Effect of Nova Scotia Gasoline Price Regulation on Consumers, Business and Tax Revenue

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Abstract
The main objectives of the gasoline price regulation in Nova Scotia are to reduce fluctuations in gasoline prices, give a fair margin to wholesalers and retailers, assure gasoline supply to retailers, and stop closure of rural gasoline outlets. The Nova Scotia Utilities and Review Board (hereafter referred to as the Regulator) gives the detailed formula it uses for setting the price of gasoline each week. The objective of the paper is to analyze the gasoline pricing formula used by the Regulator and study its effects on consumers, wholesalers, retailers and tax revenue. To achieve the objective, data available on the website of the regulator is used. The period of the study is from October 2009, when the Regulator started fixing weekly prices, to December 2012. The paper starts with brief review of literature on the subject and then moves on to discuss effect of different elements of the formula on consumers, wholesalers, retailers and tax revenue.

Introduction:
All Atlantic provinces regulate the price of gasoline. Nova Scotia had earlier experimented with gasoline regulation and in 1991 abandoned it when the then government thought it as an "unnecessary intrusion into the economy".[1] The hurricane season of 2005 resulted in sharp rise in gasoline prices. This, coupled with frequent fluctuations, tested the nerves of consumers. Independent rural gas stations saw their earnings fell substantially and they could not compete with company owned gasoline outlets. These factors were enough to put gasoline price regulation back in Nova Scotia.

New Brunswick and Nova Scotia both regulated the price of gasoline from 1st July 2006. The data used for regulation in these provinces was culled from the same sources but there were some differences in methods and magnitude of provincial part of the taxes. These differences account for the price difference in both provinces.

The purpose of the present paper is to study in detail the method used by Nova Scotia Utilities and Review Board in Nova Scotia in determining regulated price of gasoline and how it impacts consumers, gasoline wholesalers and retailers. Since government collects gasoline taxes, we also study how gasoline taxes have affected gasoline prices. The study takes data used by the Nova Scotia Utilities and Review Board and also uses Kent Marketing Survey data for cross-checking purposes. The Nova Scotia Utilities and Review Board took charge of regulating price of gasoline from October 2009. Our study is from October 2009 to December 2012. The methodology used in the paper is to cross check each element of the gasoline price formula by putting alternative data and

removing some element of the formula to see if the formula itself causes gasoline price fluctuations. The detail of the methodology is explained when we reinterpret each element of the formula.

Literature on the subject:
Roderick Hill, submitted a report on *Petroleum Product Price Regulation in Nova Scotia: A Consumer's Perspective. Final Report* [2] to Service Nova Scotia and Municipal Relations. 2 April 2012. On page 4 it states: "Price changes under regulation are more predictable, with two benefits for consumers: unexpected large price increases are almost eliminated, and there are modest monetary benefits for those who time their purchases knowing the direction in which the price is likely to change." He also adds to the conclusion: "Excise tax rates in Nova Scotia for both gasoline and diesel are now about the Canadian average. They have been declining and are their lowest levels in more than 20 years. Because these taxes contribute to publicly provided goods and services, their justification depends on the views of consumers-as-citizens about public policy objectives. Should users of road contribute to their cost or should roads be paid for from general tax revenue? Should polluters face prices reflecting the costs of their pollution?"

The Report thus goes beyond the assessment of gasoline price regulation on consumers by relating it to debate about the use of public funds on different public goods. Moreover, the remark about excise taxes are declining in Nova Scotia is opposite of facts. The neighbouring provinces of PEI and New Brunswick, which also regulate gasoline prices, have lower excise taxes than in Nova Scotia. In 2010 the HST was raised from 13% to 15% in Nova Scotia.

My study, "*Forward Averaging and the Price of Regular Self Serve Gasoline in Nova Scotia:"* [3] compares the effect of regulation on gasoline prices in Nova Scotia and New Brunswick. Nova Scotia sets the maximum and minimum regulated price of self serve gasoline while New Brunswick sets only the maximum price and leaves minimum price to be determined by the market forces. Nova Scotia regulator uses "forward averaging" in its pricing formula, the amount of which depends on the judgement of the regulator. New Brunswick does not have forward averaging in the formula. The forward averaging is used to counter the effect of fluctuating international gasoline prices on the regulated wholesale margin in Nova Scotia. The use of discretionary forward averaging amplifies fluctuations in prices. The use of forward averaging in the Nova Scotia formula causes higher and lower amplitude of prices than in New Brunswick causing consumer anxiety. This study thus contradicts the Hill Report about the effect of regulation on controlling fluctuations in gasoline prices. This study is done for June, July and August of 2012.

The present paper has much broader scope. It not only takes all years for which N.S. Utility and Review Board set prices (2009 to 2012) but also takes all aspects of formula used by the Regulator: Base wholesale prices, forwarding averaging amount, wholesale selling prices, margins and taxes.

