EXHIBIT NO. _____ (PBC-1T)

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Petition of Qwest Corporation to Initiate a Mass-Market Switching and Dedicated Transport Case Pursuant to the Triennial Review Order	**Docket No. UT-033044**

DIRECT TESTIMONY OF

PETER B. COPELAND

ON BEHALF OF

QWEST CORPORATION

DECEMBER 22, 2003

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

My testimony addresses the question of whether competitive local exchange carriers ("CLECs") can economically self-supply switching to serve mass market customers in specific geographic markets in Washington. This is fundamentally an empirical question, and the evidence from my analysis complements the evidence of existing competition presented by Mr. Reynolds to answer this question.[1] My analysis, which relies on a business case model called the CLEC Profitability Model ("CPRO"), demonstrates that an efficient CLEC can serve DS0-level mass market customers economically with self-supplied switching in six MSAs that encompass 59 wire centers in Washington. In these MSAs, my analysis shows that competitors are not impaired without access to unbundled circuit switching. Table 1 reports summary statistics of my analysis.

[1] Mr. Reynolds presents evidence of where CLECs in Washington have deployed their own switches and are providing services to mass market customers.

Table 1

Summary of *Baseline View* of the CPRO Model

MSA	NPV ($000)	Number of Wire Centers
Seattle	$12,654	26
Tacoma	$2,402	16
Bremerton	$454	7
Olympia	$454	4
Bellingham	$32	2
Vancouver/Portland*	$3,526	5

* The NPV is for the entire Vancouver/Portland MSA; there are 21 wire centers in this MSA; 5 of these wire centers are in Washington.

CPRO simulates the financial performance of an efficient CLEC in a selected geographic area. As used in the table above, "NPV" refers to net present value. As I explain below in more detail, NPV is determined by estimating the likely revenues a CLEC would generate over a period of years and subtracting the likely costs over the same period. Among the numerous assumptions in CPRO that underlie the model's NPV results are three that are regulatory-related:

1. Unbundled loops are available from the incumbent local exchange carrier ("ILEC") at the current prices established by the Washington Utilities and Transportation Commission;

2. Entrants can (and do) lease local transport (as either an unbundled network element ("UNE") or special access); and

3. Entrants must self-supply switching.

CPRO uses geographically–specific information to determine where CLECs have opportunities to serve mass market customers economically without access to unbundled local switching. The results are based on actual transport distances and

numbers of access lines in target wire centers and revenue and cost characteristics of an efficient CLEC. The model is a financial model developed on the Microsoft Excel platform. All calculations are transparent and all inputs are user-adjustable.

Consistent with the FCC's directive in the Triennial Review Order ("TRO"), CPRO is designed not to predict the financial performance of individual CLECs but, rather, to evaluate whether an efficient CLEC can economically serve mass market customers without an ILEC's unbundled switching.[2] In this case, CPRO demonstrates that CLECs in Washington can serve mass market customers economically in significant portions of the state, and it does so with conservative assumptions that lend a high level of confidence to the model's results. I adopted conservative inputs specifically to increase the confidence in the simulation results. Even with this cautious approach, the model produces a positive business case in six MSAs.

Assuming the Commission adopts MSAs as the appropriate geographic market, Qwest is seeking findings of non-impairment and elimination of the unbundled switching requirement only in these six MSAs. Consistent with this approach, the evidence Qwest has presented is generally limited to these six MSAs. If the Commission determines that an area other than an MSA is the appropriate geographic market, the Commission should remove the unbundling requirements for Qwest in the largest geographic areas wherein it finds that competition would not be impaired. It would also be appropriate to consider additional areas for non-impairment. For example, Mr.

[2] TRO at ¶517.

Reynolds' testimony shows that in the Spokane MSA, which Qwest has not included, there are two CLECs offering services to mass market customers using their own switches.

Entry simulation begins with the creation of a *baseline view* of competitive entry by an efficient CLEC in six MSAs. The *baseline view* results from running the model with the baseline (*i.e.*, default) values for all inputs. Market quantities and prices are based on ILEC line counts and potential CLEC revenues. The CLEC enters this market with a UNE-loop ("UNE-L") strategy, meaning that the CLEC supplies its own switching and leases unbundled loops and transport from Qwest. The model estimates the annual cash flows resulting from this entry strategy by combining: (1) volumes and prices for specific services; (2) network investment and operating costs for switching, transport, and collocation; and (3) loops and non-network costs. Based on the cash flow estimates, the model identifies where unbundled switching is not required for CLECs to compete economically for mass market customers. By focusing on MSAs, my analysis uses the same geographic market definition that Mr. Shooshan and Mr. Reynolds use in their testimony.

II. PURPOSE AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, TITLE, AND WORK ADDRESS.

A. My name is Peter Copeland, and my position with Qwest is Director of Cost and Economic Analysis. My address is 1801 California St. Room 2030, Denver, CO 80202.

Q. PLEASE PROVIDE YOUR BACKGROUND AND WORK EXPERIENCE

A. I have worked for Qwest and its predecessor companies for 22 years. Currently, I supervise the Qwest group that develops forward-looking cost studies for UNEs, retail services, and universal service. I have broad experience in developing costs for regulatory purposes, including developing forward-looking network cost models and embedded cost models. My educational background includes a B.A. in Urban Studies from Brown University and a Masters of Public Administration from the University of Colorado.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present CPRO and the analysis it provides concerning where CLECs can serve mass market customers economically with self-supplied switching. As used in the TRO, "mass market customers" refers to residential customers and very small business customers: "Mass market customers typically purchase ordinary switched voice services (Plain Old Telephone Service or POTS) and a few vertical features."[3] CPRO and the analysis I present rely on the guidelines for business case models that the FCC identified in the TRO.[4]

[3] TRO at ¶127.

[4] *Id.,* at ¶¶517 to 520.

Q. HOW WAS CPRO DEVELOPED?

A. The model was developed by Strategic Policy Research Inc. ("SPR") in a collaborative manner with a team of Qwest employees and consultants at LECG. While SPR employees did the bulk of the hands-on development of the model, I was heavily involved in reviewing and testing the model and in contributing to input decisions. I am intimately aware of the model's design and development.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. Section III of my testimony describes how to assess potential facilities-based competition from CLECs within the guidelines of the TRO. Section IV describes the model. Section V presents the results of my *baseline* run of the model in the geographic markets described by Mr. Shooshan. Section VI presents a sensitivity analysis of the assumptions and inputs of the model.

There are five exhibits attached to my testimony. Exhibit PBC-2 contains a detailed description of CPRO. Exhibit PBC-3 contains diagrams of the flow of CPRO. Confidential Exhibit PBC-4C describes the default input values used in CPRO and the research and analysis used to determine the appropriate values. Confidential Exhibits PBC-5C and PBC-6C are electronic copies of CPRO populated for the Seattle and Vancouver/Portland LATAs.[5]

[5] The following tabs from Confidential Exhibits PBC-5C and PBC-6C have been printed and are supplied in hard copy: Results; IDCF; General Model Input Values; General Rate Input Values; Zone

III. ASSESSING POTENTIAL COMPETITION UNDER THE TRO

Q. AT WHAT POINT IN THE TRO MASS MARKET SWITCHING IMPAIRMENT ANALYSIS SHOULD THE STATE COMMISSION CONSIDER ECONOMIC ANALYSIS?

