

APPENDIX A

Critique of the Impact of Longhorn Pipeline on Economic Activity in Texas and Selected Regions

Responsiveness Summary Appendix A

This appendix contains two analyses prepared by REI, an economics consultation firm. The first (Attachment 1) was prepared in early 1999 to support the draft EA. The second (Attachment 2) was performed in July 2000 as an update to the first. The focus of the second analysis is on the gasoline price differential between the Texas Gulf Coast and the El Paso Gateway Market.

Attachment 1

Early 1999 Analyses

Critique of The Impact of Longhorn Partners Pipeline on Economic Activity in Texas and Selected Regions

I. Summary of The Perryman Group Analysis

The Perryman Group completed an analysis of the economic impacts of the Longhorn Pipeline project on the Texas economy, and on the regional economies of El Paso (Upper Rio Grande), Midland/Odessa (Permian Basin) and Houston (Gulf Coast). The analysis includes two phases of economic activity to be generated by the project--the construction phase and the operation phase. For the most part the construction phase has already been completed. Some additional construction associated with the installation of additional pump stations will be added in future years as the pipeline capacity is expanded to meet rising demand, but these impacts are relatively small and are thus ignored in the analysis. The operation phase will continue indefinitely, but is expected to “ramp up” and reach a full operational, or “stabilized operating level” of operation in about five years (year 2003).¹ The initial level of operation will be approximately 72,000 barrels per day, rising gradually to 225,000 barrels per day in approximately 10 years.²

Three areas or regions of the Texas economy were selected for analysis to capture the most important and differing economic effects of the project--these areas are expected to be the most economically impacted in Texas by the project. The Gulf Coast area is expected to be impacted because, in addition to construction activities, this region is the source of the refined product to be shipped on the Longhorn Partners Pipeline to Midland/Odessa and to the El Paso Gateway markets.³ The major Texas markets to receive the refined product (primarily gasoline and diesel) are the El Paso and Midland/Odessa areas. Product will also be shipped to Arizona and New Mexico via interconnections with other interstate pipelines and to Ciudad Juarez and Chihuahua City in Mexico via an existing Chevron pipeline that extends into Ciudad Juarez and a connecting Mexican pipeline to Chihuahua City.⁴ The exports to Mexico are not explicitly mentioned or included in the Perryman economic impact analysis. Exports are a factor that would increase the positive economic impacts on Texas, on the Houston area economy that refines and or wholesales imported product to the El Paso area, and to the El Paso economy that benefits from wholesale market expansion in El Paso.

The analysis proceeds along three avenues. First, the construction costs were obtained from Longhorn and were identified by the place and time of the construction activity. These data

¹ The Perryman Group. **The Impact of Longhorn Partners Pipeline on Economic Activity in Texas and Selected Regions**. Prepared for Longhorn Partners Pipeline, Waco, Texas, June 1998, p. 2.

² Confidential Settlement Document, March 1, 1999: Attachment B to Settlement Stipulation, ENVIRONMENTAL ASSESSMENT, p. B-1.

³ The El Paso Gateway markets refer to major market areas of Tucson, Phoenix, Las Cruces, Albuquerque and El Paso.

⁴ Clearly, the out-of-state and out-of-country markets may eventually become more important than the Texas markets since the total deliveries of gasoline and diesel to El Paso and Midland/Odessa of approximately 42,000 barrels per day, will occupy only fraction of the pipeline's capacity of 225,000 barrels per day.

were used to approximate the initial, direct impacts of the project by geographical area. Second, annual operations data were obtained from Longhorn to approximate the ongoing expenditures of the project in the various regions of the state. Here the analysis distinguishes between fixed and variable operating costs, and uses only the fixed annual operating cost for measuring this part of the direct impacts. The reason is that, in the absence of the project, the variable costs expenditures are likely to be made by other service providers in the industry. Under these circumstances the Longhorn Pipeline project does not add any net operating expenditures to the Texas economy. These data represent the direct economic impact of the operation phase of the project on the regions. Finally, a method was developed to estimate the downward market price effects of the project on the price of gasoline and diesel in the El Paso, Midland/Odessa and El Paso Gateway market areas, and consequently on the increased consumer expenditures on other consumer purchases. These price declines represent the savings to gasoline and diesel consumers due to the project, which translate into increased spendable income and resulting consumer expenditures on other goods and services. Such increased expenditures are expected to provide an economic stimulus to the regional economies. These three quantities--construction costs, operating expenditures and increased consumer expenditures make up the so-called "direct

Having developed the initial or "direct" impact estimates described above, the analysis involves the use of "input-output" models of the regional economies (and separately, the Texas economy) to translate the direct impacts into overall economic impacts measured as 1) income, 2) employment, 3) retail sales and 4) gross state product. That is, the various direct impacts--construction, annual operating expenditures and increased consumer spending due to gasoline cost declines--are translated into annual economic benefits of increased employment, personal incomes and overall economic activity (gross state product).

II. The Method of Analysis

The overall methodological approach of The Perryman Group to analyzing the short term (one to five years) economic impacts of a private sector project is a very standard, widely used method of economic analysis. Input-output models, the basic tools used by The Perryman Group, are known as "general equilibrium" models of economies. The major strength of the input-output model is its ability to relate a change in one sector of the economy (e.g., retail sales of gasoline) to directly and indirectly related economic sectors (e.g., wholesalers of petroleum products and oil product pipelines). The trading patterns among all-important sectors of an economy are captured in this type of model. The Perryman Group used a Texas statewide model and three regional models (Gulf Coast, Permian Basin and Upper Rio Grande), as well as similar models in Arizona and New Mexico.

