

**Direct and Indirect Costs of Conversion to
Reformulated Gasoline in 5-Parish Baton Rouge Region**

By

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April 2004

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I. Introduction

In the following report we estimate some of the costs that will be imposed on business and residents within the five-parish non-attainment area should the EPA impose a requirement to use RFG. We estimate both the **direct costs** and **indirect costs** of the RFG requirement. The estimated **direct costs** are limited to losses imposed on service stations and motorists (households). The **indirect costs** result from the ripple effects to other sectors of the Baton Rouge area economy as caused by the reductions in personal incomes of households and the reduction in revenues of gasoline suppliers. These estimates do not include a number of other potentially significant costs that would result from an EPA mandate to use RFG and thus, should be considered very conservative.

Our estimates of direct costs focus on three areas. First, we estimate the total annual costs to **households** associated with a conversion to RFG in their vehicles (a direct cost). These costs arise because the use of ethanol increases the price paid by motorists at the pump. While estimates of the increase in the price per gallon associated with the conversion to ethanol vary significantly, we use two estimates of the per gallon increase in price---**10 cents and 15 cents per gallon**. This increased price is equivalent to a tax on motorists and suppliers within the five-parish area. But, unlike most taxes, the money collected by the “tax” disappears from the area (going to the refinery producing the reformulated gasoline), resulting in a reduction in annual household income.

Secondly, the reduction in quantity demanded by motorists following the increased price will **reduce net revenue for sellers**. Despite the fact that expenditures on gasoline will rise following the increased price, revenue to sellers falls significantly (a direct cost). This will lead to a ripple effect, reducing income and employment within other sectors of the local economy (the indirect costs). Thirdly, The increased price and the resulting reduction in consumption of gasoline also create what economists refer to as an annual **dead weight loss** to residents within the Baton Rouge area.

Our analysis also presents two different scenarios regarding how motorists in the 5-parish area react to higher gasoline prices caused by the mandate. In section II we assume that drivers do not change their driving patterns at all---they continue to buy the same amount of gasoline. Most estimates of the impact make this assumption. In reality this is very unrealistic. It makes the unrealistic assumption that the demand for gasoline is perfectly inelastic, i.e., consumers do not change their consumption as price increases. Studies of gasoline price elasticities indicate this is an incorrect assumption. In section III we estimate the impacts of the RFG mandate, assuming motorists in the 5-parish area reduce their consumption as the price of gasoline rises.

II. Annual Costs to Motorists Assuming the Same Driving Patterns

The introduction of reformulated gasoline with ethanol will lead to an increase in the price per gallon. This in turn will mean that in order for residents in the Baton Rouge area to continue utilizing their vehicles **to the same extent as they do presently**, they will have to spend more money. In this section, we estimate how much the additional costs to Baton Rouge area motorists would be in order for them to maintain their current driving patterns (i.e., consume the same amount of gasoline).¹

Estimating Gasoline Consumption: 5-Parish Area

Annual gasoline consumption in the five-parish area was calculated using data provided by the Center for Energy Studies at LSU (Appendix Table A1). We estimate the current average price of gasoline to be \$1.70 per gallon. The current price per gallon was determined using a weighted average of the prices for the three grades of gasoline (Tables A2 and A3). Table A4 reports the estimated gallons sold in 2003 for each of the five parishes. We estimate that about 385.8 millions of gallons of gasoline were sold in this area last year.

Direct Costs to Households Assuming No Change in Driving Patterns

Table A5 reports the added costs to area households for a number of alternative assumptions about the increase in the average price per gallon. Numbers in the last two columns are in millions of dollars and represent the additional costs imposed on area households from the use of ethanol.

Estimates suggest that the price of gasoline will increase by 10 to 15 cents per gallon following conversion to ethanol. Thus, taking into account the lower energy content of RFG, switching to ethanol will translate into **an increase in expenditures by Baton Rouge area households of between \$39.74 million to \$59.61 million per year** (See Table 1).² These increased expenditures represent reductions in the annual personal income of area households.