A. As described in the testimony of Mr. Shooshan, the FCC describes two tracks of evidence that state commissions should review to assess switching impairment for mass market customers. The first track ("Track 1") involves the assessment of whether two alternative triggers have been met (the "self-provisioning trigger" and the "wholesale facilities trigger").[6] If either of the triggers is met, there is no impairment and the unbundled switching requirement must be eliminated. Recognizing, however, that an absence of impairment can exist in areas where the triggers are not met, the FCC outlined a second track of evidence ("Track 2"). Track 2 includes three categories of evidence:[7] (1) evidence of actual deployment of local switches (even though the deployment may fall short of meeting either of the triggers);[8] (2) evidence relating to potential operational barriers;[9] and (3) evidence relating to whether

Specific Input Values; and, Company Specific Input Values. The entire exhibits are available electronically.

[6] *Id*., at ¶¶498 to 505.

[7] *Id*., at ¶¶506 to 520.

[8] *Id*., at ¶¶508 to 510.

[9] *Id.,* at ¶¶511 to 514.

entry is financially viable (*i.e.*, economical).[10] As a business case model, CPRO addresses this third category of Track 2 evidence.

Q. HOW DID THE FCC DIRECT STATE COMMISSIONS TO ASSESS COMPETITION?

A. The FCC instructed that state commissions "should determine if entry is economic by conducting a business case analysis for an efficient entrant. This involves estimating the likely potential revenues from entry, and subtracting out the likely costs (accounting for scale economies likely to be achieved)."[11] While the definition of a true business case model is somewhat more complex than this definition provided by the FCC, I agree with the FCC's conclusion that business case models are appropriate tools for determining whether there are markets in which DSO-level mass market competition is viable without CLEC access to unbundled switching.

Q. HOW DO YOU DEFINE A GEOGRAPHIC MARKET?

A. For the purposes of my testimony, I will be following the definitions of the market as described in the testimony of Mr. Shooshan. As he describes, a market has geographic and product dimensions. For the product dimension, I focus on DS0-level services. For the geographic dimension, I focus on Metropolitan Statistical Areas ("MSAs") and select inputs accordingly. Using

[10] *Id.,* at ¶¶515 to 520.

[11] *Id.,* at ¶517, footnote 1579.

inputs that are geographically-specific where appropriate and available, I assess whether an efficient CLEC could compete in each MSA with self-supplied switching.

Q. WHAT IS A BUSINESS CASE?

A. A business case is an analysis of a future business decision through the use of a financial model. The financial model is a convenient analytical structure that uses internally consistent inputs and assumptions to compare the value of the revenues and costs that are incremental to a business decision. In this testimony, the business case model examines the business decision of entering a specific geographic market and providing DS0-level services using self-supplied switching.

Q. WHY DID THE FCC ENDORSE THE USE OF A BUSINESS CASE TO ASSESS POTENTIAL COMPETITION?

A. The FCC recognized that in markets where the CLECs' level of actual deployment of switches does not meet a trigger, the economic conditions may nonetheless support economic entry by an efficient CLEC using its own switching. The FCC identified a business case analysis as one of the means for determining these markets. The premise underlying the FCC's decision to employ a business case model is that qualified entrants likely are basing their competitive entry strategies on business plans that show attractive financial opportunities from entry. Access to the business plans of competitors who

have already invested in local switching and collocation, or have announced plans to invest, would provide the most compelling evidence about the financial benefits that CLECs expect in my study areas, or areas with similar profiles. However, CLECs typically refuse to provide these plans.

My analysis, therefore, mimics this type of real-life business plan for an efficient CLEC. Rather than modeling a specific firm, my analysis follows the FCC's directive that the "analysis must be based on the most efficient business model for entry rather than to any particular carrier's business model."[12] To simulate an efficient CLEC and provide results with a high level of confidence, CPRO is populated with conservative and internally consistent assumptions to determine whether entry in particular markets presents attractive financial opportunities to entrants. In this way, CPRO attempts to simulate the decisions of a financially rational and reasonably efficient CLEC.[13]

Q. IS IT TYPICAL FOR A BUSINESS CASE TO ACCOUNT FOR EXPECTED CASH FLOWS OVER A NUMBER OF YEARS?

A. Yes. A credible business case needs to simulate what is expected to happen to a business venture over a reasonable period of time. The revenues and costs that drive most business decisions are collected and incurred over an extended

[12] *Id,* at ¶517.

[13] While the TRO states that the model should be based on "the most efficient business model for entry," CPRO does not attempt to model an unrealistically efficient CLEC. Thus, the CPRO inputs assume efficiency, but do not assume an unrealistic entry strategy under the guise of efficiency.

number of years. Often, investments in fixed assets (such as switches) and other start-up costs occur in the initial years of a business venture, and it is typical for firms to experience negative cash flows in these years. Financial viability, therefore, often depends upon generating sufficient positive cash flows in later years to make up for early losses. In line with this reality, CPRO estimates the value of CLEC entry with self-supplied switching based on the projection of cash flows over an extended period of time. Cash flows account for all of the costs and revenues associated with investments and are, therefore, not prone to biases that are often associated with accounting measures.[14] Furthermore, an assessment of the net present values of projected cash flows is the correct and standard method used by many firms to make business decisions.[15]

Because a dollar in later years is less valuable than a dollar today, it is necessary to restate all cash flows in present value terms.[16] Discounting all

[14] For example, decisions related to depreciation can have significant impacts on accounting measures but only negligible impacts on the value of an enterprise. This is because depreciation is essentially a non-cash event, and its only impact on value comes through its impact on taxes.

[15] Cash flow or free cash flow is the standard measure of financial operations used in a business case. It is generally defined as: Free Cash flow = Net Income + Depreciation - Changes in Working Capital – Capital Expenditures + Increase in Debt. This formulation is consistent with the Flow-to-Equity valuation technique used in CPRO. See White, Sondhi, and Fried, *The Analysis and Use of Financial Statements*, John Wiley & Sons, Inc. New York, 1994, and Ross, Westerfield, and Jaffe, *Corporate Finance*, 6th Edition, McGraw-Hill, New York, 2002.

[16] Money has time value. The underlying concept is simple. If you invest $1.00 today with the expectation that you will earn five percent interest per year, a year from now you expect to have $1.05, and ten years from now you expect $1.63. In this example, you would not be indifferent between receiving a dollar today or a dollar in ten years. You would prefer the dollar today. If you consider a five percent per year return to be a good rate of return, you may be indifferent between $1.00 today, $1.05 in one year, and $1.63 in ten years. Conversely, an expense or receipt of $1.63 ten years from

cash flows to present values makes them comparable. Summing the present values of all expected cash flows generates what is known as the expected net present value or NPV of the business case. A positive NPV equates to the expectation that the venture will generate value for the investors. This is another way of saying that the venture is economically viable (*i.e.*, in the terms used by the TRO, that the "competing carrier [can] economically serve the market"). In examining the trade-off between immediate investments and future positive cash flows, it is important to account for the time value of money. This is standard practice in the analysis of business cases.

