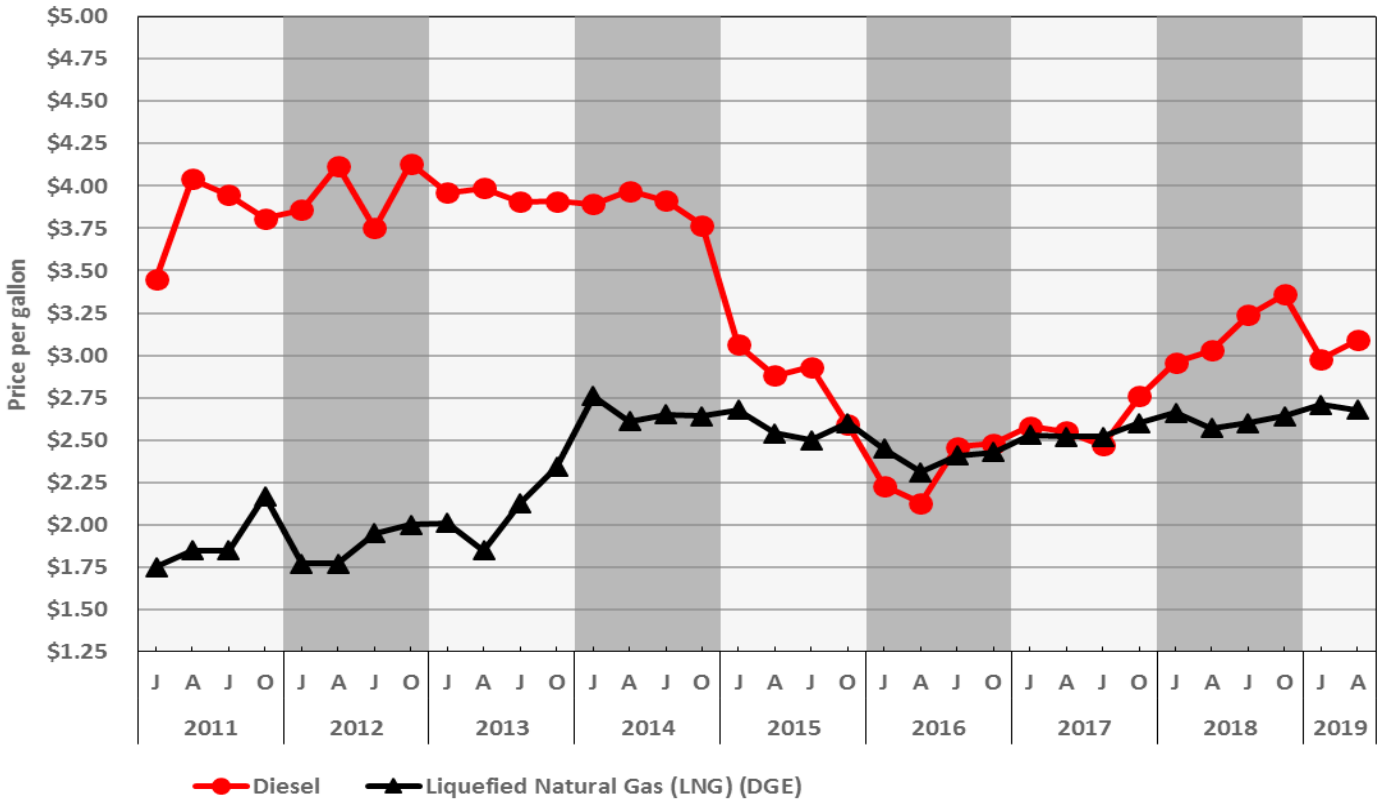


FIGURE 7
HISTORICAL LIQUEFIED NATURAL GAS (LNG) PRICES VERSUS DIESEL

NOTE: While LNG data had not been shown in a separate section in this report prior to the July 2016 issue, we do have a record of historical prices submitted by Clean Cities coordinators. We have, therefore, included Figure 7, showing historical LNG vs. Diesel prices, as well as Table 12d, comparing LNG prices submitted for this report and the prior report.

Ethanol (E85)

TABLE 8 Ethanol (E85) and Gasoline Average Retail Prices by Region			
Region	E85 Prices ($/gal)	Gasoline Prices ($/gal)	Price Difference*
New England	$2.82	$2.71	$0.11
Central Atlantic	$2.45	$2.62	-$0.17
Lower Atlantic	$2.36	$2.64	-$0.28
Midwest	$2.21	$2.66	-$0.45
Gulf Coast	$2.17	$2.44	-$0.27
Rocky Mountain	$2.25	$2.62	-$0.37
West Coast	$2.87	$3.57	-$0.70
NATIONAL AVERAGE	**$2.31**	**$2.76**	**-$0.45**

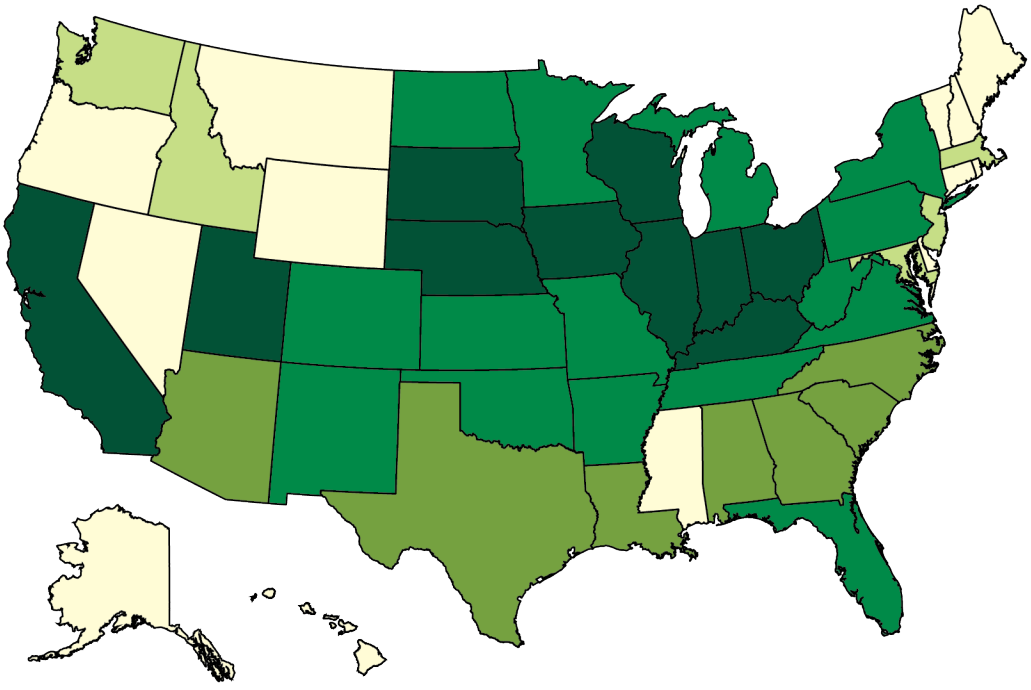
*Negative numbers represent average E85 prices that are lower than gasoline, on a $/gal basis.

The prices shown in Table 8 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

Most gasoline available throughout the United States today is a blend of 90% gasoline and up to 10% ethanol, or E10. Additionally, the E85 that is sold in the United States today actually contains, on average, approximately 70% ethanol.

E85 energy content for this report is therefore calculated as (.70)(E100 energy content) + (.30)(E0 energy content), to more closely reflect the actual energy content of E85 fuel available today.

On average, during this reporting period, E85 cost about $0.45 less than gasoline on a per (liquid) gallon basis. See page 26 for a $/GGE comparison.