¹ In the next section, we allow for a reduction in gasoline consumption due to the increased price per gallon. That is, individuals will not maintain the same driving patterns as the price of gasoline rises. They are anticipated to alter their driving patterns in order to reduce the level of gasoline consumption following the increased price---what economists refer to as the law of demand. Also, an unknown fraction of the consumption of gasoline in the Baton Rouge area comes from motorists living outside the five-parish area. Most of this “outside” consumption occurs along the two major interstates.

² In addition, due to the lower energy content of ethanol, maintaining the same driving patterns will require a 3 percent increase in consumption (see Keller and Fernandez).

Table 1
Increase in Annual Expenditures by
Households in the Baton Rouge Area
To Maintain the Same Driving Patterns

Increase in Price	Increase in Annual Expenditures
\$0.10	\$39.7 million
\$0.15	\$59.61 million

Note that the numbers in Table 1 are the ones most frequently used to in generating estimates of the costs of the RFG mandates. These costs do not include (1) the indirect effect of the mandates, or (2) the likelihood that gasoline consumption will fall in the area. The former is what we address next.

Total Costs to Households Assuming No Change in Driving Patterns

As Baton Rouge area motorists spend more on gasoline to maintain current driving patterns, they will reduce expenditures elsewhere. In this case, the additional gasoline expenditures are equivalent to a reduction in household earnings. We compute estimates of the total impact of increased gasoline prices using the BEA RIMS II input-output tables for the Baton Rouge MSA. Table 2 contains the estimates for lost employment, lost earnings, and lost sales that can be expected with a ten and fifteen cent rise in gasoline prices.

Table 2
Estimated Impact on Baton Rouge Area Economy of RFG Mandate
Assuming Current Driving Patterns Continue

Assumption:	Lost Employment	Lost Earnings	Lost Sales
10 cent increase	521	\$12,434,646	\$43,574,910
15 cent increase	782	\$18,651,969	\$65,362,365

Note: This table is based on BEA regional input-output multipliers for Baton Rouge Metro area and author's calculations.

A 10-cent increase in gasoline prices forces motorists to spend just under \$38 million to hold current driving patterns constant (Table 1). The reduction in spending elsewhere needed to pay these higher gasoline prices will lead to **(1) \$43.6 million in lost sales for firms in the MSA, (2) a 521 person reduction in employment, and (3) \$12.4 million in lost earnings for households in the MSA.**

Motorist must spend almost \$60 million more on gasoline if the RFG requirement leads to a 15-cent increase in the price of gasoline (Table 1). This additional spending of gasoline will translate into **(1) \$65.4 million in loss in business sales, (2) 782 lost jobs, and (3) \$18.7 million in lost household earnings in the MSA.**

III. Annual Costs to Households and Businesses of Conversion to RFG Assuming Driving Patterns Will Change

In this section we estimate the impact on the 5-parish area that arise because individual households will **reduce their consumption of gasoline** following an increase in the price. In this case, the increase in the price of gasoline caused by the conversion to ethanol is equivalent to a “tax” on area households and businesses.

These “tax revenues” unfortunately, are not returned to Baton Rouge area economy. Instead the increased expenditures “leave” the local area economy and go to the refineries producing the RFG, creating a reduction in personal income and business revenues. These reductions will in turn lead to ripple effects, which are felt throughout the Baton Rouge area economy.

The Theory Behind the Estimates

Figure 1 can be used to explain the derivation of our estimates of direct costs to the Baton Rouge area economy that would result from the EPA’s mandated use of RFG. The demand curve for gasoline is depicted as D. It reflects the inverse relationship between price and quantity consumed (Q)---based on what economists refer to as the “law of demand”. Holding everything else constant, the demand curve represents the maximum quantity of gasoline that motorists will be willing and able to consume at each price (P).

Suppose we denote the current price per gallon of gasoline in the Baton Rouge area as P_0 and the current level of consumption as Q_0 (measured in millions of gallons). Then total expenditures on gasoline are by definition equal to $P_0 \times Q_0$, which is also equal to total revenue for suppliers.