Q. WHAT IS THE STANDARD TIME INCREMENT FOR BUSINESS CASE ANALYSIS?

A. In each year of the period included in the CPRO analysis, cash flows are estimated by projecting the amounts of cash that come into the business from revenues and cash that leaves the business to meet costs. After the five-year active period, the model estimates a steady-state level of operations and applies a trend factor for revenues and costs.

now would have a present value of $1.00. CPRO uses 15 percent for the cost of equity and 8 percent for the cost of debt. This input is user-adjustable.

Q. WHAT GUIDELINES DID YOU FOLLOW TO ESTABLISH A SET OF INTERNALLY CONSISTENT ASSUMPTIONS?

A. Two guidelines directed the selection of the key assumptions in my analysis: credibility and consistency.

- **Credibility**: Assumptions and inputs are conservative and supportable, and the analysis is consistent with standard financial analysis techniques and practices.
- **Consistency with the TRO**: The analysis is consistent with the findings and guidance provided in the TRO.

Q. WHAT ARE THE KEY REGULATORY-RELATED ASSUMPTIONS IN CPRO?

A. There are three important regulatory assumptions in CPRO:

- Unbundled loops are available from the ILEC at the current prices established by the Washington Utilities and Transportation Commission ("WUTC");
- Entrants can (and do) lease local transport (either UNE or special access transport); and
- Entrants must self-supply switching.

Q. WHAT ARE THE KEY ASSUMPTIONS ABOUT THE CLEC MODELED IN CPRO?

A. There are two key assumptions about the characteristics of the CLEC modeled in CPRO. These assumptions are internally consistent and consistent with the regulatory assumptions described above.

- **De Novo Entrant**: The CLEC is a new entrant in the geographic market. This is more conservative than assuming that the CLEC is an existing firm

in the DS1 enterprise market that could expand into the DS0 mass market at a lower incremental cost than an entrant that does not provide any service in this geographic market.[17] A CLEC serving the DS1 enterprise market would likely have made many of the sunk investments required to

[17] It is certainly arguable that the most efficient entry strategy for the efficient CLEC would be to leverage its entry from an existing base of enterprise customers and use the same switch that the CLEC has already deployed to serve those customers. CPRO, however, takes the more conservative approach of modeling a completely new entrant into the market.

enter the mass market.[18] Although the CLEC is a de novo entrant in the market, it is not modeled as a start-up firm. In line with the guidance in the TRO, some costs, such as OSS costs, are borne in part by its operations in other markets.

- **Five Percent Market Share**: The CLEC achieves a five percent market share. This assumption is based upon three factors. First, several CLECs have already achieved this market share in other states.[19] Second, a firm with five percent market share does not preclude entry by other firms. Third, a firm with five percent share will achieve adequate economies of scale.[20]

These assumptions ensure that the model produces realistic, albeit conservative, evidence of the potential for DS0-level mass market competition without unbundled switching.

[18] The FCC observes that efficient competitors will likely enter more than one geographic market and, therefore, that the costs of entry should be shared across multiple geographic areas:

> "Note that these costs are likely to be affected by whether the entrant is using the same facilities to serve customers in other markets, thus taking advantage of available scale and scope economies. Thus, a portion of the costs may be paid for by revenues generated in other markets, and the full cost should not be attributed to serving just one market. For example, it would be unreasonable to assume that the cost of developing a complete OSS system would have to be recovered within a single granular market. Also, if it is determined that an efficient entrant could efficiently serve both enterprise and mass market customers with the same switch, collocation and transport facilities, then the state's analysis of mass market customers in a particular market should not assume that the entire cost of these facilities is borne by these customers." (TRO at ¶520, footnote 1589)

> "The ability of an efficient CLEC to share certain assets and costs across geographic areas has a significant effect on the breadth of both the product and geographic markets in which an efficient CLEC can provide viable competition. In this regard, the FCC recognized that "the evidence on the record shows that the cost of providing mass market service is significantly reduced if the necessary facilities are already in place and used to provide other higher revenue services." (*Id*., at. ¶508)

[19] *See* Confidential Exhibit PBC-4C.

[20] Dr. Bryant, on behalf of MCI WorldCom and MCImetro, also adopted a market share of 5 percent in a recent TRO proceeding in Florida. His market share value is described as follows: "Market Share: 5% across all markets and services (business and residential, voice and data). This is based on an assumed 15% market share for the CLEC industry, spread evenly across three CLECs." Direct Testimony of Dr. Mark T. Bryant, *In re: Implementation of requirements arising from Federal Communications Commission Triennial UNE Review: Local Circuit Switching for Mass Market Customers,* Florida Public Service Commission, Docket No. 030851-TP, December 4, 2003, at 88-89.

Q. DID THE FCC REVIEW BUSINESS CASE MODELS AS PART OF THE TRIENNIAL REVIEW PROCESS?

A. Yes. As part of the Triennial Review process, the FCC reviewed business case analyses that attempted to show that potential competition either demonstrates or obviates the need for unbundled switching for residential and small business customers at TELRIC-based prices. The FCC found fault with these studies and offered some guidance about the acceptable framework for future studies.

The FCC set forth four primary criticisms of the business cases analyses it reviewed:

> "We find that technical shortcomings in each of these studies preclude us from relying on their results to evaluate impairment at the national level. These shortcomings include: (1) failure to use the proper framework when determining impairment; (2) insufficient granularity in their analyses; (3) failure to consider the typical revenues gained from serving the average customer in the market; and (4) inadequate support for the parameters they employed."[21]

The FCC's first criticism was directed to the AT&T and MCI position that cost disadvantages alone are sufficient to establish impairment. The FCC observed that the proper framework must include the consideration of costs and revenues associated with entry without access to unbundled switching. The FCC's second criticism relates to the geographic level of the analyses. A credible analysis must consider geographic differences that have significant impacts on costs or revenues. As is discussed below, even though the

appropriate geographic market is much broader than an individual wire center, CPRO provides granular results to the wire center level.

Q. IN RESPONSE TO ITS THIRD CRITICISM, WHAT GUIDANCE DID THE FCC OFFER REGARDING THE REVENUE TO CONSIDER IN A BUSINESS CASE MODEL?

A. The FCC's third criticism relates to the appropriate revenues to include in a business case analysis. A credible model must consider all of the revenues and costs associated with its entry or expansion. The FCC identified these revenues as follows:

> "*Potential Revenues.* In determining the likely revenues available to a competing carrier in a given market, the state commission must consider *all* revenues that will derive from service to the mass market, based on the most efficient business model for entry. These potential revenues include those associated with providing voice services, including (but not restricted to) the basic retail price charged to the customer, the sale of vertical features, universal service payments, access charges, subscriber line charges, and, if any, toll revenues. The state must also consider the revenues a competitor is likely to obtain from using its facilities for providing data and long distance services and from serving business customers."[22]

The FCC directs further that "we expect states to consider prices and revenues at the time of their analysis. We believe that these are reasonable proxies for

[21] TRO at ¶472.

[22] *Id.,* at ¶519.

likely prices and revenues after competitive entry and will result in a more administrable standard."[23]

Q. WHAT IS THE FCC'S FOURTH CRITICISM OF MODELS PRESENTED IN THE REVIEW PROCESS?

A. The FCC's fourth criticism is that "[e]ach study's particular inputs and assumptions heavily influenced its results, and there was significant disagreement in the record about the proper inputs and assumptions."[24] Commenters disagreed about such parameters as revenues, wire center sizes and locations, market share, numerous cost inputs, and the presence of existing CLEC facilities. To anyone familiar with evaluating models, especially models used in contested proceedings, this is not surprising.