The models used by The Perryman Group are proprietary models so a reviewer is not able to check or test every aspect of the models, however, the report displays the key sectors (columns) of impact results. I reviewed the Perryman Group results for the Texas model and compared them with similar results obtained from my own analysis based on a publicly available Texas model maintained at the Texas Comptroller's Office (analysis limited to only the gasoline price decline impacts on the Texas economy from price declines in El Paso and Midland/Odessa). The results are not significantly different. The key results of the Perryman

Group economic impacts are as follows. An annual increase in available income in Texas is created by the price decline in gasoline and diesel in El Paso and Midland/Odessa. The result of increased expenditures by consumers as a result is to create \$20.531 million in total state personal income and approximately 883 additional permanent jobs in Texas, most of which will be in El Paso. The annual operation expenditures and the early impacts of the construction phase add additional economic stimulus.

The above results concerning the economic impacts of lower gasoline and diesel prices are, however, driven by a set of prior assumptions and analyses concerning the resulting competitive price of gasoline and diesel in the target markets of El Paso and Midland/Odessa and the El Paso Gateway. I will focus on the El Paso market. The Perryman Group relies on two empirically based assumptions. First, the competitive market would be expected to yield a wholesale price in El Paso equal to the wholesale price in the Gulf Coast, plus the pipeline transportation cost (measured conservatively as the spot market tariff of \$0.05 per gallon delivered from Houston to El Paso and \$0.035 from Houston to Midland/Odessa). Second, a competitive market will force wholesalers to pass along most of the lower product prices to retailers and thus to final consumers.

The issue of whether there will be retail price decreases for El Paso consumers is somewhat complex. However, an over-simplified explanation is as follows. First, it is generally true that changes in the price of wholesale gasoline get passed on to the retail consumer in fairly short order. Several recent studies have examined this issue during periods of price decreases and periods of price increases. The most recent studies have concerned the period of price increases during the summer of 1997. The Energy Information Administration has completed several studies on the topic.

The conclusions of the studies are that 87+ % of both price increases and price decreases at the wholesale level are passed on to the retail level within 12 weeks. The degree of pass-through within specific periods of time (2 weeks, 3 weeks, ..., 12 weeks) differ somewhat depending on location, storage conditions, and other factors, and the pass-through applies to both price increases and price decreases. Specifically, the estimated time and degree of pass-through is documented in the DOE study for crude oil spot prices to retail and for rack prices to retail:

“These results show, depending on the area, that anywhere between 87 to 100 percent of a spot price change is passed through to retail within 3 months and that the lag effect does tend to decrease over time.”⁵

and

“...after all lagged price adjustments have been completed the wholesale price increase or decrease will almost completely pass through to the retail level...”⁶

⁵ DOE/EIA-0621, “Assessment of Summer 1997 Motor Gasoline Price Increase,” Energy Information Administration, Washington DC 20585, May 1998, p. 80.

⁶ DOE/EIA-0626, “Price Changes in the Gasoline Market: Are Midwestern Gasoline Prices Downward Sticky?”, Energy Information Administration, Washington, DC 20585, February 1999, p. 26.

Second, it is generally the case that wholesale gasoline prices with a source from the Gulf Coast area will be lower priced than those from the Los Angeles area. The El Paso Gateway area is currently served by product via pipeline from high cost sources on the West Coast, primarily Los Angeles and from four relatively inefficient refineries in New Mexico and El Paso. The California markets are different from the rest of the nation's for a number of reasons. First, California is served by refineries primarily in California -- there are not pipelines that are available to move refined petroleum products to California from east of the Rockies. Second, California is well positioned to export products to foreign markets, mainly the Asian countries. Imported crude oil must be transported from the Gulf through the Panama Canal to reach California. Alaskan oil arrives via pipeline to Seattle and then by tanker down the West Coast. California does, however, move refined product to markets east of the California markets in the US, principally to Nevada and Arizona.

One other factor makes California different. The state has made a major commitment to (California brand) reformulated gasoline that is higher cost⁷, and much of the refining capacity has been converted to produce these products. In short, California, because of the reformulated gasoline commitment, easy access to foreign markets and restricted product availability from the rest of the Nation, is a place of more volatile gasoline prices, and on the average higher gasoline prices.

Third, the overall transportation cost from California to El Paso Gateway Markets is comparable to the cost from the Gulf Coast refinery hub. The distances are quite similar, with a small advantage to the Gulf Coast for deliveries to El Paso and the reverse for deliveries into the Phoenix area.

As a result of the above factors, it is quite certain that so long as transportation costs of moving gasoline and diesel to El Paso Gateway Markets are comparable to that from Los Angeles, the Gulf refineries will be able to deliver lower priced product into these markets.

One major factor is important in reaching a conclusion that gasoline and diesel **will be** delivered at a lower price to El Paso. There is a difference between **being able** and actually delivering product at lower prices. If non-competitive conditions exist, then lower prices would not necessarily be passed on to consumers from the wholesaler. If competitive conditions exist, however, then it is reasonable to conclude that lower Gulf Coast wholesale prices (lower than the West Coast) will be passed on to consumers in El Paso. Interstate pipelines are "common carriers" in the US meaning that capacity on the Longhorn Partners Pipeline will be available to many wholesalers who want to compete for markets in El Paso Gateway Markets. The price, or tariff is the same for all shippers, and may be a regulated rate. Since there are several refiners in Texas who would market to El Paso if other shippers on the Longhorn Partners Pipeline over priced product in El Paso Gateway Markets, it is reasonable to conclude that wholesale price savings in the Gulf Coast area will be passed on to consumers.