Suppose we represent the new price caused by the mandated use of RFG as P_1 . The fundamental law of demand means that there will be reduction in quantity consumed. The new level of consumption is denoted by Q_1 . Expenditures on gasoline after the increase in price are now equal to $P_1 \times Q_1$. As explain below, since numerous statistical

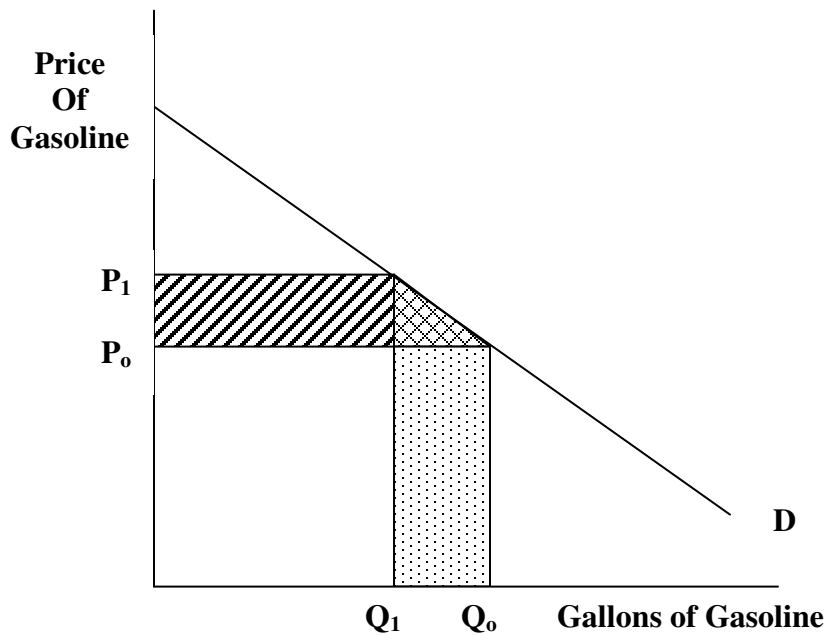
studies on the demand for gasoline strongly suggest that consumers of gasoline are relatively insensitive to changes in the per gallon price, total expenditures on gasoline will actually *rise*; that is, $(P_1 \times Q_1) > (P_0 \times Q_0)$. However, since the increase in the price is equivalent to a **per unit tax on gasoline** equal to the increase in price, sellers continue to receive P_0 rather than P_1 . Thus, total revenues (net of costs for RFG) will decrease from $(P_0 \times Q_0)$ to $(P_0 \times Q_1)$.

The losses to the 5-parish area economy are represented by the shaded areas in Figure 1. First, The dotted area between Q_0 and Q_1 represents the lost sales revenues to Baton Rouge area suppliers of gasoline. The two shaded areas between P_0 and P_1 represent the losses to consumers (households) following the increased price of gasoline. This area can be broken down into two parts. First, the diagonally shaded area represents that portion of the increased household expenditures that are lost to other regions of the state or nation. Secondly, the shaded triangle represents the lost consumer benefits that are not captured by someone else; that is, this triangle represents the dollar value of the benefits that just disappear---what economists refer to as **deadweight loss**. In the following sections we estimate the dollar values of these shaded areas. Thus, the direct costs can be broken down into three components:

- Reduced household incomes
- Reduced sales at are gasoline stations
- The deadweight loss

The losses depicted in Figure 1 represent only the **direct costs** from the mandated use of RFG. These losses will in turn generate additional losses as the reductions in household incomes and reductions in revenues of suppliers ripples through other sectors of the Baton Rouge area economy.

Figure 1: Impact of Price Increase on Demand for Gasoline



Estimating Direct Costs Assuming a Reduction in Gasoline Consumption

The fundamental law of demand states that, everything else the same, an increase in the price of a good or service will lead to a decrease in the quantity consumed. How much consumption falls depends on the nature of the good or service in question. For some goods, consumers are very sensitive to a change in price. For other goods, consumers do not respond much when the price changes. Because of the nature of gasoline, consumers are relatively insensitive to price changes---that is, the reduction in consumption of gasoline is relatively modest following an increase in price (at current levels). Nevertheless, consumption does tend to fall following an increase in the price of gasoline. It is important to take this into account because the costs of a mandated conversion to RFG will be borne by both sides of the market---consumers and suppliers.