Rack Prices and base wholesale prices:
The rack price is the price paid at the point where tanker trucks load their fuel from a distribution terminal's loading rack. This is the wholesale price paid by the distributor and does not include transportation cost. Since there is only one refinery in Nova Scotia located in Dartmouth the rack price in Nova Scotia refers to the wholesale price paid by the distributor in Nova Scotia. Daily rack prices are available from *www.kentmarketingservices.com*. As an example the rack prices are given for Halifax in January 2011 in table-1.

The days selected in the table-1 correspond to the days used in Nova Scotia formula by the Regulator for determining base wholesale prices for week beginning Friday January 14, 2011. The Regulator set the base wholesale price 71.6 cents per litre which was composed of cost 65.1 cents, wholesale margin of 6 cents, forwarding averaging amount of 0.2 cents and transport cost of 0.3 cents per litre. Thus the wholesalers in Halifax charged 71.6 cents per litre.

The rack prices include wholesale margin but does not include transportation cost. If we remove transportation cost from the base wholesale price it becomes 71.3 cents per litre. Since the distributor paid 68.12 cents (inclusive of wholesale margin of 6 cents per litre) and charged 71.3 cents per litre, he made an extra 3.18 cents per litre profit. In general, if rack prices plus transport cost are lower than the base wholesale prices, the wholesale distributor makes a windfall profit from the regulated price. This also amounts a loss to the consumer not only excess profit but also 15% HST on it, which goes to the government coffers.

Transport Cost:
From January 2012, the Regulator has increased transport cost in all regions of Nova Scotia which is given in table-2. In the table, zone one is Halifax Regional Municipality (HRM) which includes Halifax, Dartmouth, Sackville, Bedford and some other areas. For this zone increase in transport allowance was 50% which when rounded becomes 67%. The increase in Zone one where refinery is located and where most of the gasoline volume is consumed is certainly disproportional to any increase in cost of transportation. And of course 15% of transportation cost goes to the government by way of HST.

The regulator in New Brunswick allows for the actual transport cost up to maximum of 2.5 cents per litre. Transport cost there is added after the weekly retail price of gasoline is fixed. Since it is the actual transport cost which is added to the fixed price, there is no change in it since the inception of regulated price since 2006. But in Nova Scotia, the disproportional increase over regions may not reflect the true increase in transportation cost. It may well reflect increase an increase in profit to the wholesale distributor and tax revenue to the government at the expense of consumers.

Forward averaging:
The Regulator assures that the wholesale margins do not vary with weekly gasoline price changes by using forward averaging of the price. The regulated gasoline price is based on the five day average (Thursday, Friday, Monday, Tuesday and Wednesday) for price to

be charged by retailers from next Friday, the New York price may have increased or decreased. According to the Gardner Pinfold two year review report:

> *In an extended rising market, wholesalers would be buying at steadily higher prices over successive one-week adjustment periods and selling at a price fixed by regulation on the basis of conditions that prevailed over the previous one-week period. In these circumstances, the marketing margin would fall below the regulated margin on each transaction leaving them in a low or potentially negative margin position.*
>
> *In an extended declining market, wholesalers would be buying at steadily lower prices over each successive one-week period and selling at a price fixed by regulation on the basis of conditions that prevailed over the previous week. In these circumstances, their margin would rise above the regulated margin on each transaction leaving them in a relatively high margin position.*

The Nova Scotia Utilities and Review Board adds a discretionary forward averaging amount, which is subject to HST, when the previous week's benchmark price is lower than the current week's benchmark price i.e., when prices are rising. Similarly the Board reduces a discretionary forward averaging amount when current week's benchmark price is lower than previous week's benchmark price i.e., when prices are falling. According to the Board:

" When the current benchmark price is more than the previous benchmark price of prior pricing period(s), an adjustment in favour of industry will be considered. Conversely, when the current benchmark price is less than the previous benchmark price of prior pricing period(s), an adjustment in favour of consumers will be considered."

The effect of forward averaging is that when benchmark prices are rising, the pump price rises higher because the Regulator adds discretionary forward averaging amount. Similarly when the benchmark prices are falling, the Regulator subtracts discretionary forward averaging amount causing the pump prices to fall even further. In nutshell, forward averaging amplifies the fluctuations.

Let us consider the gasoline prices without forward averaging. Since the federal tax (10 cpl), provincial tax (15.5 cpl), wholesale and retail margins and transport costs are fixed amounts, the only variables are the benchmark price, HST amount on it and the sale price of gasoline. Without forward averaging:

$\Delta M = \Delta B(1+t)$

where Δ refers to change, B is benchmark price, M for maximum regulated price and t is rate of HST.