⁷ The costs to refiners to operate in California has historically been 3.5 to 5.8 cents per gallon higher than elsewhere in the Nation. During 1996 when the California reformulated gasoline (CalRFG) was introduced, the cost was 7.6 cents. Source: DOE/EIA-0621, "Assessment of Summer 1997 Motor Gasoline Price Increase," Energy Information Administration, Washington DC 20585, May 1998, page 62.

The matter of tariffs for transporting product to El Paso is determined by the regulations of the FERC for all interstate pipelines. As a general matter the tariffs are established by policy of the FERC that determines (1) if the destination is a “competitive” market (has available alternative transportation modes and capacities), then competition will keep transportation rates at normal profit levels. If the area is non-competitive (limited modes and/or capacity) then regulation requires tariff changes to be tied to changes in the producer price index. In short, tariff rates under the proposed Longhorn Partner Pipeline project will be competitive with those of the competing pipelines from California and will not be a deterrent to price savings being realized in El Paso.

In summary, given the current and expected future market conditions, Longhorn Partner Pipeline should be, indeed will be, forced by competition and/or regulation to move product to market in El Paso at competitive transportation rates. Further, Gulf Coast wholesale prices that are routinely below that of West Coast suppliers will be passed on to El Paso consumers because pipeline capacity will be available to all at competitive rates and refiners in the Gulf Coast area will actively compete for these new markets.

III. Major Assumptions that Drive the Analysis Results

A. List of assumptions of The Perryman Group concerning the petroleum products market

1. Wholesale gasoline and diesel prices in the Gulf Coast will, on average, be lower than those of California;
2. Transportation prices into El Paso will average \$0.05 per gallon;
3. 80% of wholesale price changes will be passed on to retail consumers;
4. The effects of the Longhorn Partners Pipeline on gasoline and diesel prices in the target markets will be accomplished regardless of whether most of these markets are actually taken over by shippers on the pipeline; i.e., the lowest cost marginal supplier in the market sets the price
5. Consumers who save money on lower gasoline prices will spend the money on other consumer goods; and
6. Input-output models that ignore consumption responses to price changes are adequate to measure the income, employment and gross state product impacts of the pipeline project (i.e., the demand for the product is relatively inelastic).

B. The assumptions are conservative

The Perryman Group recognizes that economic analyses of the type undertaken here contain imprecise methods and data, and expected consumer behavior responses are somewhat

uncertain as well. The Perryman Group has therefore stated that they made conservative assumptions and used conservative methods to estimate the impacts.

One conservative assumption is ignoring the Texas economic stimulation that will come from selling refined product out of state. The capacity of the pipeline will be about 225,000 barrels per day, while the gasoline and diesel markets in El Paso and Midland/Odessa are only about 42,000 barrels per day. Therefore, the pipeline will allow shippers on the Longhorn Partners Pipeline to compete mightily with West Coast refiners and small inland refineries for markets in Texas, New Mexico and Arizona, a prospect made possible by the competitive advantage of Gulf Coast wholesale prices and competitive transportation costs.

The assumption that only 80% of the wholesale price savings will be passed on to retail consumers is in fact conservative. The recent studies by DOE/EIA, along with the studies cited by The Perryman Group, support nearly 100% pass through rather than 80%. Adequate competition among wholesalers to move product to El Paso Gateway Markets and Midland/Odessa will guarantee that Gulf Coast wholesale price advantages are passed on to El Paso. Transportation tariffs will either be kept in line by competition, or by FERC regulation.

IV. Reasonableness of Results

The results of the analysis of The Perryman Group are that the primary economic impact of the pipeline on the Texas economy is the direct result of a gasoline and diesel price savings averaging \$0.09 to \$0.10 per gallon in El Paso and \$0.06 to \$0.07 in Midland/Odessa.⁸ These estimates are based on recent regular gasoline price data comparing rack, Lunberg retail and spot market prices in the Gulf Coast area with that of El Paso and California (Los Angeles area), with an adjustment for CalRFG higher costs. The historical price data based on regular unleaded account for about \$0.068 to \$0.08 of the price savings in El Paso. The other \$0.02 cents is based on the difference between the cost of producing RFG in California relative to the Gulf Coast (see footnote 7). I have reviewed published data on prices provided by The Perryman Group and two recent DOE/EIA studies of gasoline prices in the US and find these differentials to be reasonable estimates of prices that will prevail in El Paso with increased competition provided by the availability of the Longhorn Partners Pipeline.

The prices of RFG since 1995 (the period since the implementation of RFG requirements in California) have averaged approximately \$0.12 per gallon higher in California than in the Gulf Coast (see Figure 1) and a comparable amount (\$0.10 to \$0.15 per gallon) in El Paso relative to Houston.⁹ Equal or approximately equal transportation cost to the El Paso Gateway markets from California and the Gulf Coast will result in a competitive advantage for Gulf Coast refineries who ship product on the Longhorn Partners Pipeline. This advantage will prevail so long as the El Paso Gateway Markets are able to use only low-RVP fuel, and perhaps an annual mix of low-RVP fuel and MTBE oxygenated gasoline that is less costly than the CalRFG. Even with higher transportation cost for Houston area refiners shipping product to Phoenix, Houston area refiners should still have a competitive advantage of at least \$0.045 (see Table 1).