The measure of the sensitivity of consumption to changes in the price is referred to as the **price elasticity of demand (ϵ_p)**, given by the following formula:

$$\epsilon_p = (\% \text{ change in quantity consumed}) \div (\% \text{ change in price}).$$

There have been a number of statistical studies of the demand for gasoline and generally the estimated price elasticity of demand for gasoline is found to be inelastic (less than unity).³ In the following analysis, we use a conservative estimate of the price elasticity of demand of - 0.5. That is a 10% increase in price would lead to a 5%

³ Pindyck and Rubinfeld (1998).

reduction in quantity of gasoline consumed. We will argue later that this leads to a very conservative estimate of the additional costs resulting from the conversion to ethanol.⁴

Household income effects. Assuming $\varepsilon_p = -0.5$ and a 10 cents per gallon increase in price, annual consumption of gasoline in the Baton Rouge area is will decline approximately 11.4 million gallons (Table A6). But, expenditures on gasoline will increase by about \$18.2 million. Alternatively, if the price rises by 15 cents, annual consumption of gasoline will decline by 17.1 million gallons, resulting in an increase in total expenditures of about \$26.4 million.

Increased expenditures on gasoline caused by the conversion to RFG are equivalent to a reduction in personal income by the same amount. **Thus, we estimate that the mandated use of RFG will result in a reduction of household incomes in the Baton Rouge area of approximately \$18.2 to \$26.4 million annually.** The increase in expenditures on gas and the concomitant reduction in personal income are not offset by increased benefits elsewhere in the Baton Rouge area economy. The increased expenditures “disappear” to other parts of the state and region. Thus, the effect of a mandated use of RFG results in a redistribution of income from the Baton Rouge area economy to other locations.

Gasoline station sales effects. The reduction in consumption of gasoline will also result in a reduction in sales revenue (net of the cost of RFG) to suppliers. Since the increase in price for RFG is equivalent to imposing an excise tax of 10 to 15 cents per gallon, **total revenue to sellers will fall about \$19.2 million to \$29 million annually.**

Deadweight loss effects. Since the increase price of gasoline (due to the mandated use of RFG) will result in the reduced consumption of gasoline, consumers will necessarily experience a reduction in additional benefits as shown by the crosshatched triangular area in Figure 1. This is what economists refer to as the “deadweight loss”. **The value of the total benefits that are completely lost to society (as well as households in the Baton Rouge area) is estimated to be \$0.59 million to \$1.3 million annually.**

⁴ It is important to note that the price elasticity of demand for gasoline will vary significantly within the Baton Rouge area. For example, along interstate 12 and interstate 10 (the corridor), demand for gasoline is likely to be very *elastic* ($\varepsilon_p > 1$) because motorists will buy gasoline before entering the 5-parish area. This would also be true for household demand near the borders of the 5-parish area (the edge). When the price elasticity exceeds one, consumption of gas along the corridor and along the edge will fall significantly. In many cases, suppliers in these two areas will go out of business.

Table 3
Summary of Annual Direct Costs
Resulting from Use of RFG
(Millions of Dollars)

Increase in Price	Reduction in Household Incomes	Reduction in Sales Revenues	Deadweight Loss	Total Direct Cost
\$0.10	\$18.2	\$19.2	\$0.59	\$37.99
\$0.15	\$26.4	\$29.0	\$1.3	\$56.70

Data in Table 3 summarize the total direct costs to the 5-parish area under two different scenarios for gasoline price increases, assuming motorists reduce gasoline consumption in reaction to higher prices. **In the case of a 10-cent price increase, the total direct cost is \$37.99 million, while a 15-cent increase results in a total direct cost figure of \$56.7 million.**

Estimating Total Costs Assuming a Reduction in Gasoline Consumption

Data in Table 4 indicate the input-output table estimates of the total (direct plus multiplier effects) on the 5-parish area under the two different price increase scenarios.