In this map, negative numbers represent prices for E85 that are lower than gasoline, on a per gallon basis. States not highlighted with a color did not have any E85 data points in the current report.

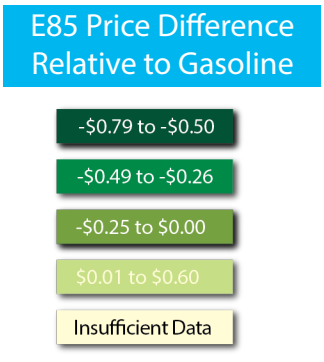


FIGURE 8
PRICE DIFFERENTIALS BY STATE FOR E85 RELATIVE TO GASOLINE

Ethanol (E85), cont.

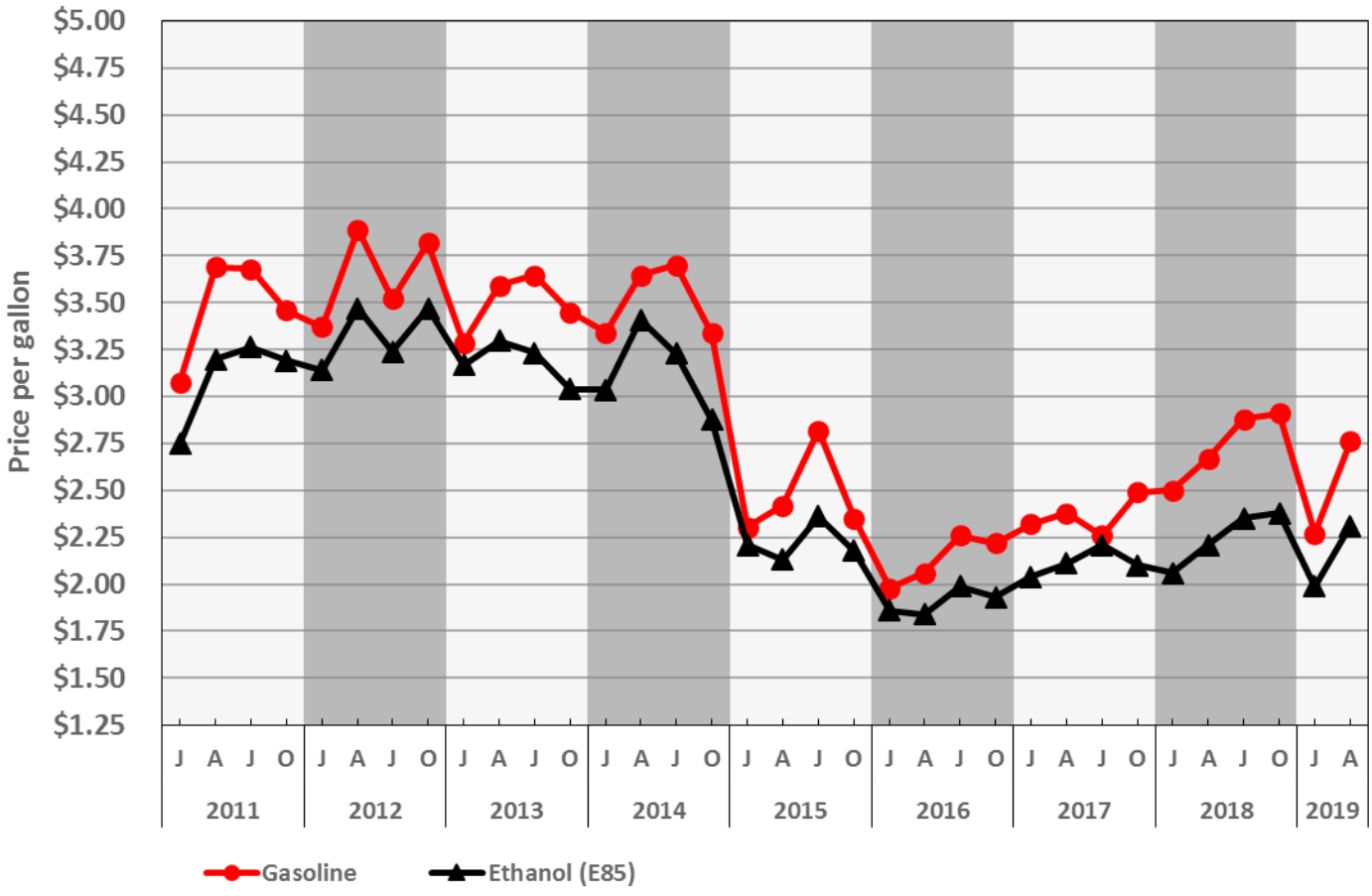


FIGURE 9
HISTORICAL ETHANOL (E85) PRICES VERSUS GASOLINE

Propane (LPG)

TABLE 9 Propane (LPG) and Gasoline Average Retail Prices by Region			
Region	LPG Prices ($/gal)	Gasoline Prices ($/gal)	Price Difference*
New England	$3.18	$2.71	$0.47
Central Atlantic	$2.88	$2.62	$0.26
Lower Atlantic	$2.62	$2.64	-$0.02
Midwest	$2.70	$2.66	$0.04
Gulf Coast	$2.92	$2.44	$0.48
Rocky Mountain	$3.03	$2.62	$0.41
West Coast	$3.00	$3.57	-$0.57
NATIONAL AVERAGE	**$2.90**	**$2.76**	**$0.14**

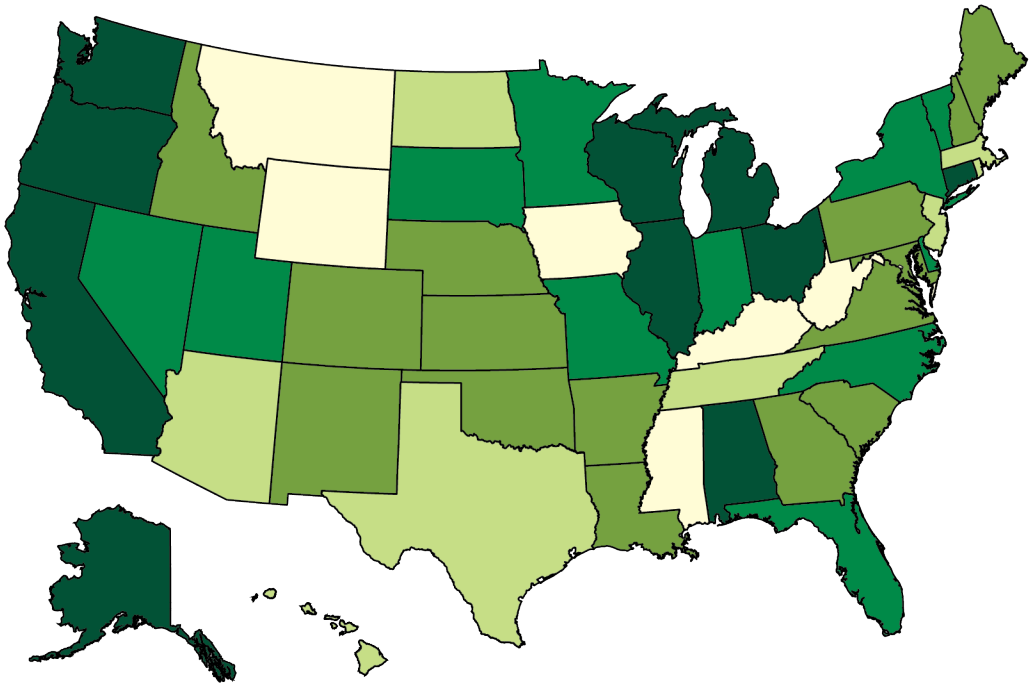
*Negative numbers represent average propane prices that are lower than gasoline, on a $/gal basis.