⁸ Phone conversation with M. Ray Perryman, April 1, 1999.

⁹ Presentation by John Cook, Director, Petroleum Division, US Energy Information Administration in El Paso, 1998. Slide presentation downloaded from the DOE/EIA Web Page.

Figure 1 . California RFG Minus Gulf Coast RFG Spot Prices



Source: DOE/EIA-0621, "Assessment of Summer 1997 Motor Gasoline Price Increase," Energy Information Administration, Washington DC 20585, May 1998, p. 21.

Table 1. Average Wholesale Prices for Gasoline in Houston, El Paso and Los Angeles and Estimated Competitive Advantage of Gulf Coast Product in Phoenix and El Paso

Month/Year	Los Angeles Pipeline Low (Reg Unleaded)	El Paso Rack (Reg Unleaded)	Gulf Coast Pipeline Low (Reg Unleaded)	Phoenix Market Advantage (LA - Gulf Coast Pipeline Low)	El Paso Market Advantage (El Paso Rack-Gulf Coast Pipeline Low)
(Cents per Gallon)					
Jan-96	55.1	60.6	49.5	5.6	11.2
Feb-96	60.1	61.4	51.5	8.6	9.9
Mar-96	69.6	68.5	57.9	11.7	10.6
Apr-96	85.5	75.4	65.8	19.7	9.6
May-96	73.4	78.9	62.5	11.0	16.4
Jun-96	66.4	76.4	58.5	7.9	17.9
Jul-96	66.8	75.9	58.7	8.1	17.2
Aug-96	64.0	74.7	57.7	6.3	16.9
Sep-96	66.1	74.1	58.9	7.2	15.2
Oct-96	63.0	72.4	63.7	(0.7)	8.7
Nov-96	59.1	70.8	65.2	(6.0)	5.6
Dec-96	69.4	70.6	64.6	4.9	6.1
Jan-97	75.8	72.2	68.8	6.9	3.4
Feb-97	69.9	73.4	61.9	8.0	11.5
Mar-97	75.0	73.7	61.1	13.9	12.6
Apr-97	66.7	74.9	58.2	8.4	16.6
May-97	60.2	74.5	60.6	(0.4)	13.9
Jun-97	53.5	72.0	55.0	(1.5)	17.1
Jul-97	54.1	70.0	58.5	(4.4)	11.5
Aug-97	73.4	72.7	64.5	9.0	8.3
Sep-97	73.2	74.3	56.5	16.7	17.8
Oct-97	67.6	72.5	54.7	12.9	17.8
Nov-97	56.4	71.0	52.8	3.7	18.3
Dec-97	59.0	67.0	49.5	9.5	17.5
Jan-98	52.2	62.1	45.9	6.3	16.2
Feb-98	49.5	57.0	44.9	4.6	12.2
Mar-98	47.0	53.3	42.5	4.5	10.8
Apr-98	56.5	52.5	48.2	8.3	4.3
May-98	52.3	53.1	48.0	4.3	5.1
Jun-98	48.5	51.3	43.8	4.7	7.6
Jul-98	45.3	49.9	41.7	3.6	8.2
Aug-98	43.8	45.6	37.1	6.7	8.5
Sep-98	43.9	44.2	40.1	3.7	4.1
Oct-98	44.3	47.0	41.1	3.2	5.9
Nov-98	43.4	44.5	33.4	10.0	11.1
Average 1996-Nov 98(1)	60.3	65.4	53.8	6.5	11.6
Average 1996-Mar 98	64.1	70.4	57.4	6.8	13.0
CalRFG Cost Addition				2.0	2.0
Extra Transportation Costs (2)				4.0	5.0
Competitive Advantage				4.5 to 4.8	8.6 to 10.0
1) The average differences for El Paso Rack minus Gulf Coast Spot for Jan '92 thru Nov '98 are 12.20 and 13.7 for Jan '94 thru Dec '97					
2) Extra transportation cost as against California product in Phoenix and inland refineries in New Mexico and El Paso for products in El Paso					
Source: OPIS Rack Price in El Paso minus Gulf Coast Spot Price and LA minus Gulf Spot in Phoenix from work papers provided by The Perryman Group, April 1, 1999.					

The rack level differentials against the inland refiners in El Paso with supplies from El Paso and New Mexico refineries now serving the El Paso market are \$0.116, based on Jan 1996-Nov 1998 data and \$0.13 for Jan 1996-Mar 1998. Given a \$0.02 estimate of the additional cost of RFG over regular unleaded, and \$0.05 transportation cost disadvantage, Houston refiners will have a competitive advantage of \$0.086 to \$0.10 in El Paso at the rack or wholesale level (Table 1). The retail price differential between El Paso and Houston have historically been more than 10 cents per gallon, and have occasionally exceeded 15 cents. The case for competitive advantage of Houston product relative to Los Angeles product at wholesale seems abundantly clear, and the advantage may run from \$0.048 delivered into Phoenix to \$0.10 into El Paso (Table 1).

Therefore, the estimate of \$0.095 in El Paso used by The Perryman Group is reasonable. The Perryman Group analysis assumes at a minimum 80% of this savings will be passed on to retail consumers.