Table 4
Estimated Impact on Baton Rouge Area Economy of RFG Mandate
Assuming a Reduction in Gasoline Consumption

Assumption:	Lost Employment	Lost Earnings	Lost Sales
10 cent increase	800	\$16,381,500	\$53,206,860
15 cent increase	1,195	\$24,401,960	\$79,169,800

Note: Assumes $\epsilon_p = -0.5$. This table is based on BEA regional input-output multipliers for Baton Rouge Metro area and author's calculations.

Assuming a price elasticity of -0.5 , a **10-cent increase in gasoline prices would reduce business sales in the 5-parish area by \$53.2 million. This translates into 800 lost jobs and \$16.4 million in lost income in the metro area. If the price increase is 15 cents, lost business sales rise to \$79.2 million and the 5-parish area can expect to lose 1,195 jobs and \$24.4 million in household earnings.**

Impacts by Industrial Sector: 15-Cent Increase

Table 5 contains the impact of a 15-cent increase on employment in the 5-parish area by industrial sector. The results indicate that the area can expect to lose 735 jobs in retail sales. Some losses in the retail trade sector reflect job losses at gasoline stations and convenience stores selling gasoline. The area will lose 75 jobs in health services, 62 jobs in miscellaneous services and 60 jobs at eating and drinking places.

**Table 5
Lost Employment in 5-Parish Area Caused by RFG Mandate
(Assumes Increase of 15 Cents per Gallon)**

Industry:	Lost Employment
Retail Trade	735
Health Services	75
Miscellaneous Services	62
Eating and Drinking Places	60
Business Services	54
Personal Services	26
Banking and Brokers	24
Wholesale Trade	24
Insurance	22
Total	1,195

Note: Assumes $\epsilon_p = -0.5$. This table is based on BEA regional input-output multipliers for Baton Rouge MSA and author's calculations. This table includes only those sectors with over 20 lost jobs, while the total includes all 38 sectors of the input-output table.

Table 6 contains the lost household earnings that the area can expect with a 15-cent increase in gas prices. The results indicate that the retail trade sector will lose just over \$12 million in earnings. Earnings in health services will decline by \$2.8 million and both business services and miscellaneous services can expect to lose over a million dollars in earnings.

Table 6
Lost Household Earnings in 5-Parish Area Caused by RFG Mandate
(Assumes Increase of 15 Cents per Gallon)

Industry:	Lost Earnings
Retail Trade	\$12,311,820
Health Services	\$2,864,200
Business Services	\$1,694,340
Miscellaneous Services	\$1,180,300
Wholesale Trade	\$861,200
Insurance	\$796,620
Banking and Brokers	\$739,800
Eating and Drinking Places	\$725,120
Transportation	\$587,240
Total	\$24,401,960

Source: See note to Table 5.

Table 7 contains the breakdown of lost business sales by industry for the same 15-cent increase in gasoline prices. The largest decline occurs in retail trade where a \$32.3 million dollar decline is expected. The results also suggest an \$8.6 million reduction in real estate sales, a \$6.2 million reduction in sales for health services, and almost a \$3.9 million fall in sales for business services firms.

Table 7
Lost Business Sales in 5-Parish Area Caused by RFG Mandate
(Assumes Increase of 15 Cents per Gallon)

Industry:	Lost Sales
Retail Trade	\$32,345,620
Real Estate	\$8,640,760
Health Services	\$6,226,580
Business Services	\$3,891,260
Miscellaneous Services	\$3,513,720
Banking and Brokers	\$2,923,760
Wholesale Trade	\$2,858,760
Eating and Drinking Places	\$2,498,760
Insurance	\$2,372,980
Total	\$79,169,800

Source: See note on Table 5.