The prices shown in Table 9 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

Propane prices in this report are from both private fleet refueling stations and public refueling sites that can provide propane for vehicles and for other uses.[7]

Note: The Alternative Fuel Price Report is a snapshot in time of retail fuel prices. Alternative fuel fleets can obtain significantly lower fuel prices than those reported in the AFPR by entering into contracts directly with local fuel suppliers. Contract prices will vary, depending on fleet size and amount of fuel to be purchased, distance from the supplier, region of the country and other factors.

On average, during this reporting period, propane cost about $0.14 more than gasoline on a per (liquid) gallon basis. See page 26 for $/GGE.



In this map, negative numbers represent prices for propane that are lower than gasoline, on a per gallon basis. States not highlighted with a color did not have any propane data points in the current report.

LPG Price Difference Relative to Gasoline

- -$1.71 to -$0.50
- -$0.49 to $0.00
- $0.01 to $0.50
- $0.51 to $1.05
- Insufficient Data

FIGURE 10
PRICE DIFFERENTIALS BY STATE FOR PROPANE (LPG) RELATIVE TO GASOLINE

[7] Because many propane retailers provide fuel for non-vehicle uses (camping stoves, gas grills, etc.), the National Renewable Energy Laboratory (NREL) has worked with suppliers to clarify the differences. On the AFDC Station Locator website (http://www.afdc.energy.gov/locator/stations/) each public propane station is designated as a "primary" or "secondary" service type. Both types are able to fuel vehicles; however, stations designated as "primary" have indicated they have facilities and billing procedures specifically designed for vehicle customers. They may also offer special vehicle pricing and most accept major credit cards, similar to traditional gasoline/diesel retailers. Propane pricing reported here reflects a sampling of both primary and secondary stations.

Propane (LPG), cont.

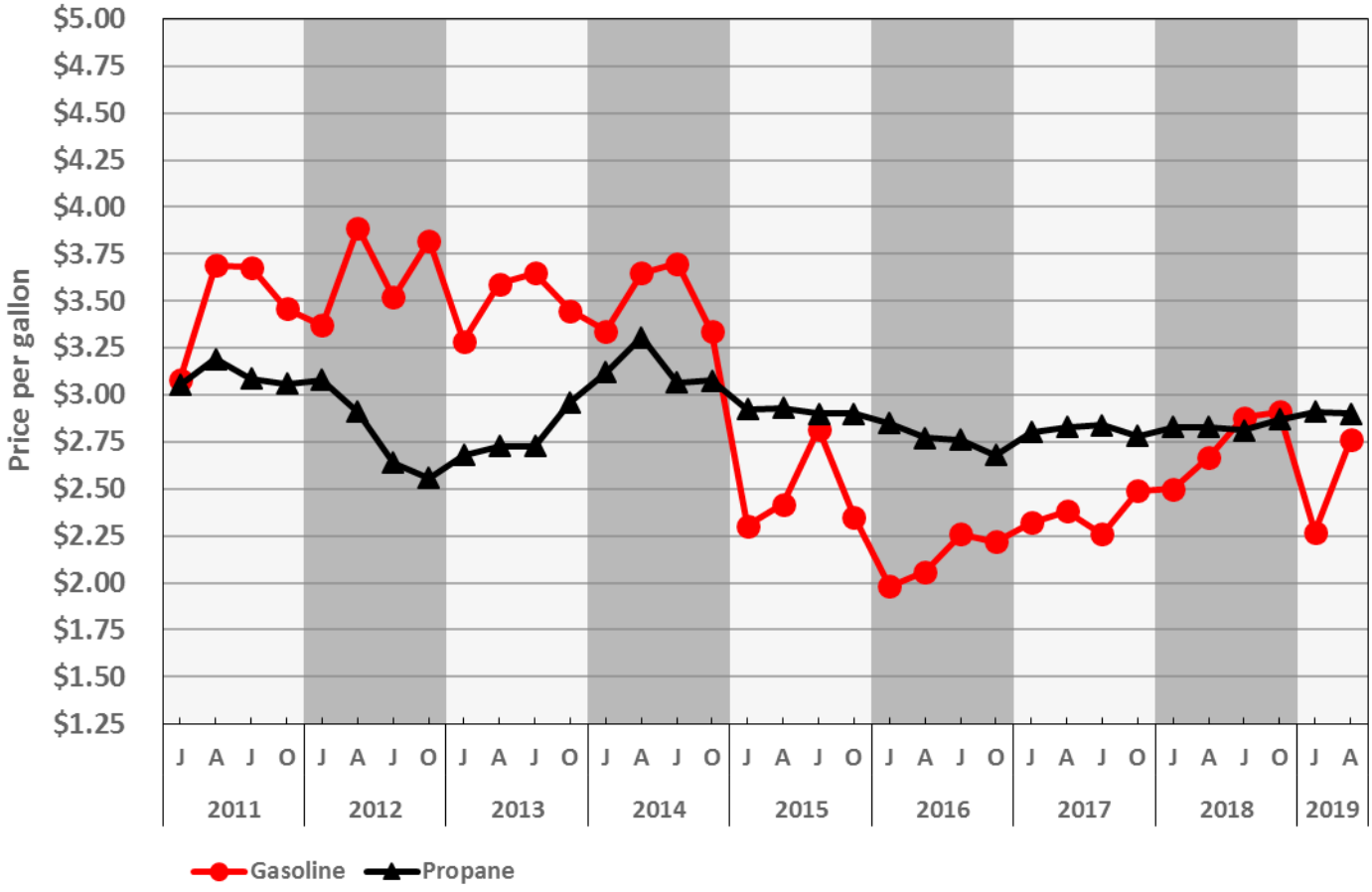


FIGURE 11
HISTORICAL PROPANE (LPG) PRICES VERSUS GASOLINE

Biodiesel Blends: B20

The prices shown in Table 10 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

TABLE 10
Biodiesel (B20) and Diesel
Average Retail Prices by Region

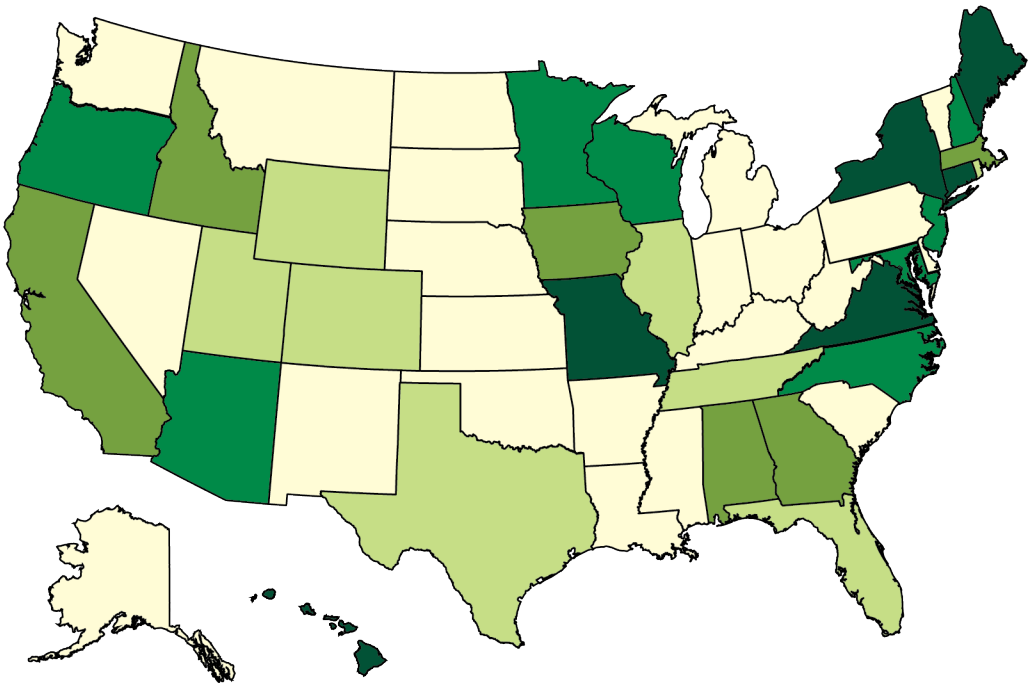
Region	B20 Prices ($/gal)	Diesel Prices ($/gal)	Price Difference*
New England	$2.89	$3.22	-$0.33
Central Atlantic	$2.56	$3.16	-$0.60
Lower Atlantic	$2.65	$2.95	-$0.30
Midwest	$2.99	$2.97	$0.02
Gulf Coast	$2.91	$2.72	$0.19
Rocky Mountain	$3.24	$2.96	$0.28
West Coast	$3.12	$3.83	-$0.71
NATIONAL AVERAGE	**$2.88**	**$3.09**	**-$0.21**

*Negative numbers represent average B20 prices that are lower than diesel, on a $/gal basis.