If all other things (federal tax, provincial tax, wholesale and retail margins) are constant then

$\Delta M/\Delta B = (1+t)$

In other words, when the benchmark price rises by one cent per litre, price before July 2010 would have risen rise by 1.13 cents per litre and after July 2010, by 1.15 cents in Nova Scotia.

We used gasoline price data from the web site of the Nova Scotia Utilities and Review Board. After removing the forward averaging amount, we recalculated all the values. Our results show that $\Delta M = 1.13$ when the HST was 13% in 2009. For January to June 2010 it the value is also 1.13. The HST rate was increased to 15% in July 2010. This jump in HST rate has increased the value. But if we ignore the changes from 28th May 2010 (the last pricing period before change) to 4th June 2010 (the first pricing period after the increase), the results become consistent with the above formula and we get $\Delta M = 1.15$.

Similar results are obtained when we take minimum regulated prices instead of maximum regulated prices.

Since the Regulator uses forward averaging amount, we need to modify the above formula, which now becomes:

$\Delta M = \Delta B(1+t) + \Delta F(1+t)$

and $\Delta M/\Delta B = [\Delta B(1+t) + \Delta F(1+t)]/\Delta B$

where F denotes forward averaging amount. Since the Regulator adds forward averaging amount when the price is rising, it rises more than it would have without forward averaging. Similarly when the price is falling, the Regulator subtracts some forward averaging amount causing price to fall even further. Table 3 shows the comparison between column ΔB and column ΔM. The change in $M >$ change in B except when there is no change in maximum price despite a change in benchmark price. In such a case, the Regulator has adjusted forward averaging amount in such manner which gives a constant maximum price. For instance on March 2, 2012, the value of ΔB is 0.9 and the forward averaging amount is adjusted to get the same price as on February 24, 2012.

When HST is 15%, a 1 cent change in benchmark price causes maximum or minimum regulated price to change by 1.15 cents per litre. But when we add forward averaging amount, it changes by more than or less than 1.15 cents per litre. And of course, the effect is intensified because forward averaging amount is also subject of HST. Table 3 shows the calculations for each pricing period. It is clear that the amount of forward averaging does not follow any set method and is arbitrary. We cannot predict if the benchmark price increases by 1 cents per litre how much maximum pump price will change. The column ΔB in table 3 relates to changes in benchmark price, column ΔM relates to changes in maximum retail price and column $\Delta M/\Delta B$ relates to the increase in maximum retail price when the benchmark price changes by 1 cents per litre. For July 6, 2012, the value of $\Delta M/\Delta B$ was 3.08 and for 31st August 2012 it was 1.3 and for 7th September it was 0.67. The minimum retail prices also fluctuate in similar manner.

Since we know the total effect of change in benchmark price on change in pump price set by the regulator in Nova Scotia, we can separate the forward averaging and HST effects on pump price change.

$(\Delta M/\Delta B) -(1+t) = \Delta F/\Delta B(1+t)$

For instance if total pump price changes by 2 cents per litre when the benchmark price changes by 1 cents per litre, 1.15 cents is the price with HST and remaining 2 - 1.15 = 0.85 cents per litre is the forward averaging effect.

Margin:

Margin is defined in microeconomics as price minus average variable cost or price minus marginal cost; and, profit margin is obtained by subtracting fixed cost from margin amount. Gasoline outlets which are self-serve fast outlets receive payments for gasoline purchase by credit or debit card at the pump (i.e., at pump only payment outlet). For these outlets variable and other fixed costs do not change with the volume of gasoline sold. So, regulated margin is the profit margin as well.

If the buyer of gasoline comes in the shop after buying gasoline for purpose of paying the bill, then the wages of the employee involved in taking payment may be considered as variable cost.

If there are two employees in the variety store attached to the gasoline outlet, and the consumers buy coffee and other snacks in the shop after buying gasoline, then the wages etc. cannot be considered as variable cost of gasoline alone but also for running snack business. If the wages go up, and other variable and fixed costs go up, and profit margin of the business falls, it did not solely fall because of gasoline it also fell because of other business. If regulator increases gasoline margin, it is subsidizing the snack business at the cost of consumer rather than increasing margin for the sale of gasoline retailer.

The New Brunswick maximum retail margin of 5.9 cpl for self serve and 8.9 cpl for full serve has not changed ever since inception of regulation in July 2006.

N.S. sets min and max price. In July 2006 minimum margin was set at 4 cpl and max self serve 5.5 cpl. For full serve it was 4 cpl to 7.5 cpl. May 18th 2007 the max cap was removed and retailers could charge any amount of the max. limit of the margin but the lowest one was 4 cpl.

From January 2012 the margins in Nova Scotia increased from 4.8 to 6.6 cpl for self serve and 4.8 to limit less for full serve.

Even though retail margins were set lower than New Brunswick in 2006, at present they are higher in Nova Scotia. New Brunswick retail margins have not changed and are maximum 5.9 cpl for self serve gasoline but in Nova Scotia they have increased from 5.5 cpl to 6.6 cpl.