A check on the economic impact estimates of The Perryman Group was completed, based on my own calculations using multipliers from the Texas Input-Output Model, published by the Texas Comptroller's Office in 1992. This price decrease of \$0.065 in Midland/Odessa and \$0.095 in El Paso at wholesale translates into a \$46.5 million per year increase in available income for the two regions, which it is reasonable to project, will be spent on other consumer goods. This additional stimulus will create an estimated \$21.2 million additional total personal income throughout the economy once the multiplier effect has occurred. Total employment impacts are estimated to be 828 jobs. The Perryman Group results by comparison show \$20.5 million in additional personal income and 883 permanent jobs.¹⁰ Work papers provided by Dr. Perryman yield results of a similar magnitude of gasoline price savings.¹¹ As stated above, these results are supported by DOE studies of price differentials between California reformulated gasoline prices and Gulf Coast reformulated gasoline prices as shown in Figure 1¹². This data illustrates that, since transportation costs are roughly the same to El Paso Gateway Markets from Los Angeles and Houston, prices in El Paso should easily be \$0.095 lower under service by the Longhorn Partner Pipeline.

Additional analyses by The Perryman Group of economic impacts from decreased gasoline prices in the Phoenix/Tucson and the Albuquerque/Las Cruces areas were completed in the same way as the analysis for El Paso. The results for Phoenix/Tucson show an increase in personal income of \$66.6 million, implying a market effect roughly 3.3 times that of El Paso/Midland. This estimate further implies approximately the same \$0.095 per gallon price savings in Phoenix/Tucson as calculated for El Paso. This estimate seems high in view of the data in Table 1; the likely price saving is approximately one-half that in El Paso.

The results for Albuquerque/Las Cruces analysis show a \$10 million per year increase in personal income, a magnitude one-half that of El Paso/Midland. This income estimate is one-half that of El Paso/Midland although total gasoline consumption is roughly equal that of El

¹⁰ The Perryman Group. **The Impact of Longhorn Partners Pipeline on Economic Activity in Texas and Selected Regions.** Prepared for Longhorn Partners Pipeline: Waco, Texas, June 1998, p. 6.

¹¹ Work papers provided by M. Ray Perryman, March 29, 1999.

¹² DOE/EIA-0621, "Assessment of Summer 1997 Motor Gasoline Price Increase," Energy Information Administration, Washington DC 20585, May 1998, page 21.

Paso/Midland, implying a price savings of about \$0.05 per gallon. Such an estimate seems reasonable given higher transportation costs to Albuquerque than applicable to El Paso/Midland.

A likely negative impact on New Mexico and El Paso is not included in The Perryman Group analysis. The success of the Longhorn Partners Pipeline in achieving an operating level of 225,000 barrels per day, a quantity by year 2010 that is 71% of the total market for the Midland and El Paso Gateway markets (see Table 2), is likely to force the inland refineries to close. Such a negative impact would offset some of the positive income and employment impacts of lower gasoline prices.

The Perryman Group only estimated the economic impacts of an example \$1 million dollar increase in the business activity of the Houston area as a result of increased shipments of refined products to markets external to Texas. The prospect is, however, that the Pipeline may provide for an increase of 100,000 to 170,000 barrels per day of exported product from the Texas Gulf Coast to Arizona, New Mexico and Mexico (Table 2). The economic impacts of such increased exports on the Houston area economy should be included in the analysis of the benefits of the project.

Market	Demand (1,000 bbls/d)		
	1996	2010	2020
Midland/Odessa	11	12	14
El Paso	31	41	49
Ciudad Juarez	18	23	27
Albuquerque	32	40	48
Tucson	31	40	47
Phoenix	112	159	196
Total	235	316	381

Sources: State Energy Data Book downloaded from Energy Information Administration Web Page for gasoline and diesel consumption by state, allocated to MSA by MSA share of state population, trends for per capita consumption by state and Bureau of the Census state population projections to year 2025, Series A, downloaded from Bureau of the Census Web page.

V. Summary of Findings

The review of The Perryman Group analysis resulted in the following findings:

1) The Perryman Group calculated price savings in the El Paso and Midland/Odessa markets are reasonable expectations given that the Gulf Coast wholesale market prices based on large efficient Gulf Coast refineries are significantly lower than the large refinery alternative on the West Coast and for the smaller less efficient inland refineries in El Paso and New Mexico.

2) Transportation costs on the Lornhorn Partners Pipeline as proposed from the Houston area to El Paso Gateway Markets will be competitive with transportation costs from the West Coast to the El Paso Gateway Markets.

3) The Longhorn Partner Pipeline will make transportation and product prices more competitive in the El Paso Gateway Markets, thus assuring that consumers will realize benefits through lower priced and clean burning gasoline. Independent search of the literature, including two recent DOE studies of the pass through of prices from crude oil price changes to wholesaler and retail levels confirm that The Perryman Group assumption of 80% pass through is conservative.

4) The Perryman Group economic impact analyses of the income and jobs impacts of the reduced gasoline costs in Texas markets are reasonable, supported by an independent, selective analysis of the data using a publicly available Input-Output model to measure the impacts.

5) An important benefit to the Texas economy, concentrated in the Houston area, was not well quantified in The Perryman Group analysis. The planned capacity expansion of the pipeline to 225,000 barrels per day will provide for important benefits of lower cost gasoline and diesel to out-of-state consumers and to the Houston area economy.

6) An important cost to El Paso and New Mexico due to the project was not included in The Perryman Group analysis. Full development of the Longhorn Partners Pipeline to 225,000 barrels per day by year 2010 would be likely to cause the El Paso and New Mexico inland refineries to close, thus shifting employment and income from El Paso and New Mexico to the Gulf Coast.

7) The economic impacts of lower gasoline prices in Phoenix/Tucson seem high given the estimates of price savings produced in this report.

