Please state your name and employment?

My name is Keith Leffler. I am an Associate Professor of Economics at the University of Washington. I am also an economic consultant doing business as Economic Consulting and Research, Seattle, Washington.

What is your educational and employment background?

I received a Masters of Arts in 1974 and a Ph.D. in 1977 in economics from the University of California, Los Angeles. I have taught classes in pricing policy, regulatory economics, and the analysis of competitive issues to undergraduates, masters and Ph.D. students for over twenty five years. My curriculum vitae is attached as Exhibit KL-1.

Describe your experience in petroleum related work.

I have worked extensively for many years on economic issues in the petroleum industry. I have assisted the Federal Trade Commission of the United States and numerous State Attorneys General in evaluating the likely competitive effects of a number of oil industry mergers including Standard Oil of California - Gulf Oil, Marathon Oil - Ashland Oil, Texaco - Shell, Mobil - Exxon, and Phillips 66 - Diamond Shamrock. I have also assisted both plaintiffs and defendants in numerous disputes that involved competitive issues in the oil industry.

Have you studied the shipping of refined product?

My work on mergers in the petroleum industry has involved issues related to the transportation of refined product. I have studied the economics of shipping via tankers, barges, pipelines and trucks. I have also done work for

petroleum jobbers in which I studied the costs of truck transport and the means of minimizing product acquisition costs.

What are the areas of your rebuttal testimony?

I am responding to relevant testimony of Dr. Ed Whitelaw, Thomas Wise, and Rodney Smith. My testimony will address the economic need for and the economic benefits from the proposed Cross Cascade pipeline. I will also discuss Dr. Whitelaw's testimony about the effects of the Cross Cascade pipeline on competition in petroleum products markets and in grain transportation.

Please summarize your testimony.

I have reached a number of opinions relevant to an evaluation of the need for and benefits from the Cross Cascade Pipeline.

- The Cross Cascade Pipeline serves the fundamental economic need and benefit of lowering the cost of and increasing the reliability of the supply of gasoline, diesel and jet fuel to the Pacific Northwest markets.

- The Cross Cascade Pipeline will save over $400 million in resource costs over the next twenty five years as compared to maintaining the current supply situation.

- Basic economic theory implies that a substantial part of these savings will directly benefit consumers through lower prices of petroleum products in the areas to be served by the pipeline.

- The Cross Cascade pipeline will alleviate the bottleneck on the Olympic pipeline to Portland and thereby eliminate the need to ship refined product by ocean transport from Puget Sound refineries to Portland.

- The Cross Cascade Pipeline will eliminate regular tanker truck shipments to Eastern Washington over the Cascade Mountains.

- The Cross Cascade Pipeline will increase competition in gasoline, diesel and jet fuel markets served by the Cross Cascade Pipeline.

- The prices of barge transport of grain are not expected to increase as a consequence of the pipeline.

Dr. Whitelaw (page 4-6) and Mr. Wise (page 4-5) have testified that there is not a need for the proposed pipeline because there is no shortage of petroleum products in Eastern Washington. Do you agree?

No I do not agree with this testimony. In assessing the need for the pipeline, Dr. Whitelaw and Mr. Wise focus on whether there is currently a "shortage" of gasoline, diesel or jet fuel in the areas to be served by the proposed pipeline. Shortage is a precisely defined economic term. A shortage exists when at the current market price, consumers want more of a product than is available. In a market economy, shortages are self correcting, consumers wanting more of a good than is available simply bid up the price until the shortage is eliminated. Shortages are perpetuated only if external constraints prevent the forces of competition from eliminating the shortage through price increases.[1] Since the government is not preventing the market from functioning, there is no shortage of refined petroleum products in the Eastern Washington supply area.[2]

However, the absence of a shortage has no implications about the need and benefit from the Cross Cascade Pipeline. Indeed if the presence or absence of a shortage was a proper criteria to assess the need for a project, regulatory analysis of the development of, for example, the telephone or air travel would have concluded that there was no need for such projects. Prior to the telephone,

[1] A leading economics text succinctly puts it - "Shortages are caused solely by restraints on prices." Alchian and Allen, Exchange and Production: Competition, Coordination and Control, page 61.

there was no “shortage” of communications via the telegraph. Prior to airtravel, there was no “shortage” of long distance travel via ships or stagecoaches. In each case, the older approach was simply inconvenient and expensive compared to a better way to do it. Economic progress is a process of finding better ways to do things.