A model is a structure to combine values for key inputs in a consistent manner. Whatever model is used, values for key inputs will continue to play an important role in estimating accurate and reliable cash flows. Even a perfectly designed model will provide inaccurate and unreliable results unless care is taken to populate the model with appropriate values for key inputs. To produce accurate and reliable results, inputs should be consistent with reasonable expectations for an efficient firm and with each other, and inputs

[23] *Id.*, at ¶520, footnote 1588.

[24] *Id.*, at ¶472.

should reflect current, state-specific information where that information is available.

Q. HOW DO INPUTS OF THE CPRO MODEL ADDRESS THE THIRD AND FOURTH CRITICISMS RAISED BY THE FCC?

A. The inputs of CPRO address the FCC's concerns in several ways. Revenue inputs are based as much as possible on the services offered by CLECs. These values are supported with analysis of Qwest internal data. In this way, they reflect the potential revenues that would be associated with an investment in a switch to provide service at the DS0-level. The revenue inputs, along with all other inputs, are described and documented in Confidential Exhibit PBC-4C. The revenue inputs (along with all other inputs to the model) are also user-adjustable. In Section VI, I show how the results of the model vary with changes to key input values.

Q. WHAT GUIDANCE DID THE FCC OFFER REGARDING THE COST CATEGORIES TO CONSIDER IN A BUSINESS CASE MODEL?

A. In assessing entry by an efficient CLEC, the FCC suggested to state commissions that for assessing the viability of a UNE-L strategy, the relevant cost categories would likely include (among others):

- Unbundled loops, including recurring, nonrecurring, and hot cut costs;
- Collocation and back-hauling traffic costs, including the effects of economies of scale;
- The costs of self-supplying a switch;

- OSS costs;
- Customer acquisition, including churn, costs; and
- Maintenance costs and overhead operations.[25]

State commissions must, further, "consider whether entrants are likely to achieve sufficient volume of sales within each wire center and in the entire area served by the entrant's switch to obtain the scale economies need to compete with the incumbent."[26]

IV. CPRO MODEL

A. Model Overview

Q. HOW IS CPRO STRUCTURED?

A. For the valuation of entry by an efficient CLEC, CPRO projects cash flows for each year for twenty-five years. Adopting such a long time horizon for the cash flows obviates the need for estimating a terminal value in the model. With discounting, cash flows after twenty-five years have little effect on the results and are ignored.[27] The initial five-years includes a growth trajectory for the CLEC to reach a steady-state market share of five percent. During this five-year period, the model projects revenues and costs at a granular level.

[25] *Id*, at.¶ 520.

[26] *Id.*

[27] The value today of $1 earned in Year 25 is $0.03. Since the impact on the value of the operation is so small, the CPRO model does not contain any further calculations of cash flow because they would not have a material impact on the analysis. Including a terminal value would increase the estimated value of the business case, but the impact would be relatively small.

After reaching a five percent market share in the fifth year, the model enters into a steady state period. In this period, cash flows are trended based on user-specified variables.

The analysis begins with the projection of the size of the DS0-level market for a specified geographic area. Next, the market share trajectory for the CLEC is applied to the overall size of the market for each year to derive a projection of the CLEC's volumes and, in turn, its revenues.

In the model, the CLEC serves all of its demand by leasing unbundled loops and transporting the traffic to and from its own switch. Network costs for providing facilities-based switching are estimated in the model's network section. Non-network costs are added to complete the cash flow calculations.

Cash flows are used to calculate the net present value for the entrant, and net present value is the estimate of the value of local entry for the CLEC. This is consistent with the TRO, which states that "[t]he economics literature generally states that a firm's decision to enter a market depends on whether the revenues it expects to obtain exceed the costs of entering and serving the market, factoring in the cost and risk of failure."[28] Furthermore, in the accompanying footnote, the FCC states that "in more technical terms, the

[28] TRO at ¶77.

condition is whether the net present value of the expected economic profit is positive."[29]

Tables in Section V present the net present value of entry for the Bremerton, Bellingham, Olympia, Seattle, Tacoma, and Vancouver MSAs. For illustrative purposes, tables in this section present the lines, revenues, and costs for service to all MSAs in the Seattle LATA.

B. CLEC Revenues

1. Overall Market and CLEC Market Share

Q. HOW DO YOU ESTIMATE CLEC REVENUES?

A. The simulation of CLEC revenues begins with the assumption that Qwest's lines represent the entire market of relevant lines today. Because other firms provide services that compete with the services provided over Qwest's DS0 lines, this assumption understates the size of the market, and through the mechanics of the model, it understates the amount of CLEC lines and revenues that are commensurate with a five percent market share. This assumption is driven by the practical consideration of the availability of data. Trajectories for business and residential lines are based on downward trends exhibited in national ARMIS line count data from years 2000 through 2002.[30]

[29] *Id.*, at ¶77, footnote 260.

[30] *See* Confidential Exhibit PBC-3C.

Next, the model estimates the trajectory of lines that the CLEC will capture in the first five years of operation. The assumption is that the CLEC's market share grows linearly for five years, adding lines both to gain market share and replace customers that switch to other providers (*i.e.*, churn), until the CLEC reaches its steady state market share. Once the CLEC reaches its steady state market share, it continues to add new customers only to the extent that it loses customers to churn.

Table 2 reports the projected DSO lines in the market and the numbers of CLEC lines for the first five years.[31] The table reports how the size of the market changes as the CLEC builds its market share. At the steady state, beginning in year five, the CLEC has five percent of the market. In all years, the lines added by the CLEC are greater than the net gain in lines. The higher number of lines added reflects the effects of churn.

[31] CPRO estimates CLEC line counts at the midpoint of each year and at the end of each year during the five-year initial period of the model. The model uses the mid-year and end of year line counts for different purposes. Mid-year line counts represent the average line count in a year and are used for calculating the CLEC's revenues. The end of year line counts represent the total demand the CLEC will serve. CPRO estimates the capacity needed for network costs based on the end of year lines to ensure that adequate capacity is available.

Table 2

Market and CLEC Line Counts

	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
Market Lines						
Mid Year Business	631,731	623,518	615,413	607,412	599,516	595,619
End of Year Business	627,625	619,466	611,412	603,464	595,619	595,619
Mid Year Residential	1,165,100	1,149,954	1,135,005	1,120,250	1,105,686	1,098,499
End of Year Residential	1,157,527	1,142,479	1,127,627	1,112,968	1,098,499	1,098,499
CLEC Lines						
Mid Year Business	2,956	8,751	14,396	19,892	25,244	27,866
End of Year Business	5,873	11,593	17,163	22,586	27,866	27,866
Mid Year Residential	5,296	15,681	25,795	35,644	45,232	49,931
End of Year Residential	10,523	20,772	30,753	40,471	49,931	49,931
CLEC Lines Added						
End of Year Business	6,930	8,864	10,746	12,578	14,361	10,032
End of Year Residential	12,417	15,882	19,256	22,538	25,733	17,975

2. Relevant CLEC Services and Prices

Q. HOW ARE THE CLEC LINES TRANSLATED INTO REVENUES?

A. The model estimates revenues by multiplying CLEC lines by revenue per line. For both business and residential customers, the model includes a flat-rate toll plan and a measured rate toll plan, both with unlimited local calling and several features included. The plans are based on MCI's plans, in particular, The Neighborhood and Business Complete plans. The model estimates the revenue per line based on the mix of rate plans that the CLEC will sell. The CLEC also earns revenues from additional services not included in the service plans, such as directory assistance. Including these is consistent with the FCC's directive to "consider *all* revenues that will derive from services to the

mass market."[32] The model multiplies the average prices for plans and additional services by the quantities sold to calculate total revenues.