For full serve gasoline the maximum retail margin is 8.9 cpl in New Brunswick. But there is no upper limit in Nova Scotia. It is left to the gas outlet to charge price for full serve gasoline according to their cost structure and demand and supply conditions.

The company owned stations which are vertically integrated upstream see an increase in their profits after rise in margins in Nova Scotia. The supply decision of the company owned gasoline outlets does not depend on whether the Regulator increases margin or not. The same very companies are supplying gasoline in New Brunswick where margin amount has been kept constant since 2006.

The company leased gasoline outlets have their own agreements with gasoline suppliers including the margin amount. The increase in gasoline margin may or may not benefit the retail outlet. It may be that an increased margin amount goes to the gasoline supplier and the retailer gets only the contractual amount. In that case the argument for increased margin defeats its purpose.

The big box stores which sell other products and gasoline already have coupon or other promotional schemes which effectively lower the price of gasoline set by the N.S. Utilities and Review Board. The increase in margin has increased their profits and/or led them to be more aggressive in their promotions schemes.

It may be argued that independent retailers may benefit from the increased margin. These independent retailers are a few and most of these operate their business in rural areas and are full serve gasoline outlets which are not subject to maximum price regulation. These full service gasoline outlets can raise the price if their cost of operation has gone up, the regulated margin may not affect their decision. However if there is independent retailer which has self-serve outlet as well then an increased margin increases the viability and profitability of the business.

The consumer, who pays higher price of gasoline, is the net loser after the Regulator increased margin.

Tax Revenue

When we compare NB and NS, the tax difference is about 5.1 cpl. The federal tax of 10 cpl is same across Canada. The provincial tax is 13.6 cp. and HST is 13% in New Brunswick while these are 15.5 cpl and 15% respectively in Nova Scotia.

To study the effect of provincial taxes on gasoline pricing, we rebuilt gasoline price series without provincial taxes and compared it with series with provincial taxes for year 2012. This shown in Table 4. The difference between the two has shown the real impact of taxes on gasoline pricing. The results show that the impact of tax is 42.6 cents on minimum price of regular self serve and 42.9 cents per litre on maximum price of regular self serve gasoline. If we take away 10 cents per litre for the federal government, we can say that the government of Nova Scotia was taking about 33 cents per litre on gasoline during 2012.

Conclusion:

The gasoline price formula used in Nova Scotia is biased toward giving wholesalers larger margins and government higher tax revenue. Consumers are at short end particularly after HST in Nova Scotia increased from 13% to 15%. The study showed that the base wholesale price should have been lower in Nova Scotia than those set by the Regulator. Also the conclusion of the study is that forward averaging, which causes prices to go up more when prices are rising and fall more when prices are falling, should be removed from the gasoline pricing formula.

References:

1. Regulated Markets Review Canadian Petroleum Products Institute http://www.cppi.ca/Regulated_Markets_Review.html 6/13/2008.

2. Roderick Hill, submitted a report on ***Petroleum Product Price Regulation in Nova Scotia: A Consumer's Perspective. Final Report*** to Service Nova Scotia and Municipal Relations. 2 April 2012.

3. Pyare Arya, Forward Averaging and the Price of Regular Self Serve Gasoline in Nova Scotia***. International Journal of Humanities and Social Sciences.*** Vol. 3, No.2, January 2013.

4. ***www.kentmarketingservices.com.***

Table-1: Rack Prices
(Cents per litre)

Thursday 06 Jan 2011	68.0
Friday 07 Jan 2011	68.1
Monday 10 Jan 2011	67.7
Tuesday 11 Jan 2011	68.1
Wednesday 12 Jan 2011	68.7
Average for the week	68.12

Table-2: Transport cost of gasoline in Nova Scotia
(cents per litre except where percent)

Zone	Allowance prior to change	Increase	Total Transport Allowance (rounded)	Percent Increase
1	0.3	0.15	0.5	67
2	0.7	0.29	1.0	43
3	1.2	0.20	1.4	17
4	1.2	0.31	1.5	25
5	1.2	0.29	1.5	25
6	2.0	0.17	2.2	10

Table-3: The Effect of Forward Averaging

B base wholesale price F forward averaging amount
M maximum retail price of regular self serve gasoline
Δ = Change