IV. Other Potentially Significant Costs

In addition to the costs estimated above, there are substantial costs to businesses and residents that we could not estimate at this time. These additional costs include:

- Offsets for expansions have become more stringent. A firm attempting to expand or a new firm entering the five-parish non-attainment area face a 1.3 to 1 offset rather than the 1.2 to 1 offset. This means a firm must either reduce its prior emissions by 1.3 times the new VOC and NOX it will emit or find another firm that has reduced its emissions by the 1.3 factor.
- If the area fails to achieve attainment by 2005, then additional fee requirements come into play. Any firm emitting more NOX or VOC than it does now, will pay a fee of \$7,700+ for each ton over 80% of its normal emissions. The Louisiana Department of Environmental Quality estimates this will sum to about **\$100 million** in this five-parish area. If the Legislature does not pass legislation to collect these fees, the EPA will.
- From a small industry standpoint the definition of a “major emitter” has become more stringent. Whereas it used to be that 50 tons per year earned the designation, now 25 tons is the benchmark. If a small firm exceeds the 25-ton limit, it will have to pay the \$7,700+ per ton fine. DEQ estimates there are 50 such small firms in the five-parish area that will be potentially impacted by this change.
- The costs imposed upon businesses and individuals within the non-attainment area will **not be spread evenly**. For example, there are at least two parts of the five-parish area that will experience the greatest impact. First, all businesses along the I-10 and I-12 interstates (corridor problem) the increased price of reformulated gas will mean a substantial reduction in revenue as motorists passing through on the interstates pass them by. Second, all businesses along the outside parish lines (edge problem) will find it difficult, if not impossible, to compete with businesses just outside the non-attainment area. The effects will be measured in employment losses and earnings losses.
- There will be a nontrivial, one-time cost imposed on service stations to convert to RFG. The conversion to ethanol will require fuel suppliers to empty and clean their tanks, and in some cases, will have to retrofit tanks systems to ensure no water leakage. In some cases, suppliers will have to replace their tanks, if they cannot be retrofitted. We are unable to estimate these costs at the present time. Table A7 reports the total number of service stations in the five-parish area. On average, each service station has at least two tanks. In the second column, we report the total number of gasoline tanks within each parish. While some of these tanks currently contain diesel and would not have to be cleaned or replaced, the number of tanks containing gasoline is nontrivial.

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APPENDIX

Gasoline Statistics and Calculations

Table A1. Percent Gallon Sales by Parish

Parish	1997 MOTOR FUELS SALES IN GALLONS (%)
Acadia	1.221
Allen	0.426
Ascension	2.383
Assumption	0.48
Avoyelles	0.68
Beauregard	0.555
Bienville	0.327
Bossier	2.473
Caddo	6.692
Calcasieu	4.214
Caldwell	0.14
Cameron	0.273
Catahoula	0.17
Claiborne	0.303
Concordia	0.496
De Soto	0.506
East Baton Rouge	10.559
East Carroll	0.303
East Feliciana	0.289
Evangeline	0.421
Franklin	0.423
Grant	0.297
Iberia	1.628
Iberville	0.541
Jackson	0.376
Jefferson	9.207
Jefferson Davis	0.78
Lafayette	6.244
Lafourche	1.626
La Salle	0.319
Lincoln	0.85

Source: Center for Energy Studies, Louisiana State University,
<http://www.engr.lsu.edu/info/gasolinetax.html>

Table A1. Percent Gallon Sales by Parish (continued)

Parish	1997 MOTOR FUELS SALES IN GALLONS (%)
Livingston	2.12
Madison	0.525
Morehouse	0.492
Natchitoches	1.034
Orleans	5.426
Ouachita	3.302
Plaquemines	0.676
Pointe Coupee	1.058
Rapides	2.653
Red River	0.458
Richland	1.086
Sabine	0.37
St. Bernard	1.15
St. Charles	1.236
St. Helena	*
St. James	0.333
St. John the Baptist	1.008
St. Landry	1.722
St. Martin	0.936
St. Mary	1.47
St. Tammany	4.411
Tangipahoa	4.247
Tensas	*
Terrebonne	2.224
Union	0.317
Vermilion	0.848
Vernon	0.763
Washington	1.043
Webster	1.064
West Baton Rouge	1.737
West Carroll	0.244
West Feliciana	0.302
Winn	0.393

Source: Center for Energy Studies, Louisiana State University,
<http://www.enrg.lsu.edu/info/gasolinetax.html>