The following services are included in the model, split into business and residential categories:

- **Service Packages**: The rate plans used in the model are based on The Neighborhood and Business Complete plans offered by MCI. The plans include services such as Call Waiting, Call Forwarding and Caller ID, and unlimited local calling. Customers can choose either measured or flat-rate toll services.
- **Additional Services:** CPRO also includes revenues for services not included in the rate plans**,** such as Directory Assistance, Voice Mail and Inside Wire Maintenance Plan and Dial "0" services. It also includes International calling and other services.
- **Other Charges:** The model includes revenues for the Subscriber Line Charge ("SLC") and Line Number Portability ("LNP") as charged by MCI in The Neighborhood and Business Complete plans.

Q. HOW DOES CPRO TREAT REVENUES AND COSTS FOR ACCESS CHARGES?

A. CPRO assumes that the flow of funds to other firms for terminating calls is equal to the flow of funds into the CLEC for receiving calls. Thus, the model assumes that the revenues and expenses associated with switched access and reciprocal compensation offset each other. Based on Qwest's experience, it is reasonable to expect that originating traffic and terminating traffic will be approximately equal, other than for CLECs serving ISPs.

[32] TRO at ¶519 (emphasis in original).

Table 3 reports the total revenues for the firm and the overall average revenue per line.

Table 3

CLEC Line Counts and Revenues[33]

	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
CLEC Lines						
Mid Year Business	2,956	8,751	14,396	19,892	25,244	27,866
Mid Year Residential	5,296	15,681	25,795	35,644	45,232	49,931
Total CLEC Lines	8,251	24,432	40,191	55,537	70,476	77,798
Monthly Revenue	$475,574	$1,408,174	$2,316,446	$3,200,865	$4,061,897	$4,483,883
Revenue Per Line	$57.64	$57.64	$57.64	$57.64	$57.64	$57.64

C. CLEC Costs

Q. HOW DOES CPRO ESTIMATE COSTS?

A. There are two categories of costs in CPRO: network costs and non-network costs. The CLEC's network costs include investments and expenses associated with building and maintaining its facilities, including the costs of leasing space and facilities from the ILEC. The non-network costs include retailing costs to provide service to retail customers and other non-network operational costs.

[33] In Tables 3 to 8, the per line calculations follow a mid-year convention. That is, the revenue for each year is divided by the average of the end of year line counts for that year and the preceding year.

1. Overview of Network

Q. HOW DOES THE CLEC CONSTRUCT A NETWORK TO PROVIDE SERVICE IN CPRO?

A. The CLEC in CPRO uses a UNE-L network architecture to provide service. There are four key components of this architecture:

- **Unbundled Loops**: The CLEC leases unbundled loops at TELRIC prices from Qwest to connect to its customers' premises.
- **Backhauling Traffic**: The CLEC uses two techniques to backhaul traffic from Qwest wire centers to its switch. In larger wire centers, it purchases collocation space, places its own Digital Loop Carrier ("DLC"), and leases transport (UNE or special access[34]). In smaller wire centers, the CLEC uses enhanced extended loops ("EELs") to connect the unbundled loops to its switch. Collocation is more cost-effective in all but very small wire centers. Regardless of the method, the CLEC backhauls all of its traffic to its switch.
- **CLEC Switch**: The CLEC purchases its own switch.
- **CLEC Interconnection with the ILEC**: The CLEC leases transport to connect its switch with the ILEC's tandem to provide local service interconnection.

Exhibit PBC-3 provides more detailed information about the technical aspects of the CLEC's network architecture, including diagrams. Below, I provide additional information about the network design and the costs that the CLEC will incur to provide service.

[34] The CLEC in the CPRO model will use UNE transport at the rates established by the WUTC unless Qwest requests that the requirement for unbundled transport be removed on a specific route, in which case the CLEC in the model will use special access transport from the FCC tariff for private line transport services.

2. Unbundled Loops

Q. WHAT COSTS ARE INCLUDED FOR CONNECTING TO CUSTOMERS USING UNBUNDLED LOOPS?

A. The model includes three loop-related categories of costs. First, The CLEC pays the non-recurring costs to lease loops from Qwest, including the cost of hot cutting loops from Qwest to the CLEC. In the *baseline view*, the CLEC uses the Coordinated Installation without Cooperative Testing to cut over loops. Second, the CLEC incurs internal costs of accepting the unbundled loop and attaching it to its own facilities. Third, the CLEC pays the monthly recurring cost of the loop. Table 4 reports the total and per line expenses on a monthly basis for each year in the model. The per line cost decreases as the proportion of loops that are for new service decreases each year and the non-recurring costs become a smaller portion of the total.

Table 4

CLEC Unbundled Loop Costs

	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
CLEC Lines						
Mid Year Total	8,251	24,432	40,191	55,537	70,476	77,798
End of Year Total	16,396	32,365	47,916	63,058	77,798	77,798
Lines Added Total	19,347	24,746	30,002	35,117	40,094	28,007
CLEC Unbundled Loop Costs (per month, $000)						
CLEC Nonrecurring Costs (Internal & External)	$116	$150	$179	$208	$237	$163
CLEC Recurring Costs	$116	$342	$563	$778	$987	$1,090
Total Cost	$231	$492	$743	$987	$1,225	$1,253
Monthly Cost Per Line ($)	$28	$20	$18	$18	$17	$16

3. Backhauling Unbundled Loops to the Home Central Office

Q. HOW DO YOU ESTIMATE THE COSTS THAT THE CLEC INCURS TO BACKHAUL TRAFFIC FROM UNBUNDLED LOOPS TO THE CLEC SWITCH?

A. The CLEC in CPRO has two options for "backhauling" traffic from UNE loops to its switch. The model chooses the appropriate option depending upon the size of the office and cost of each option.[35]

- **Collocation and Transport with Concentration**: With this option, the CLEC purchases collocation and installs a DLC in Qwest's central office. The CLEC terminates its UNE loops onto the DLC. The DLC concentrates the DS0 channels and output digital circuit(s) for transport. The DLC allows the CLEC to purchase smaller amounts of dedicated transport from Qwest. The CLEC purchases UNE transport, if available, or special access

[35] The CPRO model has inputs that serve as rules for deciding if a CLEC would collocate in the office. If the model does not estimate that the CLEC will have at least 169 lines by year five, then the CLEC will not collocate. *See* Confidential Exhibit PBC-4C for more information about the minimum number of lines input.

transport. The model evaluates the capacity of DLC and transport necessary each year and adds capacity as required.

- **EELs**: With this option, the CLEC uses EELs to backhaul traffic. The model chooses this option in two circumstances. First, it will use EELs in some central offices in the initial years of operations if it determines that the CLEC cannot collocate in an Qwest central office. The model limits the number of offices in which the CLEC can establish collocation.[36] Second, the model selects this option when it is more efficient, usually in smaller-sized offices.