Table 3 for 2012

Period	B	F	M	ΔB	ΔM	ΔM/ΔB
30-Dec-11	72.8	0.5	127.2			
06-Jan-12	74	0.6	130.2	1.2	3	2.5
13-Jan-12	74.9	0.7	131.3	0.9	1.1	1.2
20-Jan-12	75.1	0.5	131.3	0.2	0	0
27-Jan-12	75.7	0.6	132.1	0.6	0.8	1.3
03-Feb-12	77.1	0.8	134	1.4	1.9	1.4
10-Feb-12	77.8	0.8	134.8	0.7	0.8	1.1
17-Feb-12	79.6	1.1	137.2	1.8	2.4	1.3
24-Feb-12	80.8	1.1	138.6	1.2	1.4	1.2
02-Mar-12	81.7	0.2	138.6	0.9	0	0
09-Mar-12	80.7	0.7	138	-1	-0.6	0.6
16-Mar-12	81.8	0.8	139.4	1.1	1.4	1.3
23-Mar-12	83.3	1	141.3	1.5	1.9	1.3
30-Mar-12	86.1	1.4	145	2.8	3.7	1.3
06-Apr-12	88.3	1.3	147.4	2.2	2.4	1.1
13-Apr-12	86.2	0.8	144.4	-2.1	-3	1.4
20-Apr-12	85.2	0	142.4	-1	-2	2
27-Apr-12	80.7	-0.8	136.3	-4.5	-6.1	1.4
04-May-12	79.8	-1.1	134.9	-0.9	-1.4	1.6
11-May-12	77	-1.2	131.6	-2.8	-3.3	1.2
18-May-12	77.3	-1.5	131.6	0.3	0	0
25-May-12	76.4	-1.5	130.5	-0.9	-1.1	1.2
01-Jun	76.2	-1.3	130.5	-0.2	0	0
08-Jun	73.3	-1.1	127.4	-2.9	-3.1	1.1
15-Jun	72.2	-1.1	126.2	-1.1	-1.2	1.1
22-Jun	70.4	-1.9	123.2	-1.8	-3	1.7
29-Jun	67.9	-2	120.2	-2.5	-3	1.2
06-Jul	69.1	0	123.9	1.2	3.7	3.1
13-Jul	73.5	0.7	129.7	4.4	5.8	1.3
20-Jul	75.4	1.1	132.4	1.9	2.7	1.4
27-Jul	73.4	0	128.8	-2	-3.6	1.8
03-Aug	73.2	0.2	128.8	-0.2	0	0
10-Aug	77.6	1.3	135.1	4.4	6.3	1.4
17-Aug	78.3	1.5	136.2	0.7	1.1	1.6
24-Aug	78.8	1	136.2	0.5	0	0
31-Aug	81.8	1.4	140.1	3	3.9	1.3
07-Sep-12	82.4	1.2	140.5	0.6	0.4	0.7
14-Sep-12	86.6	1.3	145.5	4.2	5	1.2
20-Sep-12	82.6	0	139.4	-4	-6.1	1.5
21-Sep-12	77.5	2.5	136.4	-5.1	-3	0.6

Table-3
for 2012
Continued

28-Sep-12	81.6	1	139.4	4.1	3	0.7
05-Oct-12	84.9	1	143.2	3.3	3.8	1.2
12-Oct-12	81.6	0.5	138.8	-3.3	-4.4	1.3
19-Oct-12	77.7	-1.2	132.4	-3.9	-6.4	1.6
24-Oct-12	71.9	0	127	-5.8	-5.4	0.9
26-Oct-12	69.3	-1.5	122.4	-2.6	-4.6	1.8
02-Nov-12	72.5	-0.3	127.4	3.2	5	1.6
09-Nov-12	73.3	-0.3	128.3	0.8	0.9	1.1
16-Nov-12	75.6	0.6	132	2.3	3.7	1.6
23-Nov-12	73.7	-0.2	128.9	-1.9	-3.1	1.6
Nov-12	72	-0.6	126.5	-1.7	-2.4	1.4
07-Dec-12	71.3	-0.9	125.4	-0.7	-1.1	1.6
14-Dec-12	68.2	-1	121.7	-3.1	-3.7	1.2
21-Dec-12	70.3	0	125.2	2.1	3.5	1.7
28-Dec-12	73	0.5	128.9	2.7	3.7	1.4

Table-3: The Effect of Forward Averaging

B base wholesale price F forward averaging amount
M maximum retail price of regular self serve gasoline
Δ = Change