Attachment 2

July 2000 Analyses

**Critique of
The Impact of Longhorn Partners Pipeline on
Economic Activity in Texas and Selected Regions:
June 2000 Update
By
Milton L. Holloway¹³**

Introduction

The Perryman Group completed an analysis of the economic impacts of the Longhorn Pipeline project on the Texas economy, and on the regional economies of El Paso (Upper Rio Grande), Midland/Odessa (Permian Basin) and Houston (Gulf Coast). Resource Economics, Inc. completed a critique of The Perryman Group analysis in May 1999. This paper is an update to May 1999 critique.

The key driver to the economic impact analysis of the Longhorn Partners Pipeline project on El Paso is the estimated effect of the pipeline on retail gasoline prices. The Perryman Group estimated that the retail price of gasoline would decline by \$0.095 as a result of the increased competition provided by the Longhorn Partners Pipeline in the El Paso market. Resource Economics, Inc. completed an independent analysis of the Perryman findings and concluded that the results were reasonable.

Recent data on the retail price of gasoline in El Paso raises a question about the central conclusion that the Longhorn Pipeline Project would achieve consumer savings in El Paso. Specifically, Senator Lloyd Doggett challenged the conclusion regarding lower price effects in a recent letter to President Clinton.¹⁴ The referenced letter encloses an attachment showing the retail prices of gasoline in El Paso, Houston, Austin, Dallas and Los Cruces for the period January 1999 through May 2000. The average price differential between Houston and El Paso (El Paso minus Houston) over the period is shown to be 1.6 cents per gallon (i.e., Houston retail gasoline prices were 1.6 cents lower). The data and analyses presented below focus on the comparison of El Paso and Houston markets because the influence of Gulf Coast refined product on the El Paso Gateway Markets is central to the economics of the Longhorn Partners Pipeline that is at issue.

Analysis and Updated Data

The retail gasoline market in El Paso has experienced higher prices than other Texas metropolitan areas for a very long time. Figure 1 shows El Paso retail prices in comparison to those of Houston since January 1990. The average price differential for January 1990 through November 1998 is 11.1 cents per gallon (Figure 2). The average differential since January 1999 is 1.6 cents, with prices since January 2000 being consistently lower than those in Houston (Figure 2). The data for El Paso relative to Austin, Dallas and Los Cruces show that El Paso has

¹³ Dr. Holloway is President, Resource Economics, Inc., Austin, Texas.

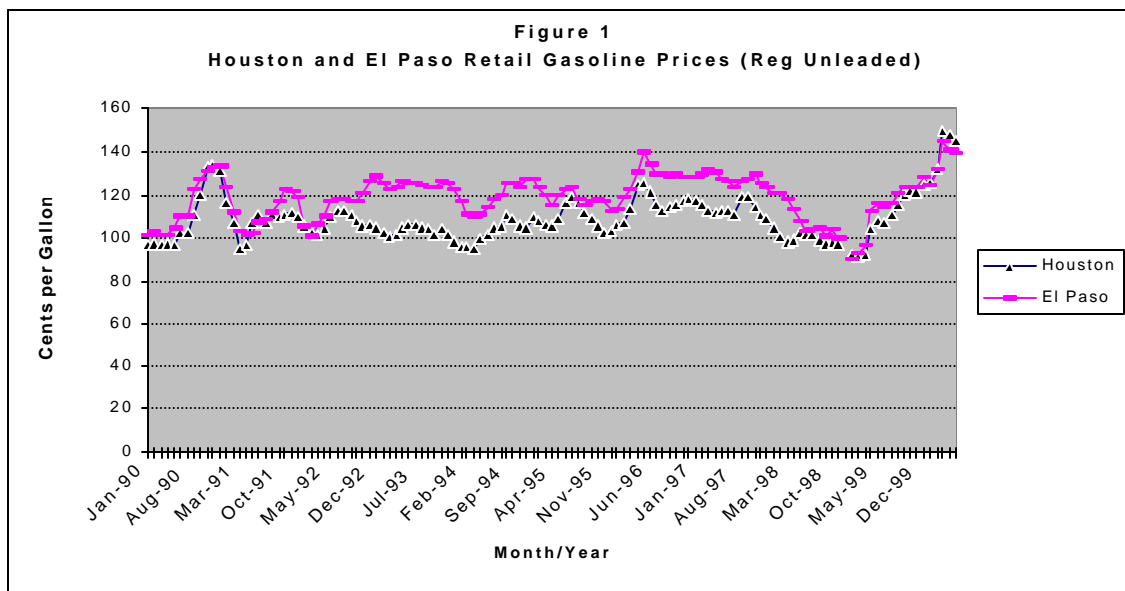
¹⁴ Letter to President William J. Clinton from Senator Lloyd Doggett, June 19, 2000.

retail prices of 5.0 cents higher than Austin, 0.6 cents higher than Dallas and 4.0 cents higher than Los Cruces during the January 2000 through May 2000 period.

It is clear from the data in Figures 1 and 2 that prices at the retail level in El Paso have been below those in Houston since January 2000. But there have been other periods where El Paso prices have temporarily fallen below those in Houston during the last decade. El Paso retail prices were below those of Houston several times during the months following the world oil price increase that accompanied the Persian Gulf War (Desert Storm) of 1990. The higher El Paso prices returned to levels that range from 5 to 25 cents above Houston prices during the spring of 1992 through the fall of 1998. El Paso prices (excluding January 1999) were from zero to 8 cents above those in Houston from the fall of 1998 through December 1999.