Just as there is an economic need for better ways to do things, there is also an economic need for an efficient entrant to compete with a monopoly supplier, such as Tidewater, in order to lower the price of doing things. The presence of absence of a shortage is again not relevant to such need. Assume, for example, that United Airlines was the only supplier of air travel to and from SeaTac and that they served all markets out of SeaTac. While there would not be a shortage of air travel, there would clearly be an economic need for and benefits from a project that, for example, expanded the airport to allow entry of an efficient competitor such as SouthWest.

Is the shortage criteria of need used by Dr. Whitelaw and Mr. Wise an accepted criteria in the field of economics?

No it is not. Economists evaluate projects according to whether they are economically efficient. Fundamentally, a project is efficient, if as a result, greater wealth is available to society. In the typical unregulated setting, competition among producers and suppliers motivates efficiency. If a particular seller can find a way to lower the cost of a input or a product, he undertakes the project and offers his customers a better deal. The seller finding the most efficient

[2] I adopt the definition of the Eastern Washington Supply Area proposed in the testimony of Thomas Wise (page 12). This supply area is the area supplied by product shipped into Eastern Washington.

production technique ends up winning the competitive struggle. Other sellers either mimic the efficient technique, find their own cost reducing innovations, or they leave the market.

When a project imposes costs that may not be properly accounted for by competitors, regulation by the government can be appropriate. Assessment of the need for a project by the government should still have the same beginning point - does the project offer the potential to increase wealth.[3] In the case of the Cross Cascade pipeline, this efficiency question concerns whether there are resource cost savings from the project, and the amount of those savings, in making gasoline, diesel and jet fuel available to consumers in the Pacific Northwest.

Contrary to the testimony of Dr. Whitelaw and Mr. Wise, does the Cross Cascade pipeline satisfy a proper economic criteria of need?

Yes, it does. All parties to the project application who have addressed the transportation costs of petroleum products in the Northwest recognize that the Cross Cascade Pipeline offers a more efficient method of getting product to Eastern Washington.[4] In addition, it is undisputed that Tidewater is currently a monopoly supplier in transporting petroleum products from west of the Cascades to Eastern Washington and Oregon. The completion of the Cross Cascades Pipeline will efficiently introduce competition.

[3] Of course, the analysis must also consider other costs the project may impose such as environmental costs. These are properly balanced against the costs savings to judge the overall efficiency of a project.

[4] For example, Mr. Wise testifies that the Cross Cascade pipeline would reduce the costs of moving product to Pasco by about 61 cents per barrel (page 28). This alone implies savings of over $8 million per year at current demand levels.

Are there transportation cost savings in addition to those from Portland to Pasco that should be included in the assessment of the needs and benefit from the proposed pipeline?

Yes. In addition to the savings from getting product to Pasco, the benefits from the proposed pipeline must include the savings from sending product to Kittitas by pipeline rather than trucking product over the Cascades. The savings must also include those from eliminating the bottleneck on the Olympic Pipeline south of Renton. Elimination of this bottleneck will remove the need to send refined product to Portland using expensive ocean transportation.

Have you developed estimates of the total transportation costs saving that will result from the completion of the Cross Cascades Pipeline?

Yes, I have.

What is your estimate of the total transportation costs savings?

My analysis implies that the costs of providing gasoline, diesel and jet fuel in the Pacific Northwest will fall by over $16 million in the first year the Cross Cascade Pipeline is available. Over twenty five years the cost savings will be over $400 million.

Could you explain how you came to these estimates of the cost savings?

I have developed a detailed supply and demand analysis of the Pacific Northwest market for gasoline, diesel and jet fuel. The analysis considers the efficient source of and transportation of product to each of twenty seven sub-markets with and without the Cross Cascade Pipeline. For each of the sub-markets I determine the expected cost of obtaining gasoline, diesel and jet fuel

needed to supply the sub-market. I then compared the total cost across all the sub-markets to reach the cost savings of over $400 million from 2001-2026.[5]

Can you describe the information you used in developing you analysis?

My analysis begins with estimates of the current consumption of gasoline, diesel, and jet fuel by county in Washington, Oregon and Western Idaho along with a growth factor. By applying brand market shares to these figures, estimates of the current and future consumption by brand by market area are obtained. Costs of alternative product source and alternative transport mode and route are developed. The transport cost alternatives include the costs of pipelines, water transport, terminaling, and trucking. Suppliers are assumed to choose the alternative that minimizes their cost of product. Refinery capacities and pipeline capacities are also part of the analysis. To develop this model, I was able to build off computer simulations used by Olympic Pipeline to assess the financial feasibility of the Cross Cascade project.

What are the sources of the information that is used in your supply and demand analysis of the economic need for and benefit from the Cross Cascade Pipeline?