Regardless of the method chosen, the CLEC backhauls the traffic from Qwest's central offices where it has customers to the Qwest central office that serves the location of the CLEC switch. In the model, this Qwest central office is called the home central office. The CLEC purchases special access channel terminations to feed the traffic into its switch.

Table 5 reports the number of central offices served via collocation and EELs, along with the recurring expense and cumulative investment both on a per line basis and in total. As shown, the CLEC spends significantly more, per line, to provide service in its first years of operation. As it achieves greater economies of scale, its costs per line decrease.

[36] The CPRO model has an input that limits the number of offices that a CLEC can collocate in a year in a LATA. This variable allows users to build into a model run any capacity limits that a CLEC has.

Table 5

CLEC Network Costs

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
Wire Centers Served							
Via Collocation		20	40	51	51	51	51
Via EELs		35	15	4	4	4	4
CLEC Network Costs ($000)							
Collocation Nonrecurring Costs	$914	$737	$342	$8	$2	$3	$0
Collocation Recurring Costs	$3	$250	$546	$780	$966	$1,148	$1,148
DLC Investment	$526	$1,005	$1,933	$1,573	$1,234	$1,038	$0
DLC Expenses	$11	$44	$107	$182	$242	$291	$313
Transport Nonrecurring Costs	$22	$245	$96	$50	$43	$38	$0
Transport Recurring Costs	$0	$135	$119	$111	$129	$145	$145
Total Costs	$1,476	$2,417	$3,143	$2,704	$2,616	$2,663	$1,606
Total Cost Per Line ($)	-	$293	$129	$67	$47	$38	$21

4. Switching

Q. HOW ARE SWITCHING COSTS ESTIMATED IN CPRO?

A. The CPRO model includes three separate costs related to investment for switching and features: (1) the fixed cost to purchase a digital switch; (2) the variable cost to add additional line terminations on the switch up to its total capacity; and, (3) the ongoing costs of maintaining the switch.

The CLEC initially incurs the fixed cost of a switch and enough ports to handle all traffic in year 0. In subsequent years, the CLEC purchases additional switching capacity as needed. If the CLEC serves more customers than its first switch can serve, then it purchases an additional switch. In each year of service, the CLEC also incurs expenses to maintain its switching facilities.

Table 6 reports the investment and expense for the CLEC during its first five years. As with its backhauling facilities, the CLEC has higher investment and expenses per line in its initial years. As its capacity utilization improves with time, its per line costs drop.

Table 6

CLEC Switching Costs

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
CLEC Switching Costs ($000)							
Switching Fixed Investment	$2,400	-	-	-	-	-	-
Switching Variable Investment	$166	$990	$964	$939	$914	$745	-
Switching Expense	$78	$186	$246	$303	$360	$410	$433
Total Switching Costs	$2,644	$1,176	$1,210	$1,242	$1,274	$1,155	$433
Cumulative Total Cost	$2,644	$3,820	$5,029	$6,272	$7,545	$8,701	$9,133
Total Cost Per Line ($)	-	$143	$50	$31	$23	$16	$6
Cumulative Cost Per Line ($)	-	$463	$206	$156	$136	$123	$117

5. Connecting the CLEC Switch to the ILEC Network

Q. IN CPRO, HOW DOES THE CLEC INTERCONNECT WITH THE ILEC?

A. CPRO assumes the CLEC interconnects with the ILEC by purchasing local interconnection service ("LIS"), direct trunk transport, and special access facilities to connect its own switch to the ILEC tandem(s). In the model, the capacity required of the special access transport is based on Qwest's market-specific traffic levels. If there is more than one tandem in the market, then the CLEC purchases facilities to connect its switch to each tandem associated with a wire center that the CLEC serves. Table 7 reports the expenses, in total and

on a per line basis, to interconnect with the ILEC. As in other parts of the network, the CLEC achieves better utilization and decreased costs per line as it gains market share.

The network design was constructed in collaboration with network engineers from Qwest and consultants from SPR. Table 7 shows the cumulative five-year capital spending that the model estimates for the CLEC in each market to self-supply switching and backhaul traffic to the switch.

Table 7

Cumulative Capital Spending

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
CLEC Investment/Nonrecurring Costs ($000)							
Switching Investment	$2,566	$990	$964	$939	$914	$745	$0
DLC Investment	$526	$1,005	$1,933	$1,573	$1,234	$1,038	$0
Collocation Nonrecurring	$914	$737	$342	$8	$2	$3	$0
Transport Nonrecurring	$22	$245	$96	$50	$43	$38	$0
Loop Nonrecurring	-	$1,388	$1,796	$2,153	$2,501	$2,847	$1,955
Total Investment/Nonrecurring Costs	**$4,027**	**$4,365**	**$5,131**	**$4,723**	**$4,694**	**$4,671**	**$1,955**
Cumulative	**$4,027**	**$8,393**	**$13,524**	**$18,247**	**$22,941**	**$27,612**	**$29,567**
Total Cost Per Line ($)	$0	$529	$210	$118	$85	$66	$25
Cumulative Cost Per Line ($)	$0	$1,017	$554	$454	$413	$392	$380

Q. DO YOU ASSUME THAT THE FACILITIES THAT THE CLEC PURCHASES WILL PROVIDE SERVICE FOR THE ENTIRE TWENTY-FIVE YEARS IN THE MODEL?

A. No. Based on the expected economic lives of the facilities, the model estimates the costs associated with the timely replacement of fully depreciated facilities. For example, if switching equipment has a life of ten years and the

CLEC spends $1 million in the first year of the model, then the model estimates that the CLEC also spends $1 million in year 11 on switching equipment. The model does not assume that the CLEC will necessarily replace the switch but that it will invest in technology to keep its network current. Historic experience indicates that it will cost no more to replace this functionality in the future than it would today.

D. Non-Network Costs

1. SG&A Costs

Q. WHAT NON-NETWORK COSTS ARE INCLUDED IN CPRO?

A. The non-network costs in CPRO are comprised of retailing and overhead functions. These costs are often referred to as Sales, General, and Administrative ("SG&A") costs. The model includes an overall category of general and administrative costs and explicitly models several categories of costs related to sales. CPRO includes:

- **General and Administrative ("G&A")**: The model estimates G&A costs as a percentage of network and customer care costs.
- **Start-up in LATA**: The model includes costs for a management team to provide initial operation management in the first year of service in addition to the costs captured in other categories. Many of these costs are based on the number of lines served by the CLEC, which is lowest in the first year. The addition of this extra cost ensures that the model includes adequate costs for these functions in the initial year of operation.
- **Operation Support Systems**: In line with the TRO, the CLEC modeled in CPRO provides service in other geographic markets and is now entering the geographic markets under study. CPRO assumes that the firm adds

additional capabilities to its OSS to provide DS0-level mass market service via UNE-L. OSS perform the back office functions of order processing, order management, provisioning, inventory control, billing and network monitoring. The firm enters multiple markets and portions of the incremental OSS costs are assigned based on the number of lines served by the CLEC in the steady state.

- **Account Setup**: Account set-up costs are the one-time cost related to each new line served. This is a nonrecurring cost.