B20 is a blend of 20% biodiesel and 80% conventional diesel. B20 contains only about 2% less energy (BTUs) per volume than 100% diesel. The appendix at the end of this report provides conversion factors for calculating B20 prices on a GGE and DGE basis.

Note that B20 prices, in many regions, track closely with diesel prices.

On a national average basis, during this reporting period, B20 cost $0.21 less than diesel on a per gallon basis.



In this map, negative numbers represent prices for B20 that are lower than diesel, on a per gallon basis. States not highlighted with a color did not have any B20 data points in the current report.

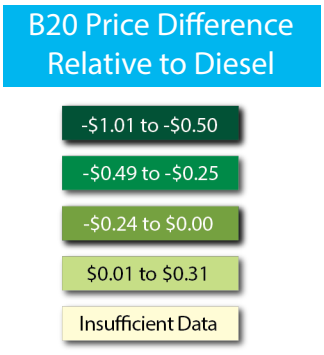


FIGURE 12
PRICE DIFFERENTIALS BY STATE FOR B20 RELATIVE TO DIESEL

Biodiesel Blends: B20, cont.

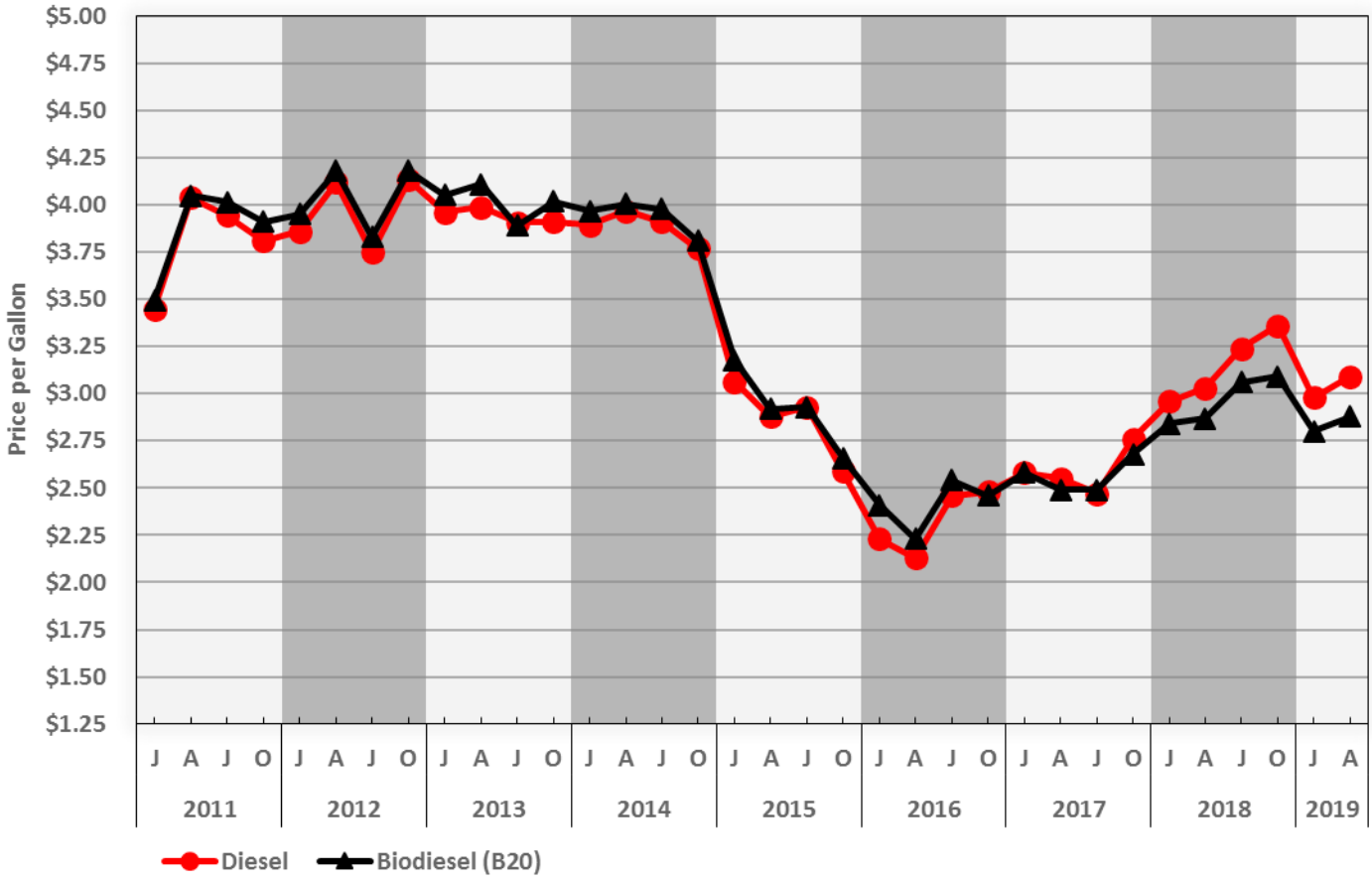


FIGURE 13
HISTORICAL B20 PRICES VERSUS DIESEL

Biodiesel Blends: B99/B100

TABLE 11 Biodiesel (B99/B100) and Diesel Average Retail Prices by Region			
Region	B99/B100 Prices ($/gal)	Diesel Prices ($/gal)	Price Difference*
New England	$3.02	$3.22	-$0.20
Central Atlantic	$2.38	$3.16	-$0.78
Lower Atlantic	$3.58	$2.95	$0.63
Midwest	---	$2.97	---
Gulf Coast	$2.89	$2.72	$0.17
Rocky Mountain	$2.93	$2.96	-$0.03
West Coast	$3.85	$3.83	$0.02
NATIONAL AVERAGE	**$3.51**	**$3.09**	**$0.42**