Table-3 for 2011

	B	F	M	ΔB	ΔM	ΔM/ΔB
31-Dec-10	65.3	0.6	118.7			
07-Jan-11	64.9	0.4	118	-0.4	-0.7	1.75
14-Jan-11	65.1	0.2	118	0.2	0	0
21-Jan-11	65.2	0.1	118	0.1	0	0
28-Jan-11	64.1	0	116.6	-1.1	-1.4	1.3
04-Feb-11	65.5	0	118.2	1.4	1.6	1.1
11-Feb-11	65.5	0	118.2	0	0	0
18-Feb-11	65.8	0.8	119.5	0.3	1.3	4.3
25-Feb-11	68.5	1.2	123.1	2.7	3.6	1.3
04-Mar-11	72.1	1.5	127.5	3.6	4.4	1.2
11-Mar-11	73.7	1.5	129.4	1.6	1.9	1.2
18-Mar-11	73.2	1.3	128.6	-0.5	-0.8	1.6
25-Mar-11	75	1.5	130.9	1.8	2.3	1.3
01-Apr-11	76.2	1.4	132.1	1.2	1.2	1
08-Apr-11	78.7	1.3	134.9	2.5	2.8	1.1
15-Apr-11	79.1	0.9	134.9	0.4	0	0
22-Apr-11	80.6	1.2	137	1.5	2.1	1.4
29-Apr-11	81.9	1.3	138.6	1.3	1.6	1.2
06-May-11	82.8	0.4	138.6	0.9	0	0
07-May-11	82.8	0.4	138.6	0	0	0
13-May-11	80.1	-0.4	134.6	-2.7	-4	1.5
18-May-11	72.6	0	126.4	-7.5	-8.2	1.1
20-May-11	72.8	-0.2	126.4	0.2	0	0
27-May-11	73	-0.4	126.4	0.2	0	0
03-Jun-11	75.4	0	129.6	2.4	3.2	1.3
10-Jun-11	74.5	0	128.6	-0.9	-1	1.1
17-Jun-11	74.7	-0.2	128.6	0.2	0	0
24-Jun-11	72.6	-0.5	125.8	-2.1	-2.8	1.3
01-Jul-11	70.7	0	124.2	-1.9	-1.6	0.8
08-Jul-11	73.1	0.5	127.5	2.4	3.3	1.4
15-Jul-11	77.1	1	132.7	4	5.2	1.3
22-Jul-11	77.4	0.7	132.7	0.3	0	0
29-Jul-11	76.6	0.6	131.7	-0.8	-1	1.3
Aug-11	76.1	0	130.4	-0.5	-1.3	2.6
12-Aug-11	71.3	-1	123.7	-4.8	-6.7	1.4
19-Aug-11	74.5	0	128.6	3.2	4.9	1.5
26-Aug-11	74.5	0	128.6	0	0	0
02-Sep-11	76.9	0.6	132	2.4	3.4	1.5
09-Sep-11	77.9	0.7	133.3	1	1.3	1.3
16-Sep-11	75	-0.7	128.3	-2.9	-5	1.7
23-Sep-11	72.6	-1.2	125	-2.4	-3.3	1.4

Table-3 for 2011 continued

30-Sep-11	71.7	-1	124.2	-0.9	-0.8	0.9
07-Oct-11	72.6	0	126.4	0.9	2.2	2.4
14-Oct-11	76.8	1	132.4	4.2	6	1.4
21-Oct-11	75.5	0.4	130.2	-1.3	-2.2	1.7
28-Oct-11	73.5	-0.7	126.6	-2	-3.6	1.8
04-Nov-11	73	-0.2	126.6	-0.5	0	0
11-Nov-11	74.3	0.3	128.7	1.3	2.1	1.6
18-Nov-11	71.8	-0.5	124.9	-2.5	-3.8	1.5
25-Nov-11	69.8	-0.8	122.2	-2	-2.7	1.4
02-Dec-11	70.2	-1.2	122.2	0.4	0	0
09-Dec-11	71.1	0	124.7	0.9	2.5	2.8
16-Dec-11	71	0.1	124.7	-0.1	0	0
23-Dec-11	70.3	-0.2	123.5	-0.7	-1.2	1.7
30-Dec-11	72.8	0.5	127.2	2.5	3.7	1.5

Table-3: The Effect of Forward Averaging

B base wholesale price F forward averaging amount
M maximum retail price of regular self serve gasoline
Δ = Change