- **Customer Acquisition**: Customer acquisition costs for marketing and sales are modeled on a per line basis. These costs include advertising, sales commissions, and promotional discounts. This is a nonrecurring cost. The model includes inputs for an initial cost and a steady state cost. With this structure, the model allows an analyst to assess the impact of high initial costs of acquiring customers.

- **Customer Care**: CPRO includes a cost per line per month to provide customer care, including billing. These costs are incurred for call completion services, number and directory maintenance, maintaining and billing customer accounts, and instructing customers in the use of products and services. This is a recurring cost.[37]

Q. WOULD YOU PLEASE PROVIDE THE LEVELS OF SG&A COSTS ESTIMATED IN CPRO FOR THE SEATTLE LATA?

A. Table 8 reports CLEC lines and costs associated with retail functions, in total and on a per line basis. The cost varies by year of operation. As shown, the CLEC incurs greater expense per line in early years when a greater proportion of its lines are new.

[37] *See* Confidential Exhibit PBC-4C for additional details.

Table 8

CLEC Non-Network Costs

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Steady State
CLEC Non-Network Costs ($000)							
Start-up Costs in LATA	$595	-	-	-	-	-	-
OSS	$2,653	$15	$553	$542	$531	$274	$26
Account Set-up	-	$339	$434	$526	$616	$703	$491
Customer Acquisition	-	$2,322	$2,970	$3,600	$4,214	$4,811	$2,521
Customer Care	-	$495	$1,466	$2,411	$3,332	$4,229	$4,668
Total Costs	**$3,248**	**$3,171**	**$5,422**	**$7,079**	**$8,693**	**$10,017**	**$7,705**
Total Cost Per Line ($)	-	$384	$222	$176	$157	$142	$99

Q. DOES THE CPRO MODEL INCLUDE ANY OTHER COSTS TO PROVIDE SERVICE?

A. Yes. The model also includes the costs associated with support plant and accounts receivable. Support plant costs are a function of network investments and customer care. Accounts receivable, which are estimated as a function of revenues, cause costs because the CLEC must fund its operations before it collects cash from its customers.

Q. DOES CPRO ESTIMATE ANY OTHER COMPONENTS OF CASH FLOWS ASSOCIATED WITH THE OPERATIONS OF THE FIRM?

A. Yes. CPRO also estimates the level of cash that the CLEC would need to fund operations aside from its expenses and investments. The model estimates cash as a function of annual expenditures. As is explained in Confidential Exhibit PBC-4C, the level of cash is consistent with the levels carried by efficient CLECs.

V. THE *BASELINE VIEW*

Q. WHAT GUIDANCE DID THE FCC PROVIDE ABOUT HOW TO SPECIFY THE GEOGRAPHIC MARKET?

A. The FCC provided little guidance about how to specify geographic markets. The most definitive statement made was that the market could not be the entire state.[38] This is an area where the FCC clearly placed significant discretion in the hands of state commissions. Mr. Shooshan explains in his testimony that aggregating wire centers by MSAs in Washington makes sense from economic and practical perspectives. I present my *baseline view* of the model using this unit of geography for assessing CLEC entry. I present results for the Seattle, Tacoma, Vancouver, Olympia, Bremerton, and Bellingham MSAs. The Seattle, Tacoma, Bremerton, Olympia, and Bellingham MSAs are in the Seattle LATA. The Vancouver MSA is in the Portland/Vancouver LATA. In the *baseline view*, I exclude all wire centers that fall outside of MSAs.

Q. WHAT ARE THE RESULTS OF YOUR *BASELINE VIEW* RUN OF CPRO FOR THE LATAS IN WASHINGTON?

A. Table 9 reports the NPV for CLEC entry with self-supplied switching into the Bremerton, Bellingham, Olympia, Seattle, Tacoma and Vancouver MSAs. The NPV of entry is positive in all MSAs.

[38] TRO at ¶495.

Table 9

NPV and Number of Wire Centers by MSA

MSA	NPV ($000)	Number of Wire Centers
Seattle	$12,654	26
Tacoma	$2,402	16
Bremerton	$454	7
Olympia	$454	4
Bellingham	$32	2
Vancouver/Portland*	$3,526	5

* The NPV is for the entire Vancouver/Portland MSA; there are 21 wire centers in this MSA; 5 of these wire centers are in Washington.

VI. VALUES FOR KEY INPUTS

A. Consistency of Key Inputs

Q. WHAT ARE THE IMPORTANT ATTRIBUTES OF MODEL INPUTS?

A. To produce accurate estimates of the value of entry, input values should be as realistic as possible and consistent with the purpose of the analysis, the publicly available facts and the values of other inputs.

Q. CAN YOU PROVIDE AN EXAMPLE OF A SET OF CPRO INPUT VALUES THAT WERE SELECTED IN MANNER THAT MAINTAINS CONSISTENCY?

A. Yes. The values for revenue per line, customer acquisition cost, market share and churn are interrelated in the real world, and values for these inputs were selected such that they are consistent with each other, the TRO, the best

publicly available facts, and my intent to use conservative assumption, in order to lend a high level of confidence to the results. These variables are defined as follows in CPRO:

- **Revenue Per Line**: The CLEC's prices for various packages of services.
- **Customer Acquisition Cost**: The amount of money that a CLEC spends acquiring customers.
- **Market Share**: The size and speed of market share growth for the CLEC across time.
- **Churn Rate**: The rate that CLEC customers disconnect service.

From a functional perspective, firms can control revenue per line (through prices) and customer acquisition costs, and market share and churn are functions of a firm's decisions about these variables. A firm that sets lower prices will, all else being equal, achieve higher market shares and have lower churn rates; a firm that spends more on customer acquisition will achieve a higher market share and achieve it more quickly.

Q. HOW WERE THE VALUES FOR THESE VARIABLES SELECTED FOR USE IN THE *BASELINE* RUN OF CPRO?

A. The process of selecting values for these variables begins with the FCC's directive that revenues for the CLEC in a business case analysis should be based on today's prices. The FCC states that:

> "we expect states to consider prices and revenues prevailing at the time of their analyses. We believe that these are reasonable proxies

for likely prices and revenues after competitive entry and will result in a more administrable standard."[39]

To comply with this directive, prices were set based upon service plans offered today by MCI today. MCI's prices are a reasonable approximation of what a CLEC can achieve today, and MCI has a strong track record of winning market shares with its Neighborhood pricing plan.[40] After starting with MCI's current prices, I chose values for market share, customer acquisition costs, and churn that are consistent with these prices. In many cases, CLECs and analysts have forecast more favorable values for churn and customer acquisition costs. For internal consistency, values in the *baseline view* are consistent with today's experience rather than forecasts of the future.

Q. WHAT VALUE DID YOU SELECT FOR CUSTOMER ACQUISITION COSTS?

A. I estimated that the CLEC spends an average of $120 to acquire a customer. As presented in detail in Exhibit PBC-4C, this value is in the range of values that CLECs currently spend. It is a conservative estimate of what an efficient

[39] *Id,* at Footnote 1588

[40] In late 2002, Wayne Huyard, president of MCI Mass Markets, boasted that, "The Neighborhood built by MCI(SM) has…become the most successful local service product in the history of consumer local communications." (Source: MCI, Arlington, VA, September 18, 2002, The Digest) Kathy Stack, who is in charge of marketing the Neighborhood, stated that, "So far, about 3 million people have signed up for the Neighborhood plan." (Steven Church, www.delawareonline.com, "Verizon to defend itself against competition from long distance giants, small companies, April, 14, 2003.)