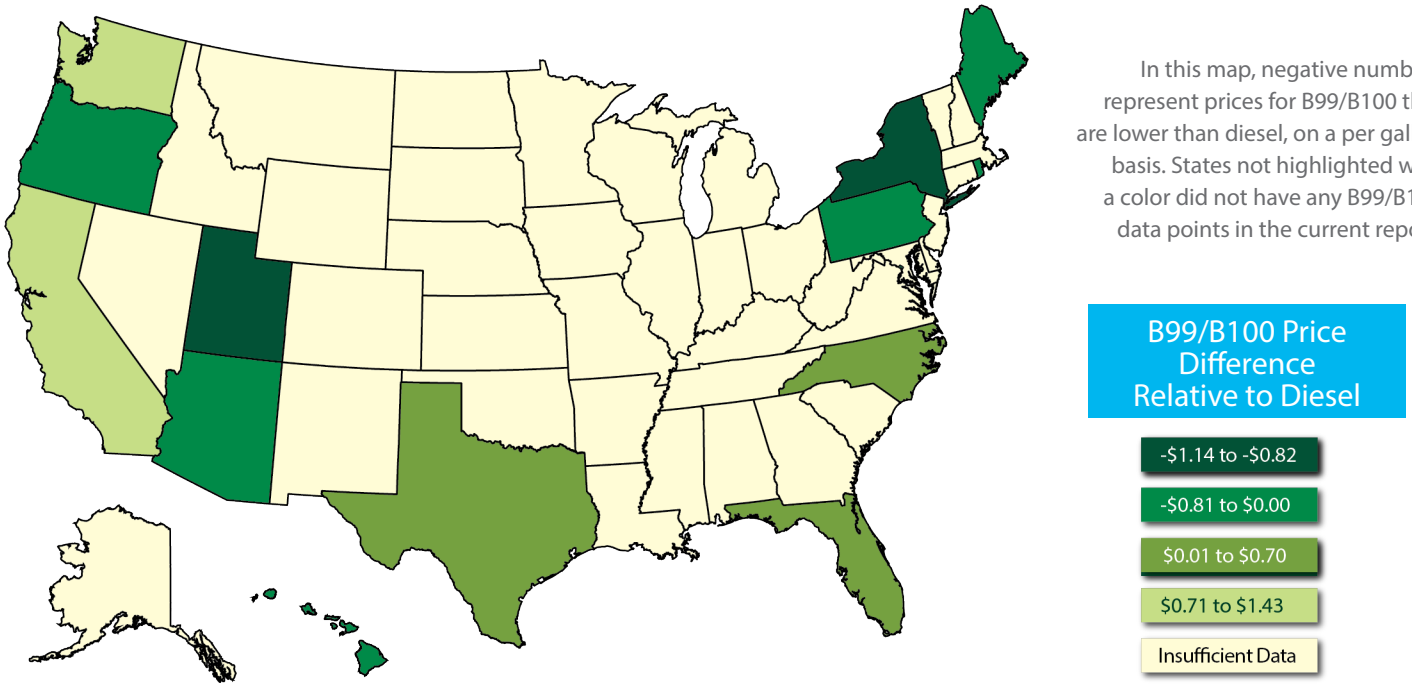
*Negative numbers represent average B99/B100 prices that are lower than diesel, on a $/gal basis.

The prices shown in Table 11 were submitted by Clean Cities coordinators, fuel providers, and other stakeholders on a voluntary basis, between April 1 and April 15, 2019.

B100 contains about 10% less energy (BTUs) per volume than 100% diesel.

The appendix at the end of this report provides conversion factors for calculating B100 prices on a GGE and DGE basis.

On average, during this reporting period, B99/B100 cost about $0.42 more than diesel on a per gallon basis.



In this map, negative numbers represent prices for B99/B100 that are lower than diesel, on a per gallon basis. States not highlighted with a color did not have any B99/B100 data points in the current report.

FIGURE 14
PRICE DIFFERENTIALS BY STATE FOR B99/B100 RELATIVE TO DIESEL

Biodiesel Blends: B99/B100, cont.

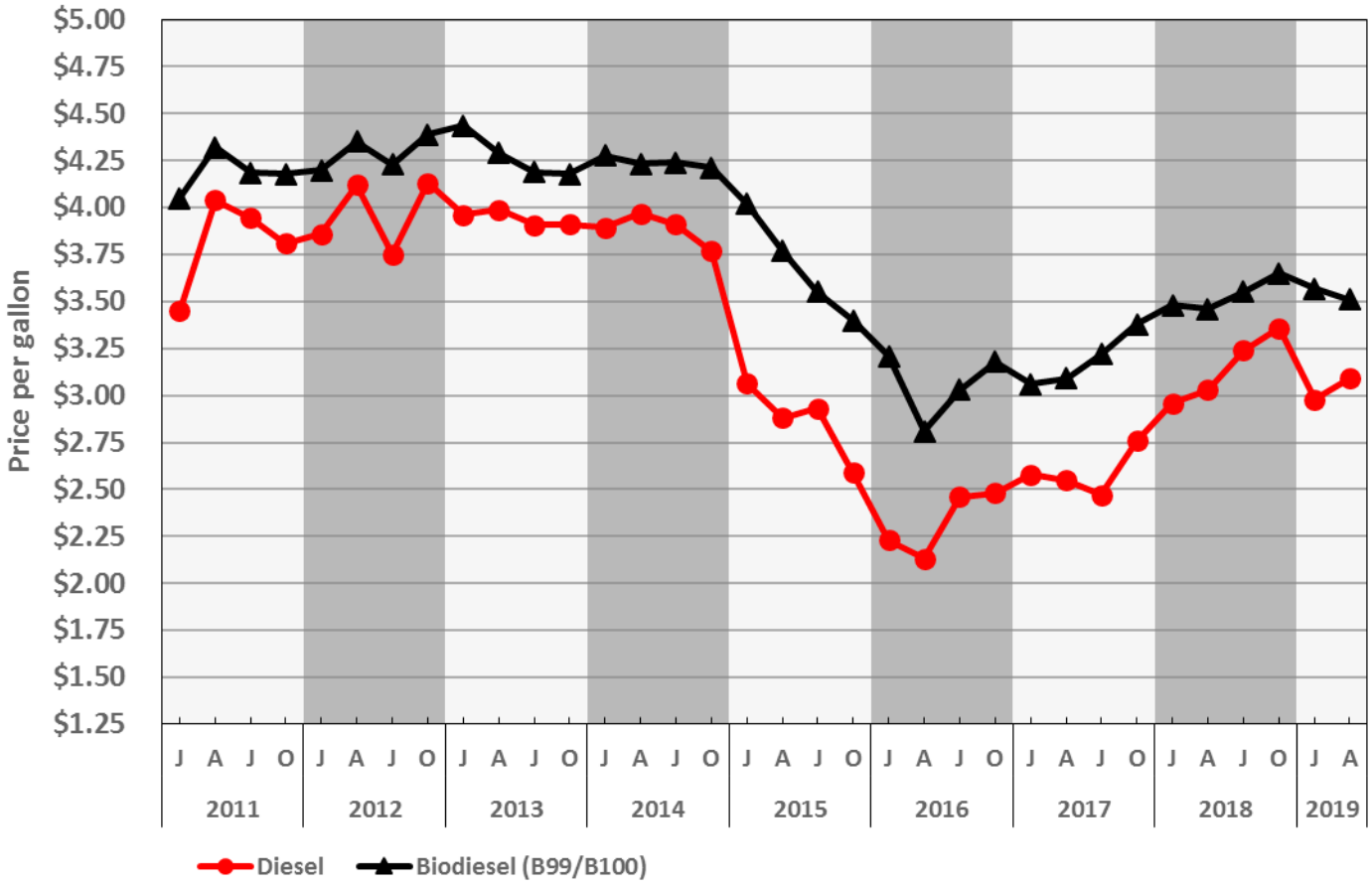


FIGURE 15
HISTORICAL B99/B100 PRICES VERSUS DIESEL

Comparison Of Prices: This Report Versus Last Report

The following tables summarize the average retail prices submitted for this report by region, and compare them to prices submitted for the January 2019 Alternative Fuel Price Report. It should be noted that a portion of the price changes may be attributed to differing sample sizes and locations between the two reports.