Information from a variety of sources is considered in the analysis. The Draft Environmental Impact Statement (DEIS) provides information about product movements and costs. The testimony of Paul Rolniak and of Thomas Wise also provide details about consumption, refinery outputs and capacities, and transport costs. Public tariff information on transport costs are used. Various energy information services such as OPIS were consulted. Pacific Northwest Regional Analysis for a number of years prepared by Energy Analysts

[5] These costs savings are measured in 2001 constant dollars.

International, Inc. are considered. I have also had discussions with Frank Hopf and Paul Rolniak concerning the Pacific Northwest markets for gasoline, diesel and jet fuel. Finally, I have relied upon my background and experience in studying the Pacific Northwest petroleum markets.

Have you considered the possible reversal of the Chevron pipeline from Boise to Pasco in your analysis?

Yes. I have prepared transportation and product costs estimates for scenarios that include a Chevron pipeline that can deliver product from Pasco to Boise.

Could you explain the results of your analysis?

The Tables contained in Exhibit KL-2 summarize the results. Table KL2-1A shows aspects of the market for the year 2001 if the Cross Cascade pipeline is not available. The amount of product delivered by pipelines and by water is shown along with the costs of getting product to each of the 27 sub-markets.[6] The annual product delivery costs is estimated at about $391 million. Table KL2-1B estimates the same information if the Cross Cascade Pipeline is available.[7] Product delivery costs are reduced by over $16 million per year and by over $400 million over twenty five years.[8]

Do these savings include reductions in water or truck shipments of gasoline, diesel and jet fuel?

[6] The estimates assume that Yellowstone Pipeline to Spokane will be reconnected by the year 2001. The transportation costs include any differential product costs from obtaining product outside the Puget Sound area.
[7] The sub-markets in which the savings occur are italicized and printed in bold in Table 1B.
[8] The twenty five year savings estimate is obtained by projecting the supply and demand model to the year 2026 holding technology constant. Savings in that year are estimated at $17 million. Since this is quite close to the saving in the year 2001, I simply multiplied the 2001 savings by 25.

Yes. Part of these savings would be from the elimination of expensive and risky ocean transport of product from the Washington refineries to Portland. With the Cross Cascade Pipeline in place, the need for these ocean shipments is eliminated since the current bottleneck to Portland on the Olympic Pipeline is alleviated. Once the project is completed, product destined for Eastern Washington can go direct to Pasco rather than first being sent to Portland. The need for petroleum barge shipments on the Columbia are also eliminated by the Cross Cascade Pipeline even though Tidewater remains an effective competitor from Pasco to Lewiston. Finally, there are significant cost savings from elimination of the need to truck product over the Cascades to serve the Central Washington area. Currently, product for Central Washington is shipped to Harbor Island, transferred to tanker trucks and driven over the Cascades. With the Cross Cascade Pipeline in place, product will be shipped to Kittitas for further distribution.

Do these savings change significantly if the Chevron pipeline from Boise to Pasco is reversed?

Yes, the savings are significantly increased. In the first year of operation, 2001, the savings from the project would be nearly $24 million with reversal of the Chevron pipeline from Boise to Pasco.

Could you explain why the savings are significantly greater if the Chevron pipeline were reversed.

Yes, Tables 2A and 2B are useful to understand this. Table 2A addresses the case if the Cross Cascade project is not completed. The shipments from Pasco to Boise shown in this Table indicate that suppliers have the incentive to supply Boise with product from the west regardless of whether the Cross Cascade pipeline exists. That is, if the Boise to Pasco pipeline were reversed, it would be cheapest to supply Boise by barging product to Pasco and then sending it over the Chevron pipeline to Boise. This is also seen in Table 2A by the increased water shipments from Portland to Pasco as compared to Table 1A. The Cross Cascade pipeline of course lowers the cost of getting product to Pasco as compared to using the current monopoly supplier Tidewater. Therefore, with the Chevron pipeline reversed, the savings from the Cross Cascade Pipeline are increased.

Mr. Wise (page 8-9) has testified that the proposed pipeline will not greatly reduce the need to ship fuel by tanker truck. Does your analysis support this testimony?

No, it does not. With the Cross Cascade Pipeline in place, the Kittitas terminal will be used to supply much of central Washington rather than tanker truck delivery all the way from Harbor Island. This is the source of the costs reductions for the Ellensberg, Yakima, Chelan, and Okanogan sub-markets. The completion of the Cross Cascade pipeline should eliminate the tanker truck travel

over the Cascade mountains and reduce significantly the number of miles traveled by tanker trucks.[9]

Rodney Smith (page 3) has testified that the Cross Cascade pipeline is not expected to eliminate truck traffic over the pass. Does your analysis support his conclusion?