CLEC would spend. Several CLECs have forecasted lower costs in the future.[41]

Q. WHAT DEFAULT VALUES DID YOU SELECT FOR MARKET SHARE AND CHURN TO BE CONSISTENT WITH YOUR PRICE AND CUSTOMER ACQUISITION DEFAULT VALUES?

A. I chose a market share target of five percent. The CLEC will achieve this market share over five years by gaining one percent each year. This assumption is conservative since AT&T and MCI have achieved higher market share levels in other states in less time.[42]

I selected a rate of churn of three percent per month. I based this value on my research of churn throughout the telecommunications industry. Confidential Exhibit PBC-4C contains the details of the research conducted on churn rates and the analysis of that information. The default churn rate is consistent with what efficient CLECs have achieved today and with the other inputs in the *Baseline View*. It is likely a conservative estimate.[43]

---

[41] *See* Confidential Exhibit PBC-4C for details.

[42] *See* Confidential Exhibit PBC-4C.

[43] "Generally, POTS churn runs higher than T1 churn, as the majority of these customers are not on term contracts. We believe a reasonable churn target for these types of services is between 2 and 2 1/2%, while target churn for integrated T1s and voice trunking services is between 1 and 1 1/2%." "Q2 2003 Mpower Holding Corp. Earnings Conference Call – Final," Fair Disclosure Wire, August 6, 2003.

Q. DO YOU HAVE ANY GUIDANCE FOR THIS COMMISSION ABOUT MAINTAINING INTERNAL CONSISTENCY AMONG THESE FOUR INPUTS?

A. Yes. The Commission should subject evidence about these variables to three tests

before making changes to the *baseline view*. First, the party should test alternative values for internal consistency. A change of one input in isolation will likely lead to mismatched inputs. Second, the information supporting a change should be granular enough to ensure that the alternative input value is consistent with the purpose of the proceeding, consistent with the other assumptions in the model, and verifiable by other parties. Third, consistent with the TRO, any alternative input value must reflect the operations of an efficient CLEC, not those of any particular CLEC.

B. Sensitivity Analysis

Q. WHAT IS THE PURPOSE OF YOUR SENSITIVITY ANALYSIS OF THE MODEL?

A. The purpose of a sensitivity analysis is to identify the key inputs of a model and to determine how the results of the model change with reasonable changes to the input values. This exercise does not present new scenarios of internally consistent inputs. Rather, it simply reports how the model results change with changes to key inputs.

Q. WHICH VARIABLES DID YOU TEST IN YOUR SENSITIVITY ANALYSIS?

A. I selected five variables to test in my sensitivity analysis. I chose these variables for two reasons. First, each has a significant impact on the model's results. Second, based on a review of the *ex parte* filings made with the FCC

in the Triennial Review proceeding, I expect that these variables will be the source of much debate. Table 10 reports the changes in value to each key input.

- **Churn**: The CPRO Model has two variables to describe the rate that customers leave the CLEC, one for churn during the first five years and one for the following steady state period.
- **Revenue Per Line**: The CPRO Model has four variables that describe the price per line received by the CLEC for its service plans.
- **Customer Acquisition Costs**: The model has two variables for customer acquisition costs. The first is the cost of acquiring a customer during the initial five years of the CLEC's operations. The second variable describes the cost during the steady state.
- **Long Distance Usage**: CLECs sell plans that include flat rate toll usage. As the CLEC's flat rate customers consume additional toll usage, costs increase but revenues remains the same. CPRO has separate values for business and residential customers.
- **Additional Contribution Per Line**: CLECs receive additional contribution from services, such as directory assistance.

Table 10 summarizes the variables I change in my analysis. As shown, this table provides the name of the variable, its default value, and the lower and upper bounds in the sensitivity analysis.

Table 10

Input Changes for Sensitivity Analysis

Input Category	Units	Default Value	Low Value	High Value
1) Churn				
Initial Rate	%/Month	3.0%	3.3%	2.7%
Steady State Rate	%/Month	3.0%	3.3%	2.7%
2) Revenue Per Line				
Business Flat Rate Plan	$/Line/Month	$59.99	$53.99	$65.99
Business Measured Plan	$/Line/Month	$31.99	$28.79	$35.19
Residential Flat Rate Plan	$/Line/Month	$49.99	$44.99	$54.99
Residential Measured Plan	$/Line/Month	$33.99	$30.59	$37.39
3) Customer Acqusition				
Initial Cost	$/Line Added	$120	$132	$108
Steady State Cost	$/Line Added	$90	$99	$81
4) Long Distance Usage for Flat Rate Plans				
Business	Minutes per Month	400	440	360
Residential	Minutes per Month	400	440	360
5) Additonal Profit Per Line	$/Line/Month	3	2.7	3.3

Note:
High and Low values refer to the inputs effect on NPV, not necessarily the value of the input.
Input changes vary by 10% from the Baseline value.

Q. WHAT ARE THE RESULTS OF YOUR SENSITIVITY ANALYSIS?

A. The results of my sensitivity analysis are presented in Table 11 for the Seattle LATA. The table reveals how the *baseline* values estimated by the model change with changes to the key variables. The results indicate that the model is sensitive to changes to key variables, but the results remain positive for the LATA.

Table 11

Sensitivity Analysis Results

	NPV ($M)	
Input Category	**Value**	**Change**
Baseline	$16	-
1) Churn		
High Value	$18	$2
Low Value	$14	($2)
2) Revenue Per Line		
High Value	$27	$11
Low Value	$5	($11)
3) Customer Acquisition		
High Value	$17	$1
Low Value	$15	($1)
4) Long Distance Usage		
High Value	$17	$1
Low Value	$15	($1)
5) Additional Profit Per Line		
High Value	$17	$1
Low Value	$15	($1)

Q. WHAT IS THE INTERPRETATION OF YOUR SENSITIVITY ANALYSIS?

A. The interpretation of my sensitivity analysis is that, while there is no single value that is correct for these inputs, there are no reasonable changes to key input values that change the basic message from the model. The basic message is that there are a strong financial rewards available to efficient CLECs that self-supply switched services in these markets

Q. HOW DID YOU SELECT THE RANGE FOR EACH VARIABLE THAT YOU INCLUDED IN THE ANALYSIS?

A. I selected a range of ten percent on all variables. I chose this range to show how the model results vary with similar changes across various inputs to isolate the inputs that are most sensitive.

VII. CONCLUSION

Q. WHAT ARE YOUR CONCLUDING COMMENTS?

A. I have introduced the CPRO model and my analysis of conditions in Washington to assist the Commission in assessing if potential entry into the DS0-level mass market is viable for an efficient CLEC that self-provisions switching. This model is based upon sound principles of financial analysis and the guided by the FCC's instructions in the TRO. Based on my analysis, I conclude that entry is viable for efficient CLECs in the Seattle, Tacoma, Bremerton, Olympia, Bellingham, and the Vancouver portion of the Portland/Vancouver MSAs. This is a robust conclusion, because it is based upon conservative assumptions, and because financial results remain positive with less favorable values for key inputs.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.