GASOLINE ($ per gallon)

TABLE 12a - Gasoline Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$2.57	$2.71	$0.14	5.45%
Central Atlantic	$2.45	$2.62	$0.17	6.94%
Lower Atlantic	$2.13	$2.64	$0.51	23.94%
Midwest	$2.04	$2.66	$0.62	30.39%
Gulf Coast	$1.84	$2.44	$0.60	32.61%
Rocky Mountain	$2.28	$2.62	$0.34	14.91%
West Coast	$3.17	$3.57	$0.40	12.62%
NATIONAL AVERAGE	**$2.27**	**$2.76**	**$0.49**	**21.59%**

DIESEL ($ per gallon)

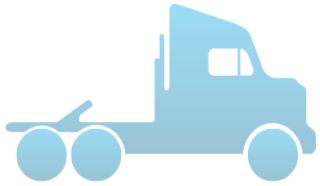


TABLE 12b - Diesel Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$3.22	$3.22	$0.00	0.00%
Central Atlantic	$2.94	$3.16	$0.22	7.48%
Lower Atlantic	$2.88	$2.95	$0.07	2.43%
Midwest	$2.86	$2.97	$0.11	3.85%
Gulf Coast	$2.65	$2.72	$0.07	2.64%
Rocky Mountain	$2.81	$2.96	$0.15	5.34%
West Coast	$3.63	$3.83	$0.20	5.51%
NATIONAL AVERAGE	**$2.98**	**$3.09**	**$0.11**	**3.69%**

CNG ($ per GGE)

TABLE 12c - CNG Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$2.60	$2.60	$0.00	0.00%
Central Atlantic	$2.27	$2.25	-$0.02	-0.88%
Lower Atlantic	$2.10	$2.16	$0.06	2.86%
Midwest	$2.02	$2.05	$0.03	1.49%
Gulf Coast	$2.13	$2.09	-$0.04	-1.88%
Rocky Mountain	$1.89	$1.92	$0.03	1.59%
West Coast	$2.47	$2.53	$0.06	2.43%
NATIONAL AVERAGE	**$2.19**	**$2.22**	**$0.03**	**1.37%**

LNG ($ per DGE)

TABLE 12d - LNG Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	---	$2.85	---	---
Central Atlantic	---	---	---	---
Lower Atlantic	$2.75	$2.75	$0.00	0.00%
Midwest	$2.79	$2.99	$0.20	7.17%
Gulf Coast	$2.55	$2.56	$0.01	0.39%
Rocky Mountain	---	---	---	---
West Coast	$2.77	$2.66	-$0.11	-3.97%
NATIONAL AVERAGE	**$2.71**	**$2.68**	**-$0.03**	**-1.11%**

Comparison Of Prices: This Report Versus Last Report, cont.

TABLE 12e - E85 Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$2.91	$2.82	-$0.09	-3.09%
Central Atlantic	$2.30	$2.45	$0.15	6.52%
Lower Atlantic	$1.92	$2.36	$0.44	22.92%
Midwest	$1.86	$2.21	$0.35	18.82%
Gulf Coast	$1.82	$2.17	$0.35	19.23%
Rocky Mountain	$1.99	$2.25	$0.26	13.07%
West Coast	$2.73	$2.87	$0.14	5.13%
NATIONAL AVERAGE	**$1.99**	**$2.31**	**$0.32**	**16.08%**

ETHANOL
(E85)
($ per gallon)

PROPANE
($ per gallon)

TABLE 12f - Propane Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$3.09	$3.18	$0.09	2.91%
Central Atlantic	$2.88	$2.88	$0.00	0.00%
Lower Atlantic	$2.66	$2.62	-$0.04	-1.50%
Midwest	$2.77	$2.70	-$0.07	-2.53%
Gulf Coast	$2.86	$2.92	$0.06	2.10%
Rocky Mountain	$2.99	$3.03	$0.04	1.34%
West Coast	$3.08	$3.00	-$0.08	-2.60%
NATIONAL AVERAGE	**$2.91**	**$2.90**	**-$0.01**	**-0.34%**

TABLE 12g - B20 Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$2.93	$2.89	-$0.04	-1.37%
Central Atlantic	$2.54	$2.56	$0.02	0.79%
Lower Atlantic	$2.35	$2.65	$0.30	12.77%
Midwest	$2.86	$2.99	$0.13	4.55%
Gulf Coast	$2.82	$2.91	$0.09	3.19%
Rocky Mountain	$2.99	$3.24	$0.25	8.36%
West Coast	$3.05	$3.12	$0.07	2.30%
NATIONAL AVERAGE	**$2.80**	**$2.88**	**$0.08**	**2.86%**

BIODIESEL
B20
($ per gallon)

BIODIESEL
B99/B100
($ per gallon)

TABLE 12h - B99/B100 Prices				
	January 2019	April 2019	Difference in $	Difference in %
New England	$2.83	$3.02	$0.19	6.71%
Central Atlantic	$2.53	$2.38	-$0.15	-5.93%
Lower Atlantic	$3.80	$3.58	-$0.22	-5.79%
Midwest	---	---	---	---
Gulf Coast	$2.89	$2.89	$0.00	0.00%
Rocky Mountain	---	$2.93	---	---
West Coast	$3.80	$3.85	$0.05	1.32%
NATIONAL AVERAGE	**$3.57**	**$3.51**	**-$0.06**	**-1.68%**

Price Comparison By Region For Public & Private Refueling Stations

The tables below summarize average retail fuel prices contained in this report, sorted by type of refueling station, i.e., "private" or "public". The stations classified as "public" are open to the general public. The majority of the stations classified as "private" are operated by state or local government agencies, transit agencies, utility districts, colleges or universities, or military facilities. They serve the host agency's fleets, and may have contractual or other arrangements in place to sell fuel to other government agencies and/or selected other fleets. In some cases, contracts may include billing, accounting, or fleet service management fees that are rolled into the price of the fuel.

For this report, there were 4,320 prices submitted from "public" refueling stations, and 320 prices submitted from "private" refueling stations, for a total of 4,640 prices. This includes a small number of data points that were submitted for alternative fuel blends that are not widely used, such as E15-E50, B5, B10 and B50, hydrogen and renewable diesel.

As with the other prices in this report, these prices include state and federal taxes, as described in the Methodology section of this document.

TABLE 13a - Gasoline
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	$2.39	$2.74
Central Atlantic	$2.60	$2.62
Lower Atlantic	$2.82	$2.63
Midwest	$2.65	$2.66
Gulf Coast	---	$2.44
Rocky Mountain	---	$2.62
West Coast	$3.36	$3.61
NATIONAL AVERAGE	**$2.91**	**$2.75**

TABLE 13b - Diesel
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	$3.12	$3.24
Central Atlantic	$2.94	$3.24
Lower Atlantic	$3.19	$2.94
Midwest	$2.67	$2.98
Gulf Coast	---	$2.72
Rocky Mountain	---	$2.96
West Coast	$3.65	$3.84
NATIONAL AVERAGE	**$3.02**	**$3.10**

TABLE 13c - Natural Gas (CNG)
Average Retail Price by Refueling Station Type ($/GGE)

	Private	Public
New England	$2.09	$2.71
Central Atlantic	$2.12	$2.30
Lower Atlantic	$0.98	$2.21
Midwest	$1.82	$2.07
Gulf Coast	$1.87	$2.11
Rocky Mountain	$1.51	$1.99
West Coast	$1.87	$2.65
NATIONAL AVERAGE	**$1.89**	**$2.27**

TABLE 13d - Liquefied Natural Gas (LNG)
Average Retail Price by Refueling Station Type ($/DGE)

	Private	Public
New England	$2.85	---
Central Atlantic	---	---
Lower Atlantic	---	$2.75
Midwest	---	$2.99
Gulf Coast	---	$2.56
Rocky Mountain	---	---
West Coast	$2.06	$3.35
NATIONAL AVERAGE	**$2.15**	**$2.96**

--- indicates no data points were submitted for this region.