No, as discussed, my analysis indicates that the Kittitas terminal on the Cross Cascade pipeline is the low cost supply point to Central Washington. The ability to move product via pipeline to Kittitas will lead to an equilibrium relationship between the prices at Harbor Island and at Kittitas which will essentially reflect the pipeline transportation cost differential. Since the cost of getting product to Kittitas by pipeline is cheaper than by truck, I certainly do not expect there to be a profitable opportunity to pick up product at Harbor Island and truck it to Eastern Washington rather than picking it up in Kittitas where it was sent by pipeline.

Mr. Smith also suggests that truckers may serve Eastern King County with product from Kittitas to avoid the traffic and congestion at Harbor Island. In my opinion, this is not an economical possibility. The added product costs, the added trucking costs, and the added transit time makes shipping product from Kittitas to, for example, North Bend, a most remote possibility.

Do you agree with Dr. Whitelaw (page 7) and Mr. Wise (page 7-8) that because competition drives prices, a cost reduction such as that caused by the Cross Cascade pipeline will not likely reduce the prices paid by consumers?

[9] Umatilla is currently a barge drop point for deliveries to the railroad in Hermiston. With the Cross Cascade pipeline in place, these deliveries could be made direct to Hermiston from Pasco by truck. However, a more likely alternative is barging from Portland or Pasco to Umatilla. Another likely alternative, with delivered product being cheaper in Pasco, is the development of a rail alternative.

No, their conclusions in this regard are contrary to basic economic propositions. Costs are a major determinant of the competitive price. The state of competition and the costs of supply are what determine the observed prices in Pasco, in Yakima, in Seattle, and in all the other communities of the Pacific Northwest. If the cost of during business falls, suppliers are motivated to get more business. Prices then tend to fall. Regardless of the exact competitive conditions, be it many, few, or only one seller, a reduction in cost is expected to lead to a reduction in the competitive price.

The impact of costs on prices is currently manifest in petroleum products markets. For example, gasoline prices are at historical low levels. The reason why is clear - the cost of crude oil is at its historical low level. Yet, if Dr. Whitelaw and Mr. Wise were correct that costs don't influence the competitive price, the low crude costs would be irrelevant to the low gasoline prices. Obviously, cost reductions have in fact led to price reductions. The impact of a cost reduction due to a lower transport costs will also be to lower prices. While I cannot predict the exact split of the savings between the suppliers and consumers, I am confident that a significant portion of the over $400 million in savings over the next twenty five years will go into the pockets of consumers in the Eastern Washington supply area.

Would you expect the price reduction to consumers from the Cross Cascade Pipeline to be significant?

Yes, I certainly believe that a portion of $400 million is significant. Yet, it is true that transportation costs represent a relatively small part of the total costs

of gasoline, diesel or jet fuel in the Eastern Washington supply area. For example, currently the costs to get a gallon of gasoline to Pasco are about four cents per gallon or about four percent of the price of gas. If all transportation savings from the proposed pipeline were passed onto consumers the impact on a per gallon basis would still be small. However, it is important to keep in mind the very large number of gallons at issue. If consumers in the state of Washington could save, for example, only one cent per gallon in their gasoline costs, they would save about $25 million dollars per year.

Dr. Whitelaw (page 11) testified that shippers of gasoline, diesel and jet fuel are not the demanders of the proposed pipeline. Do you agree?

No, I do not. In the markets for gasoline, diesel, and jet fuel in the Pacific Northwest, the suppliers or shippers are the demanders of all the inputs that create the final product - gasoline, diesel or jet fuel available at locations in the Eastern Washington supply area. In economics such demands, including the demand for labor, the demand for materials, and the demand for transportation, are known as "Derived Demands," because they are derived from the ultimate demand of consumers. However to interpret this to imply that consumers rather than suppliers are the demanders is incorrect.[10] The shippers of product to Eastern Washington determine their preferred transportation mode. They are

[10] Dr. Whitelaw suggests that consumers ought to be the demanders of the proposed pipeline. However, consumers typically pay no attention to how a supplier elects to produce and ship a product. When consumers purchase cereal at the grocery store, they don't know whether it came to the distribution center by truck, by air freight, or by barge. They do however know the price. If one supplier learns that it can lower its costs by changing its shipping mode, it has an opportunity to offer shoppers a lower price, passing on some of its savings. By favoring lower prices, consumers indirectly demand the cheaper transportation alternative even though they have no knowledge of the supplier's transportation decision.

the decision makers as to whether a pipeline will or will not used. They are the demanders of the services of a pipeline.