Although there are several factors that explain gasoline market prices in El Paso relative to those in Houston during any selected period of time, there are two dominant factors that can be expected to have the major influence in periods of rapidly rising crude oil prices. The first is the inventory levels of gasoline product and crude oil present in the two markets at the beginning of the period. The second is the time lag of U.S. domestic crude oil price responses to a world oil price change.

El Paso area gasoline prices are cushioned for a time from rising world oil and product prices by inventory levels at terminals, inland refineries and in the pipeline systems from the Gulf Coast and the West Coast to the El Paso area. El Paso markets are also cushioned from world market changes due the relatively high dependency on inland crude oil. Domestic oil prices do not immediately adjust to world market price levels during a period of rising world prices. Houston area prices are more directly affected by world oil and product prices because the Gulf is one of the two major import points for foreign crude oil and refined products.



Several recent and pending influences are making the El Paso Gateway Markets very fluid therefore making it difficult to analytically separate the contribution of each influence to current

retail gasoline prices. This is especially true of the current market in light of the above discussion of two dominant factors. The following is a list of significant recent developments in the El Paso Gateway Market area.¹⁵

1. Texaco Trading & Transportation Inc. (TTTI) announced a new pipeline to connect U.S. Gulf Coast to Wichita Falls and westward to West Texas (this system is now called the Texas Products System and ORION pipeline). Operations for this system were scheduled to begin 1/98. TTTI began startup of Orion in early 1998. It took several months before they were able to deliver “on specification” products, but actual deliveries began penetrating the West Texas market by 1999. The pipeline has a current capacity of 20,000 barrels per day (bpd) from Odessa to El Paso. This capacity might be expanded in the future since the capacity from Wichita Falls to Odessa is approximately 100,000 to 120,000 bpd.
2. Phillips announced in November of 1998 that they would NOT build their own product pipeline from Borger to El Paso. Instead they would purchase a 25% equity interest in the existing Ultramar Diamond Shamrock line from McKee to El Paso (existing capacity of 20,000 to 30,000 bpd) and increase their interest in the line to 33% once the line is expanded to 60,000 bpd. Phillips built a short line to connect their Borger refinery to the existing UDS line. Publicly available data indicates that UDS was shipping 25,000 to 28,000 barrels per day of product to El Paso during 1998.
3. Pride’s Abilene Refinery shut down in early 1998. Shell’s Odessa Refinery shut down in late 1998. These closures continue the trends of declining capacity of inland refineries in the region, shifting the production to the gulf coast. In June 2000, after a great deal of industry speculation that no potential bidders were willing to bid on the assets, Fina announced a pending sale of the refinery and other ancillary assets to an independent Israeli exploration and production company.
4. Future changes in inland refining capacity will be required as new, more stringent EPA emissions policies are put in place. The most likely outcome will be the closure of other inland refineries where expensive renovations will be required if production is continued. The result will be a further shift of production to the Gulf Coast.
5. The period since January, 1999 has been a period of rapidly rising oil and product prices in response to the OPEC decision to reduce production in the first quarter of 1998. The run-up in oil prices has influenced every aspect of the supply and demand in the system. The periods following sharp world market changes induce varying market influences among local markets in the U.S. Of particular importance are the matters of local inventories of refined product and regional refining capacity. The important factors in explaining the current retail gasoline market in a particular city as described by Mr. Cook of the U.S. Department of Energy include¹⁶.

¹⁵ Source for items 1-4: Muse, Stancil & Co, draft document, June 26, 2000.

¹⁶ Presentation by John Cook, Director, Petroleum Division, US Energy Information Administration in El Paso, during 1998. Slide presentation downloaded from the DOE/EIA Web Page.

- Proximity of supply - distance from the refineries supplying the local market. Additionally, the proximity of those refineries to crude oil supplies can be a factor, as well as shipping logistics, including pipeline or waterborne, from refinery to market.
- Cost of supply - including crude oil, refinery operating, and transportation costs.
- Supply/demand balance - some regions are typically in excess or short supply, while others may vary seasonally, or when supply interruptions (such as refinery shutdowns) occur.
- Competitive environment - including the number of suppliers, and the degree of local market dominance by one or a few, as well as diversity of supply sources and barriers to entry.
- Local demographics - such as population density, per-capita income, station density, number of vehicles, etc.
- Operating costs - including station rents, local wage rates, tax burden, etc.
- Taxes - per-gallon, such as excise taxes, and percentage, such as sales taxes, added to
- Environmental programs - including oxygenated (as here in El Paso), reformulated, and low-volatility gasoline, and restrictions on transportation or storage.

While it is clear that there are several factors that are currently influencing retail gasoline prices in El Paso, it is incorrect to rely on retail prices over the last 17 months to conclude that the Longhorn project will not provide any benefit to El Paso consumers. The prospect of Longhorn's entry into the market and the expansion of pipeline capacity by other companies to serve the market allowing increased reliance of Gulf Coast are important influences. Gulf Coast product has already substituted for production from two West Texas refineries that have closed. There will be others. Gulf Coast refined product is fundamental to the determination of favorable retail prices in the long term. But there is much more to the explanation of current prices among cities.

Every local market price is influenced (determined) by local supply and demand conditions. Price data since 1997 serve to make the point that other short-term influences are at play. Table 1 shows the rack and retail prices for Houston, El Paso and Phoenix¹⁷. Also shown are the calculated margins and the change in margins since 1997. The margins declined in each city during 1999 and 2000, but are especially pronounced in 2000. The retail margins declined significantly during the period following the world crude oil price increase of 1999 caused by OPEC's decision to reduce production. Note that the margin declines were significantly less in Houston than in El Paso and Phoenix.