Table A2. Louisiana Monthly Gas Sales by Fuel Grade, 2003

2003	Total Gasoline (1000 Gal/day)*	Total Gallons Sold	Regular (1000 Gal/day)*	Total Regular Gallons Sold	Midgrade (1000 Gal/day)*	Total MidGrade Gallons Sold	Premium (1000 Gal/day)*	Total Premium Gallons Sold
December	6,238	193,384,200	5,065	157,002,600	412	12,765,800	762	23,612,700
November	5,990	179,694,000	4,863	145,881,000	399	11,970,000	728	21,843,000
October	6,515	201,965,000	5,397	167,303,900	408	12,638,700	710	22,022,400
September	6,089	182,667,000	5,048	151,437,000	395	11,835,000	647	19,395,000
August	6,172	191,319,600	5,072	157,244,400	417	12,917,700	683	21,157,500
July	6,238	193,390,400	5,098	158,031,800	426	13,218,400	714	22,140,200
June	6,118	183,540,000	4,956	148,692,000	428	12,831,000	734	22,014,000
May	6,307	195,517,000	5,100	158,087,600	443	13,745,400	764	23,680,900
April	6,163	184,875,000	5,067	151,998,000	413	12,378,000	683	20,499,000
March	5,827	180,646,300	4,803	148,877,500	406	12,589,100	619	19,179,700
February	5,836	163,394,000	4,718	132,095,600	431	12,054,000	687	19,244,400
January	5,634	174,654,000	4,501	139,537,200	429	13,299,000	704	21,817,800
Total	6,096	2,225,046,500		1,816,188,600		152,242,100		256,606,600
Percentage		100.00%		81.62%		6.84%		11.53%

*Source: U.S. Department of Energy, http://www.eia.doe.gov/emeu/states/oilsales_trans/oilsales_trans_la.html

Table A3. Gulf Coast Price per Gallon by Fuel Grade (4/12/04)

Regular \$1.67
Midgrade \$1.77
Premium \$1.86

Source: U.S. Department of Energy

http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/padd_3_mini_report.html

Table A4. Five-Parish Area Estimates

Parish	% Taxable Gas Sales (Table 1)	Estimate of Gallons Sold in 03'
East Baton Rouge	10.6%	234,943,000
West Baton Rouge	1.7%	38,649,000
Livingston	2.1%	47,171,000
Iberville	0.5%	12,038,000
Ascension	2.4%	53,023,000
Total	17.3%	385,824,000

Assumptions

	Estimate	Source
Total LA Motor Gas Sales 03' (gal)	2,225,046,500	Table 2
Avg Price/gal (Weighted by Grade)	\$1.70	Table 3 (weighted by Table 2)
Elasticity of Demand	-0.5	Rubinfeld (1998)
Fuel Efficiency (New/Old)	1.03	Fernandez & Keller

Table A5. Cost Estimates

Increase in Price/gal	Added Cost to Area Consumers (Millions)	Adjusted for Lower RFG Fuel Efficiency (Millions)
\$0.01	\$3.86	\$3.97
\$0.02	\$7.72	\$7.95
\$0.03	\$11.57	\$11.92
\$0.04	\$15.43	\$15.90
\$0.05	\$19.29	\$19.87
\$0.06	\$23.15	\$23.84
\$0.07	\$27.01	\$27.82
\$0.08	\$30.87	\$31.79
\$0.09	\$34.72	\$35.77
\$0.10	\$38.58	\$39.74
\$0.11	\$42.44	\$43.71
\$0.12	\$46.30	\$47.69
\$0.13	\$50.16	\$51.66
\$0.14	\$54.02	\$55.64
\$0.15	\$57.87	\$59.61
\$0.16	\$61.73	\$63.58
\$0.17	\$65.59	\$67.56
\$0.18	\$69.45	\$71.53
\$0.19	\$73.31	\$75.51
\$0.20	\$77.16	\$79.48
\$0.21	\$81.02	\$83.45
\$0.22	\$84.88	\$87.43
\$0.23	\$88.74	\$91.40
\$0.24	\$92.60	\$95.38
\$0.25	\$96.46	\$99.35
\$0.26	\$100.31	\$103.32
\$0.27	\$104.17	\$107.30
\$0.28	\$108.03	\$111.27
\$0.29	\$111.89	\$115.25
\$0.30	\$115.75	\$119.22
\$0.31	\$119.61	\$123.19
\$0.32	\$123.46	\$127.17
\$0.33	\$127.32	\$131.14
\$0.34	\$131.18	\$135.12
\$0.35	\$135.04	\$139.09

Note: Assumes $\varepsilon_p = -0.5$.