Comparison Of Prices By Region For Public & Private Refueling Stations cont.

TABLE 13e - Ethanol (E85)
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	---	$2.82
Central Atlantic	$2.39	$2.46
Lower Atlantic	$2.42	$2.36
Midwest	$2.21	$2.21
Gulf Coast	$2.92	$2.17
Rocky Mountain	---	$2.25
West Coast	$2.59	$2.87
NATIONAL AVERAGE	**$2.32**	**$2.31**

TABLE 13f - Propane
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	$1.98	$3.24
Central Atlantic	$1.69	$3.23
Lower Atlantic	---	$2.62
Midwest	$2.07	$2.75
Gulf Coast	$1.52	$3.04
Rocky Mountain	---	$3.03
West Coast	$3.08	$2.99
NATIONAL AVERAGE	**$2.05**	**$2.96**

TABLE 13g - Biodiesel (B20)
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	$2.42	$3.17
Central Atlantic	$2.49	$2.80
Lower Atlantic	$2.43	$2.82
Midwest	$2.12	$3.04
Gulf Coast	---	$2.91
Rocky Mountain	---	$3.24
West Coast	$2.80	$3.13
NATIONAL AVERAGE	**$2.46**	**$3.03**

TABLE 13h - Biodiesel (B99/B100)
Average Retail Price by Refueling Station Type ($/gal)

	Private	Public
New England	---	$3.02
Central Atlantic	$2.18	$2.79
Lower Atlantic	$4.00	$3.41
Midwest	---	---
Gulf Coast	---	$2.89
Rocky Mountain	---	$2.93
West Coast	$4.29	$3.78
NATIONAL AVERAGE	**$3.49**	**$3.51**

--- indicates no data points were submitted for this region.

Historical Alternative Fuel Prices From Previous Reports

The following graphs illustrate historical prices for the alternative fuels included in the Alternative Fuel Price Report from 2010 to the present, relative to gasoline and diesel. Compressed natural gas (in GGE), propane, and ethanol (E85) have been graphed against gasoline prices, while compressed natural gas (in DGE) liquefied natural gas (in DGE) and biodiesel blends (B20 and B99/B100) have been graphed against diesel prices.

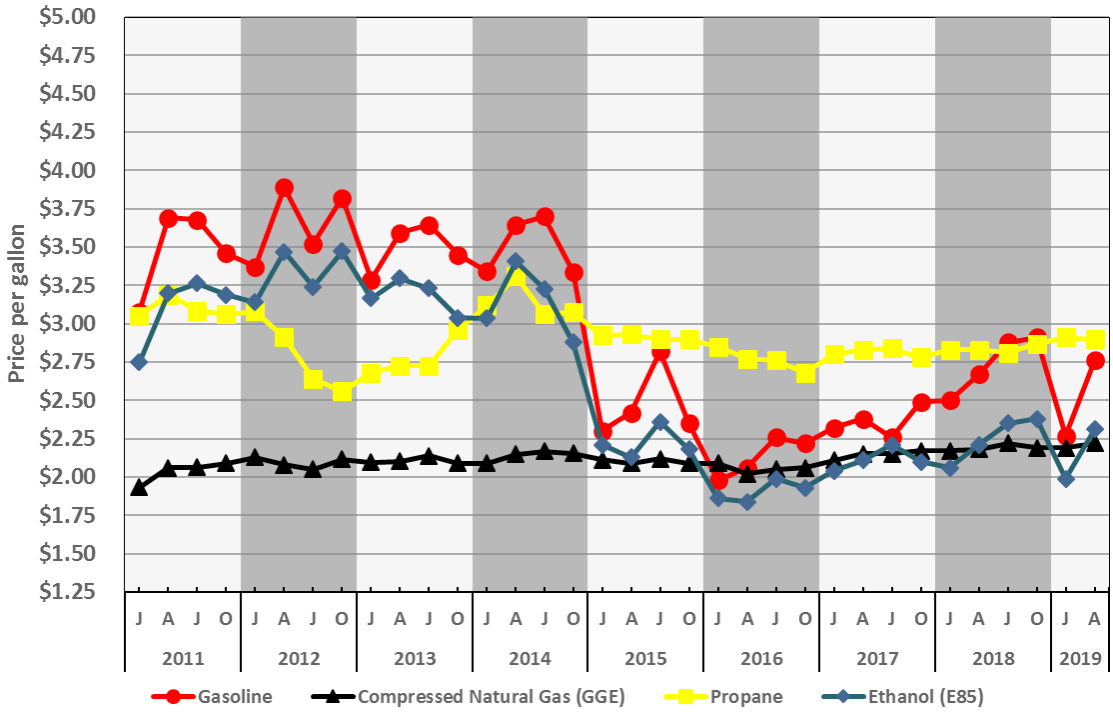


FIGURE 16
ALTERNATIVE FUEL PRICES VERSUS GASOLINE

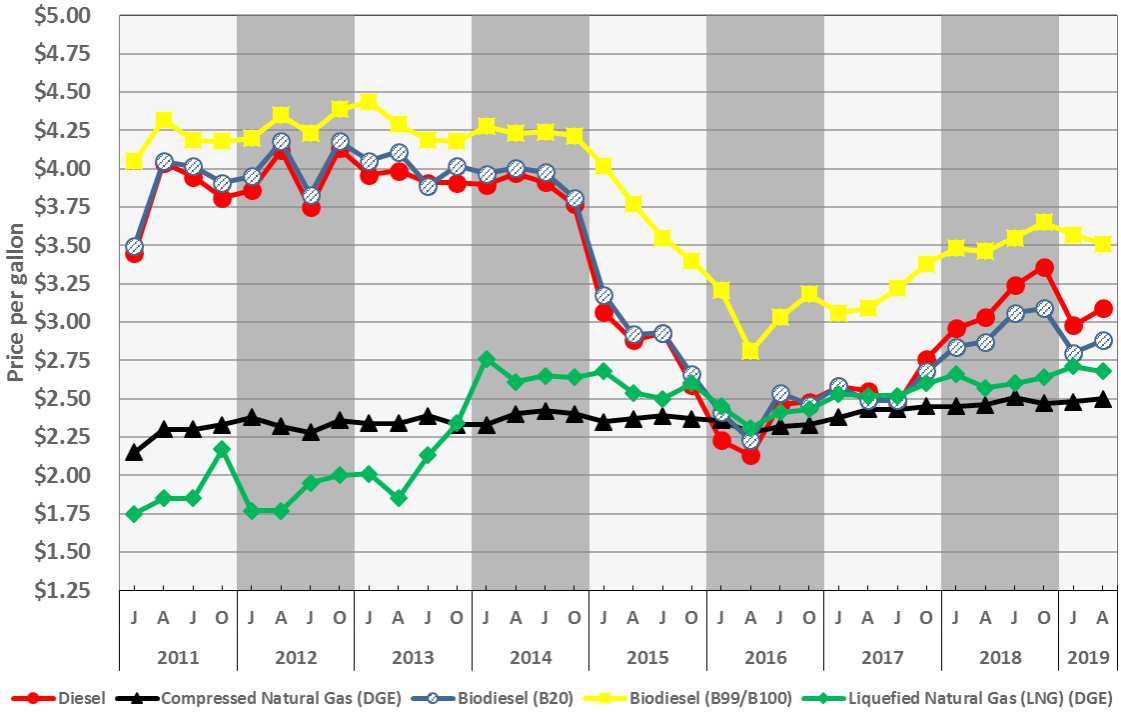


FIGURE 17
ALTERNATIVE FUEL PRICES VERSUS DIESEL

Illustration of Conversion Factors for Fuels

TABLE 14 Lower Heating Values	
Fuel	**Lower Heating Value**
Gasoline (E0)	115,400 BTU/gal
Gasoline (E10)[9]	114,300 BTU/gal
Diesel	128,700 BTU/gal
Biodiesel (B100)	117,100 BTU/gal
Compressed Natural Gas (CNG)[10]	114,300 BTU/GGE
Ethanol (E100)	75,700 BTU/gal
Propane	83,500 BTU/gal

Conversion factors used to establish prices in dollars per gasoline gallon equivalent ($/GGE) and dollars per diesel gallon equivalent ($/DGE) were developed using the lower heating values from the Transportation Energy Data Book Edition 34, Table B.4,[8] and are listed to the left.