Table-3 for 2010

Period	B	F	M	ΔB	ΔM	ΔM/ΔB
25-Dec-09	0	59	101.7			
01-Jan-10	0.9	63	106.2	3.1	4.5	1.5
08-Jan-10	0.9	64.8	108.3	1.8	2.1	1.2
15-Jan-10	0	64.2	107.6	0.3	-0.7	-2.3
22-Jan-10	0	62.7	105.9	-1.5	-1.7	1.1
29-Jan-10	0	61.5	104.5	-1.2	-1.4	1.2
05-Feb-10	0.5	62.3	105.4	0.3	0.9	3
12-Feb-10	-0.6	60	102.8	-1.2	-2.6	2.2
19-Feb-10	0	60.9	103.8	0.3	1	3.3
26-Feb-10	0.8	65	108.5	3.3	4.7	1.4
05-Mar-10	0.6	65	108.5	0.2	0	0
12-Mar-10						
19-Mar-10	1.9	66.4	110.06	0.1	1.6	15.6
26-Mar-10	-0.2	64.1	107.5	-0.2	-2.6	12.8
02-Apr-10	0	64.1	107.5	-0.2	0	0
09-Apr-10	0	66.3	109.9	2.2	2.4	1.1
16-Apr-10	0.5	65.3	108.8	-1.5	-1.1	0.7
23-Apr-10	-0.6	63.6	106.9	-0.6	-1.9	3.2
30-Apr-10	0.3	65.7	109.3	1.2	2.4	2
07-May-10	-0.3	65.7	109.3	0.6	0	0
14-May-10	0	62.7	105.9	-3.3	-3.4	1.0
21-May-10	-1.1	59.7	102.5	-1.9	-3.4	1.8
28-May-10	-1.5	57.3	99.8	-2	-2.7	1.3
04-Jun-10	-1	58.9	101.6	1.1	1.8	1.6
11-Jun-10	-0.5	59.6	102.4	0.2	0.8	4
18-Jun-10	0.7	62.2	105.3	1.4	2.9	2.1
25-Jun-10	1	62.2	105.3	0.6	0	0
01-Jul-10	0	62.1	107.1	0	1.8	0
09-Jul-10	-0.4	59.7	104.3	-2	-2.8	1.4
16-Jul-10	0	60.9	105.7	0.8	1.4	1.8
23-Jul-10	0.5	62.1	107.1	0.7	1.4	2
30-Jul-10	-0.1	62.1	107.1	0.4	0	0
06-Aug-10	0.5	63.6	108.8	1.1	1.7	1.6
13-Aug	-0.2	61.2	106	-1.7	-2.8	1.7
20-Aug-10	-0.8	57.4	101.7	-3.2	-4.3	1.3
27-Aug-10	-0.5	57.4	101.7	-0.3	0	0
03-Sep-10	-0.5	59.1	103.6	1.7	1.9	1.1
10-Sep-10	0	60.1	104.8	0.5	1.2	2.4
17-Sep	0.5	61.2	106	0.6	1.2	2
24-Sep-10	-0.5	59.1	103.6	-1.1	-2.4	2.2
01-Oct-10	0.6	60.8	105.6	0.6	2	3.3
08-Oct-10	2	66.2	111.8	4	6.2	1.6

Table-3 for 2010 continued

15-Oct-10	0.9	66.2	111.8	1.1	0	0
22-Oct-10	0.4	64.4	109.7	-1.3	-2.1	1.6
29-Oct-10	0	63	108.1	-1	-1.6	1.6
05-Nov-10	0.3	64.1	109.4	0.8	1.3	1.6
11-Nov-10	0.6	65.6	111.1	1.2	1.7	1.5
19-Nov-12	0.9	68.1	114	2.2	2.9	1.3
26-Nov-10	0.7	68.1	114	0.2	0	0
03-Dec-10	1	69.9	116	1.5	2	1.3
10-Dec-10	1.1	71.4	117.8	1.4	1.8	1.3
17-Dec-10	0.3	69.3	115.3	-1.3	-2.5	1.9
31-Dec-10	0.6	72.2	118.7	2.6	3.4	1.3

Table-3: The Effect of Forward Averaging

B base wholesale price F forward averaging amount
M maximum retail price of regular self serve gasoline
Δ = Change

Table-3 for 2009

Period	B	F	M	ΔB	ΔM	ΔM/ΔB
02-Oct-09	48.2	0	96.6			
09-Oct-09	50.5	0	99.2	2.3	2.6	1.1
16-Oct-09	50.4	1	100.2	-0.1	1	-10
23-Oct-09	55.6	1.6	106.8	5.2	6.6	1.3
30-Oct-09	58.3	1.9	110.2	2.7	3.4	1.3
06-Nov-09	57.3	1.2	108.3	-1	-1.9	1.9
13-Nov-09	55.5	0.8	105.8	-1.8	-2.5	1.4
20-Nov-09	55.4	0.9	105.8	-0.1	0	0
27-Nov-09	55.9	0.4	105.8	0.5	0	0
04-Dec-09	55.6	-0.4	104.5	-0.3	-1.3	4.3
11-Dec-09	53.7	-1.6	101	-1.9	-3.5	1.8
18-Dec-09	50.9	-0.8	98.8	-2.8	-2.2	0.8
25-Dec-09	52.7	0	101.7	1.8	2.9	1.6

Table-4 : Tax amount on gasoline, 2012

B= Base wholesale price
MinP exTax: Minimum price before taxes
MaxP exTax: Maximum price before taxes