¹⁷ The rack price is the wholesale price charged by wholesalers at their refineries or company terminals. Terminals are truck pickup points for local market retailers. The retail price is the price of regular unleaded at the pump. The margin is the retailer's difference between the cost of wholesale product (rack price) and the retail price net of taxes—a difference that must cover the retailer's full cost of doing business in the long term.

Table 1. Average Rack and Retail Prices by City (Price per Gallon of Gasoline)

Year	City	Retail	Rack	Fed Tax	State Tax	Freight	Margin	Margin Change from 1997
1997	EL PASO	128.06	75.29	18.40	20.00	1.50	12.87	0.00
1999	EL PASO	110.73	59.55	18.40	20.00	1.50	11.27	-1.60
2000	EL PASO	140.04	90.10	18.40	20.00	1.50	10.04	-2.83
1997	HOUSTON	114.51	62.70	18.40	20.00	1.50	11.90	0.00
1999	HOUSTON	107.79	55.97	18.40	20.00	1.50	11.91	0.01
2000	HOUSTON	143.78	92.59	18.40	20.00	1.50	11.29	-0.61
1997	PHOENIX	132.23	76.93	18.40	19.00	1.50	16.40	0.00
1999	PHOENIX	122.42	74.41	18.40	19.00	1.50	9.10	-7.29
2000	PHOENIX	148.45	99.10	18.40	19.00	1.50	10.45	-5.95

Source: Based on price data compiled by Oil Price Information Service (OPIS) 7/4/00

Table 2 sheds further light on the regional differences. During 1997 to 2000 retail prices in Houston rose by 25.6% while increasing only 9.4% in El Paso. Retail prices increased 12.3% during the period in Phoenix. Rack prices increased by 47.7% in Houston while increasing only 19.7% in El Paso and 28.8% in Phoenix. Margins declined by only 5.1% in Houston but 22.0% in El Paso and 36.3% in Phoenix.

It is most likely that local inventories of refined product at the time of the world oil price run-up in 1999 explains most of the difference in the changes among the three cities since 1997. In the short-term, relatively low inventories in Houston must be replaced primarily from higher priced foreign crude oil and product. The high-priced foreign products quickly became reflected in the rack price.

Table 2. Percent Change in Average Rack and Retail Prices by City Compared to 1997 (per Gallon of Gasoline)

Year	RSA	RsaCity	Retail	Rack	Fed Tax	State Tax	Freight	Margin
1997	640	EL PASO	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1999	640	EL PASO	-13.5%	-20.9%	0.0%	0.0%	0.0%	-12.4%
2000	640	EL PASO	9.4%	19.7%	0.0%	0.0%	0.0%	-22.0%
1997	680	HOUSTON	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1999	680	HOUSTON	-5.9%	-10.7%	0.0%	0.0%	0.0%	0.1%
2000	680	HOUSTON	25.6%	47.7%	0.0%	0.0%	0.0%	-5.1%
1997	930	PHOENIX	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1999	930	PHOENIX	-7.4%	-3.3%	0.0%	0.0%	0.0%	-44.5%
2000	930	PHOENIX	12.3%	28.8%	0.0%	0.0%	0.0%	-36.3%

Source: Based on price data compiled by Oil Price Information Service (OPIS) 7/4/00

The typically higher rack prices in El Paso have temporarily moved lower than rack prices in Houston. The El Paso minus Houston rack price as declined from 12.59 cents per gallon in 1997 (a number slightly higher than the 9.5 cent average difference during the 1990's) to -2.49 cents in the first five months of 2000 (Table 3). The differentials have also changed to negative values for retail prices and margins. That is, retail and rack prices, as well as retail margins are currently lower in El Paso than Houston. The change from 12.59 cents to -2.49 cents is primarily due to more rapidly rising rack prices in Houston than in El Paso. One should not conclude from this short period of time following the world oil price run-up of about \$15 per barrel that El Paso has moved into a new era of price comparability with Houston.

Table 3. Difference at Rack and Retail Prices by Year: El Paso Minus Houston and Phoenix Minus Houston (Cents per Gallon of Gasoline)

Year	El Paso Minus Houston			Phoenix Minus Houston		
	Retail	Rack	Margin	Retail	Rack	Margin
1997	13.56	12.59	0.97	17.72	14.23	4.49
1999	2.94	3.58	-0.64	14.63	18.44	-2.81
2000	-3.74	-2.49	-1.25	4.67	6.51	-0.85

Source: Based on price data compiled by Oil Price Information Service (OPIS) 7/4/00

It is also wrong to conclude from only current conditions that The Longhorn Partners Pipeline will not make a contribution to lower retail prices in the El Paso markets in the future. While there has been other expansions of pipeline capacity to move Gulf Coast product into El Paso, the expansion has been a modest long-term addition. The Longhorn Partners Pipeline will add a major, efficient contribution of 225,000 bpd of pipeline capacity to the growing El Paso Gateway Market. Such a pipeline capacity will provide a major competitive force for the long term, well beyond the current needs.

Conclusions

The current gasoline prices in El Paso have temporarily fallen below those in Houston and exceed those of Dallas and Austin by smaller margins than usual. This condition of relatively favorable gasoline prices in El Paso relative to Houston is primarily a matter of recent major increases in world oil prices due to actions of OPEC that effect the Houston area immediately, and existing inventory conditions in the storage and transportation systems serving these metropolitan areas.