In the case of CNG, prices are provided to us in GGE, so no conversion is necessary. The representative heating value of CNG is provided in Table 13 as a reference.

Conversion to GGE

The conversion factor used to convert the price of an alternative fuel from $/gallon to $/GGE is determined as follows:

$$\text{Conversion factor} = \frac{\text{BTU/gal of gasoline (E10)}}{\text{BTU/gal of alternative fuel}}$$

To calculate the price of an alternative fuel in $/GGE, multiply the price per gallon of the alternative fuel by the relevant conversion factor from Table 15.

TABLE 15 Conversion Factors: $/gal to $/GGE	
Fuel	**Conversion Factor**
Biodiesel (B20)	0.90
Biodiesel (B100)	0.98
CNG	1.00
Ethanol (E85)[11]	1.30
LNG	0.89
Propane	1.37

Conversion to DGE

The conversion factor used to convert the price of an alternative fuel from $/gallon to $/DGE is determined as follows:

$$\text{Conversion factor} = \frac{\text{BTU/gal of diesel}}{\text{BTU/gal of alternative fuel}}$$

For example, the conversion factor used to convert a B100 price from $/gal to $/DGE is determined as follows:

$$\frac{\text{128,700 BTU/gal of diesel}}{\text{117,100 BTU/gal of B100}} = 1.099, \text{ rounded to } 1.10$$

To calculate the price of an alternative fuel in $/DGE, multiply the price per gallon of the alternative fuel by the relevant conversion factor from Table 16.

TABLE 16 Conversion Factors: $/gal to $/DGE	
Fuel	**Conversion Factor**
Biodiesel (B20)	1.02
Biodiesel (B100)	1.10
CNG	1.13
Ethanol (E85)[12]	1.47
LNG[13]	1.00
Propane	1.54

For example, if the price of B100 is given as $3.00/gal, the $/DGE is determined as follows: ($3.00/gal) x 1.10 = $3.30/DGE

[8] http://cta.ornl.gov/data/appendix_b.shtml

[9] According to the National Renewable Energy Laboratory (NREL) Alternative Fuels Data Center, the energy content of common gasoline baseline references (E0, E10 and indolene) varies between 112,114 and 116,090 Btu/gal. We chose 114,300 Btu/gal for the E10 energy content, consistent with the Transportation Energy Data Book (TEDB) energy content of CNG, in GGEs. See next footnote.

[10] (5.66 lbs. of CNG/GGE) x (20,200 BTU/lb.) = 114,332; rounded to 114,300.

[11] Most gasoline available throughout the United States today is a blend of 90% gasoline and up to 10% ethanol, or E10. Additionally, the E85 that is sold in the United States today actually contains, on average, approximately 70% ethanol. E85 energy content for this report is therefore calculated as [(.70) x (E100 energy content)] + [(.30) x (E0 energy content)], to more closely reflect the actual energy content of E85 fuel available today.

[12] See footnote 11, above.

[13] In July 2016, at its annual meeting, the National Conference of Weights and Measures (NCWM) voted to approve the diesel gallon equivalent (DGE) as an authorized method of measuring natural gas sold as a vehicle fuel. 1 DGE means 6.059 lbs. of liquefied natural gas (LNG) or 6.384 lbs. of compressed natural gas (CNG).

Comparison of Prices on an Energy-Equivalent Basis

The following tables compare prices for E85, propane, B20 and B99/B100 to conventional fuels (gasoline and diesel) on an energy-equivalent basis. (Natural gas is generally sold in gasoline gallon equivalents or diesel gallon equivalents, so the natural gas "price at the pump" can be directly compared to the price of the corresponding conventional fuel, as shown in Tables 5, 6 and 7.)

TABLE 17a
Ethanol (E85) and Gasoline
Average Retail Prices by Region (GGE)

Region	E85 Prices ($/GGE)	Gasoline Prices ($/gal)	Price Difference*
New England	$3.67	$2.71	$0.96
Central Atlantic	$3.18	$2.62	$0.57
Lower Atlantic	$3.07	$2.64	$0.43
Midwest	$2.87	$2.66	$0.21
Gulf Coast	$2.82	$2.44	$0.38
Rocky Mountain	$2.92	$2.62	$0.31
West Coast	$3.73	$3.57	$0.16
NATIONAL AVERAGE	**$3.00**	**$2.76**	**$0.24**

*Negative numbers represent average E85 prices that are lower than gasoline, on a $/GGE basis.

TABLE 17b
Propane (LPG) and Gasoline
Average Retail Prices by Region (GGE)

Region	LPG Prices ($/GGE)	Gasoline Prices ($/gal)	Price Difference*
New England	$4.36	$2.71	$1.65
Central Atlantic	$3.95	$2.62	$1.33
Lower Atlantic	$3.59	$2.64	$0.95
Midwest	$3.70	$2.66	$1.04
Gulf Coast	$4.00	$2.44	$1.56
Rocky Mountain	$4.15	$2.62	$1.53
West Coast	$4.11	$3.57	$0.54
NATIONAL AVERAGE	**$3.97**	**$2.76**	**$1.21**

*Negative numbers represent average propane prices that are lower than gasoline, on a $/GGE basis.

TABLE 17c
Biodiesel (B20) and Diesel
Average Retail Prices by Region

Region	B20 Prices ($/DGE)	Diesel Prices ($/gal)	Price Difference*
New England	$2.95	$3.22	-$0.27
Central Atlantic	$2.61	$3.16	-$0.55
Lower Atlantic	$2.70	$2.95	-$0.25
Midwest	$3.05	$2.97	$0.08
Gulf Coast	$2.97	$2.72	$0.25
Rocky Mountain	$3.30	$2.96	$0.34
West Coast	$3.18	$3.83	-$0.65
NATIONAL AVERAGE	**$2.94**	**$3.09**	**-$0.15**

*Negative numbers represent average B20 prices that are lower than diesel, on a $/DGE basis.

TABLE 17d
Biodiesel (B99/B100) and Diesel
Average Retail Prices by Region (DGE)

Region	B99/B100 Prices ($/DGE)	Diesel Prices ($/gal)	Price Difference*
New England	$3.32	$3.22	$0.10
Central Atlantic	$2.62	$3.16	-$0.54
Lower Atlantic	$3.94	$2.95	$0.99
Midwest	---	$2.97	---
Gulf Coast	$3.18	$2.72	$0.46
Rocky Mountain	$3.22	$2.96	$0.26
West Coast	$4.24	$3.83	$0.41
NATIONAL AVERAGE	**$3.86**	**$3.09**	**$0.77**

*Negative numbers represent average B99/B100 prices that are lower than diesel, on a $/DGE basis.

Acknowledgements

The authors would like to acknowledge all of the contributors from the Clean Cities community who have provided prices for this report; we sincerely appreciate your continued dedication to the success of this report. The authors would also like to acknowledge the continued support of DOE for developing this report.

Would You Like To Participate?

If you would like to provide prices for alternative fuels in your region and be part of the data collection effort for this report, or if you have any questions, please contact:

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