Period	B	MinP ex Tax	Min Price	Tax amount	% Tax	MaxP ex T	Max Price	Tax amount
30-Dec-11	72.8	84.6	125.5	40.9	32.6	86.4	127.2	40.8
06-Jan-12	74	85.9	128.1	42.2	32.9	87.7	130.2	42.5
13-Jan-12	74.9	86.9	129.3	42.4	32.9	88.7	131.3	42.6
20-Jan-12	75.1	86.9	129.3	42.4	32.8	88.7	131.3	42.6
27-Jan-12	75.7	87.6	130.1	42.5	32.7	89.4	132.1	42.7
03-Feb-12	77.1	89.2	131.9	42.7	32.4	91	134	43
10-Feb-12	77.8	89.9	132.7	42.8	32.3	91.7	134.8	43.1
17-Feb-12	79.6	92	135.1	43.1	31.9	93.8	137.2	43.4
24-Feb-12	80.8	93.2	136.5	43.3	31.7	95	138.6	43.6
02-Mar-12	81.7	93.2	136.5	43.3	31.7	95	138.6	43.6
09-Mar-12	80.7	92.7	135.9	43.2	31.8	94.5	138	43.5
16-Mar-12	81.8	93.9	137.3	43.4	31.6	95.7	139.4	43.7
23-Mar-12	83.3	95.6	139.3	43.7	31.4	97.4	141.3	43.9
30-Mar-12	86.1	98.8	142.9	44.1	30.9	100.6	145	44.4
06-Apr-12	88.3	100.9	145.4	44.5	30.6	102.7	147.4	44.7
13-Apr-12	86.2	98.3	142.4	44.1	31.0	100.1	144.4	44.3
20-Apr-12	85.2	96.5	140.3	43.8	31.2	98.3	142.4	44.1
27-Apr-12	80.7	91.2	134.2	43	32.0	93	136.3	43.3
04-May-12	79.8	90	132.8	42.8	32.2	91.8	134.9	43.1
11-May-12	77	87.1	129.5	42.4	32.7	88.9	131.6	42.7
18-May-12	77.3	87.1	129.5	42.4	32.7	88.9	131.6	42.7
25-May-12	76.4	86.2	128.5	42.3	32.9	88	130.5	42.5
01-Jun	76.2	86.2	128.5	42.3	32.9	88	130.5	42.5
08-Jun	73.3	83.5	125.4	41.9	33.4	85.3	127.4	42.1
15-Jun	72.2	82.4	124.1	41.7	33.6	84.2	126.2	42
22-Jun	70.4	79.8	121.1	41.3	34.1	81.6	123.2	41.6
29-Jun	67.9	77.2	118.1	40.9	34.6	79	120.2	41.2
06-Jul	69.1	80.4	121.8	41.4	33.9	82.2	123.9	41.7
13-Jul	73.5	85.5	127.7	42.2	33.0	87.3	129.7	42.4
20-Jul	75.4	87.8	130.3	42.5	32.6	89.6	132.4	42.8
27-Jul	73.4	84.7	126.7	42	33.2	86.5	128.8	42.3
03-Aug	73.2	84.7	126.7	42	33.2	86.5	128.8	42.3
10-Aug	77.6	90.2	133.1	42.9	32.2	92	135.1	43.1
17-Aug	78.3	91.1	134.1	43	32.1	92.9	136.2	43.3
24-Aug	78.8	91.1	134.1	43	32.1	92.9	136.2	43.3
31-Aug	81.8	94.5	138	43.5	31.5	96.3	140.1	43.8
07-Sep-12	82.4	94.9	138.5	43.6	31.5	96.7	140.5	43.8
14-Sep-12	86.6	99.2	143.4	44.2	30.8	101	145.5	44.5
20-Sep-12	82.6	93.9	137.3	43.4	31.6	95.7	139.4	43.7
21-Sep-12	77.5	91.3	134.3	43	32.0	93.1	136.4	43.3
28-Sep-12	81.6	93.9	137.3	43.4	31.6	95.7	139.4	43.7
05-Oct-12	84.9	97.2	141.1	43.9	31.1	99	143.2	44.2

Table 4
contd.

12-Oct-12	81.6	93.4	136.7	43.3	31.7	95.2	138.8	43.6
19-Oct-12	77.7	87.8	130.3	42.5	32.6	89.6	132.4	42.8
24-Oct-12	71.9	83.2	125	41.8	33.4	85	127	42
26-Oct-12	69.3	79.1	120.3	41.2	34.3	80.9	122.4	41.5
02-Nov-12	72.5	83.5	125.4	41.9	33.4	85.3	127.4	42.1
09-Nov-12	73.3	84.3	126.3	42	33.3	86.1	128.3	42.2
16-Nov-12	75.6	87.5	130	42.5	32.7	89.3	132	42.7
23-Nov-12	73.7	84.8	126.8	42	33.1	86.6	128.9	42.3
Nov-12	72	82.7	124.4	41.7	33.5	84.5	126.5	42
07-Dec-12	71.3	81.7	123.3	41.6	33.7	83.5	125.4	41.9
14-Dec-12	68.2	78.5	119.6	41.1	34.4	80.3	121.7	41.4
21-Dec-12	70.3	81.6	123.2	41.6	33.8	83.4	125.2	41.8
28-Dec-12	73	84.8	126.8	42	33.1	86.6	128.9	42.3
Average				42.6				42.9