Table A6. Constant Elasticity Estimates

Increase in Avg Price	New Avg Price/gal	%Q Demand Change	New Q Demanded (gal/yr)	Reduction in Gas Consumed (gal/yr)
\$0.01	\$1.71	-0.29%	384,688,000	1,136,000
\$0.02	\$1.72	-0.59%	383,551,000	2,273,000
\$0.03	\$1.73	-0.88%	382,415,000	3,409,000
\$0.04	\$1.74	-1.18%	381,278,000	4,546,000
\$0.05	\$1.75	-1.47%	380,142,000	5,682,000
\$0.06	\$1.76	-1.77%	379,005,000	6,819,000
\$0.07	\$1.77	-2.06%	377,869,000	7,955,000
\$0.08	\$1.78	-2.36%	376,733,000	9,091,000
\$0.09	\$1.79	-2.65%	375,596,000	10,228,000
\$0.10	\$1.80	-2.95%	374,460,000	11,364,000
\$0.11	\$1.81	-3.24%	373,323,000	12,501,000
\$0.12	\$1.82	-3.53%	372,187,000	13,637,000
\$0.13	\$1.83	-3.83%	371,051,000	14,773,000
\$0.14	\$1.84	-4.12%	369,914,000	15,910,000
\$0.15	\$1.85	-4.42%	368,778,000	17,046,000
\$0.16	\$1.86	-4.71%	367,641,000	18,183,000
\$0.17	\$1.87	-5.01%	366,505,000	19,319,000
\$0.18	\$1.88	-5.30%	365,368,000	20,456,000
\$0.19	\$1.89	-5.60%	364,232,000	21,592,000
\$0.20	\$1.90	-5.89%	363,096,000	22,728,000
\$0.21	\$1.91	-6.19%	361,959,000	23,865,000
\$0.22	\$1.92	-6.48%	360,823,000	25,001,000
\$0.23	\$1.93	-6.77%	359,686,000	26,138,000
\$0.24	\$1.94	-7.07%	358,550,000	27,274,000
\$0.25	\$1.95	-7.36%	357,414,000	28,410,000
\$0.26	\$1.96	-7.66%	356,277,000	29,547,000
\$0.27	\$1.97	-7.95%	355,141,000	30,683,000
\$0.28	\$1.98	-8.25%	354,004,000	31,820,000
\$0.29	\$1.99	-8.54%	352,868,000	32,956,000
\$0.30	\$2.00	-8.84%	351,731,000	34,093,000
\$0.31	\$2.01	-9.13%	350,595,000	35,229,000
\$0.32	\$2.02	-9.43%	349,459,000	36,365,000
\$0.33	\$2.03	-9.72%	348,322,000	37,502,000
\$0.34	\$2.04	-10.01%	347,186,000	38,638,000
\$0.35	\$2.05	-10.31%	346,049,000	39,775,000

Note: Assumes $\varepsilon_p = -0.5$.

Table A7.
Total Number of Gasoline Stations and Total Number of Gasoline Tanks in the
Five-Parish Nonattainment Area

Parish	Number of Stations	Number of Tanks
Ascension	91	259
East Baton Rouge	324	927
Iberville	40	268
Livingston	101	117
West Baton Rouge	40	124
Total	596	1,695

Note: Some tanks require retrofit to handle ethanol additive. Some tanks have multiple compartments to handle two or more grades of fuel.

Source: Richard Metcalf, Environmental Department, Louisiana Mid-Continental Oil and Gas