Dr. Whitelaw (page 21) has offered testimony in which he argues that the Cross Cascade pipeline may reduce competition for petroleum products in Eastern Washington. Do you agree with his analysis of this issue?

No, I do not. Dr. Whitelaw's analysis is based on incorrect premises and incorrect economic logic. First of all, Dr. Whitelaw asserts that the "economic viability of the proposed pipeline requires displacing the existing delivery system in this area."[11] However, as shown in Table KL2-3, my supply and demand analysis indicates that when the pipeline is completed, refineries in Washington, California, Utah and Montana will be supplying product to the Pacific Northwest. The is exactly the same set of refineries currently supplying this area. The only change in competitive conditions resulting from the proposed pipeline is a reduction in the cost of supply because of the competition to be faced by Tidewater, currently a monopoly provider of shipping to Pasco. The increase in competition is expected to lead to lower prices being paid by consumers in Eastern Washington.[12]

[11] Dr. Whitelaw reaches this conclusion based on a comparison of the economical pipeline delivery amount of 60,000 BPD and the consumption of product in Eastern Washington of about 66,000 BPD. However, the expected amount of product supplied into Eastern Washington in 2001 is about 86,5000 BPD. This amount is far in excess of the requirements of the Cross Cascade pipeline for economic viability.

[12] Even if Dr. Whitelaw were correct (which he is not) that the proposed pipeline will completely displace all supply from outside Washington, this would not imply any reduction in competition. The only way that Washington supply can displace product that is currently obtained from Montana, Utah or California, is if the Washington product has a lower delivered price. Product from the other areas would remain as competition - if price rose to a level allowing competitive supply from other areas, it would flow in. The Cross Cascade pipeline increases the competitiveness of the Puget Sound refineries in the Eastern Washington supply area. Therefore, competition in Eastern Washington in the supply of petroleum products will be increased as a result of the proposed pipeline.

Do you agree with Dr. Whitelaw's conclusion (page 18-20) that the completion of the proposed pipeline will result in higher prices for shipping grain on the Columbia River?

I do not. Dr. Whitelaw's conclusion in this regard is contrary to basic economic theory and logic. His analysis rests on a presumption that Tidewater currently takes advantage of low costs via "backhauling" grain. However, Tidewater barges carrying products on the Columbia are specialized as to cargo. Petroleum product barges haul petroleum products; grain barges haul grain. By combining grain barges and petroleum barges in a single tow, Tidewater saves nothing. The cost of hauling four grain barges in a single tow and two petroleum barges in a single tow will be the same as hauling two combined tows of one petroleum barge and two grain barges.[13] The situation is quite unlike that of, say, trucking where the same tractor-trailer hauling lumber to Chicago can return empty or, using the same trailer, haul steel to Seattle at very little additional cost. Unlike the trucking example, there is no backhaul opportunity available to Tidewater in grain and petroleum product shipping on the Columbia since Tidewater can not load an empty petroleum barge with grain.

Dr. Whitelaw (page 19) also testified that grain transport costs will increase because Tidewater will need to recoup the costs of its idled petroleum barges. Do you agree?

I do not. There is no support in economics for such a conclusion. The fact that Tidewater made an investment that it can not recover in one sector of its business certainly does not imply it has any altered incentive or opportunity to raise price in another sector. What if Tidewater had real estate investments in

[13] Even if Tidewater is currently not utilizing full tows, there is no "backhaul" opportunity. The same number of tugboats, grain barges and petroleum barges must go up river as go down river.

Hawaii and the price of that real estate falls? Should we expect the price of grain transport on the Columbia to rise? Certainly not. Economics shows that the price of grain transport will be determined by competition in grain transportation and the costs of supplying grain transport by barge. That fact that Tidewater petroleum barges are idle does not impact the competition in grain transport and it does not increase the costs of grain transport. There is therefore no economic justification for an expectation of a price increase.

Finally, Dr. Whitelaw (page 19) argues that Tidewater is a price leader in grain transport because of its large size. And that therefore Tidewater will raise the grain transport prices to offset its profit losses in petroleum. Do you agree with that analysis?

I do not. Regardless of whether Tidewater is or is not a price leader, we can presume that its current price of grain transportation is Tidewater's estimate of the profit maximizing price given the state of competition and costs. If Tidewater could profitably increase prices with the expectation that the other barge companies would follow, Tidewater would have done so. Tidewater's situation in petroleum transportation has no more to do with its most profitable grain transportation prices than its situation in its many other lines of business.

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Keith B. Leffler