DIRECT TESTIMONY OF JAMES W. STEGEMAN

ON BEHALF OF BELLSOUTH TELECOMMUNICATIONS, INC.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NUMBER 030851-TP

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Section 1. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.

A. My name is James W. Stegeman. I am the President of CostQuest Associates, Inc. I am testifying on behalf of BellSouth Telecommunications ("BellSouth," "BST," or the "Company").

Q. PLEASE OUTLINE YOUR EXPERIENCE AND QUALIFICATIONS.

A. I have a Bachelors degree in Mathematics and Statistics and a Masters degree in Statistics from Miami University, Oxford, Ohio. Previously I was employed with Merrell Dow Research Institute, Cincinnati Bell Telephone, and INDETEC International. My work has included statistical evaluation of data, training, cost estimation, and financial analysis. I have developed systems and models to perform a variety of functions including the following: cost estimation; competitive assessment; product profitability; and budgeting.

Q. WHAT IS YOUR ROLE IN THIS PROCEEDING?

A. I led the design, development, and implementation of the BellSouth Analysis of Competitive Entry ("BACE") model that is being filed by BellSouth in this proceeding.

Q. WHAT IS YOUR EXPERIENCE WITH MODELS DESIGNED TO ESTIMATE THE PROFITABILITY/VIABILITY OF TELECOMMUNICATION PRODUCTS, MARKETS, AND FIRMS?

A. I was involved in the design, development, and implementation of numerous telecommunication profitability systems used throughout the world (systems in Hong Kong and the United States) including INDETEC's CPMS and ProfitMap systems. In fact, I just finished managing the design and implementation of a profitability model for a U.S. based fiber overbuild company that sells bundled video, data and voice services.

Q. DO YOU HAVE EXPERIENCE WITH MODELS DESIGNED TO ESTIMATE THE COSTS OF TELEPHONE SERVICE AND ITS COMPONENTS?

A. Yes. I designed, coded and implemented the BellSouth Telecommunication Loop Model (BSTLM©) that was used in UNE proceedings in eight of the nine of BST's states. I also developed the CostPro Loop model that is being used in a number of states in the U.S., and the Cost Proxy Model (CPM) currently in use in California. I assisted in the design, coding and implementation of the Benchmark Cost Proxy Model (BCPM). I designed the Universal Service Cost model adopted for use in Hong Kong and more recently the switching and transport portions of the universal service cost model used by the New

Zealand Commerce Commission. I led the development of the Australian Universal Service Cost model, and consulted on the development of similar costing models in Japan. I have also reviewed the HAI and HCPM models during their development.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I describe the BellSouth Analysis of Competitive Entry (BACE) model (referred to as "BACE" or "the model"). This includes an overview of the model development, the basic approach employed in the model, the architecture, logic, and processing of the model, the data required, and the model's reporting capability. BellSouth witnesses Dr. Aron and Dr. Billingsley, discuss various inputs into the model, the assumed CLEC engineering used in the model and the model results. A copy of the model, which is provided via CD, accompanies my testimony.

Q. WHICH OF THE ISSUES IN THIS PROCEEDING DOES YOUR TESTIMONY ADDRESS?

A. My testimony addresses Issue 2, Market Definition. I specifically address subparts (b) and (c) of issue 2, which relate to the variation in factors affecting CLEC's ability to serve customers and CLECs' ability to target and serve specific markets profitably and efficiently using currently available technologies. My testimony also addresses Issue 5, Potential for Self-Provisioning of Local Switching. I address subparts (d) and (e) of Issue 5, which relate to potential economic barriers to CLEC entry and the markets in which CLECs can economically self-provision local switching.

Q. PLEASE DESCRIBE HOW YOUR TESTIMONY RELATES TO THE FOREGOING ISSUES.

A. My testimony focuses primarily on issues 2 (c) and 5 (e). At the conclusion of my testimony, I describe how the BACE model is also relevant to issues 2 (b) and 5 (d).

Q. BRIEFLY OUTLINE YOUR TESTIMONY.

A. The major sections of my testimony discuss the following topics:

1) Introduction.
2) BACE background. This includes a discussion of why the model was built, the nature of its development, and the fundamental approach employed by the model.
3) A discussion of how BACE is consistent with the FCC's TRO.
4) An overview of the model architecture, various processing steps, and a description of some of the advantages of BACE.
5) An overview of the BACE data requirements.
6) A discussion of price calculation in BACE.
7) A discussion of quantity calculation in BACE.
8) A discussion of revenue calculation in BACE.
9) A discussion of cost calculation in BACE, including optimization steps.
10) A discussion of tax calculation in BACE.
11) A discussion of the reports obtained from BACE.
12) A discussion of the tests performed on the BACE model.
13) A description of how BACE relates to issues 2 (b) and 5 (d).

For convenience, I have provided a list of acronyms used in this testimony as Exhibit JWS-1.

Section 2: BACKGROUND

Q. WHY WAS BACE BUILT?

A. In the proceedings leading up to the FCC's release of its Triennial Review Order (TRO) BellSouth recognized that there would be a need for an economic model to determine if and where Competitive Local Exchange Carriers (CLECs) would be impaired without access to BellSouth's unbundled switching. As a result, they commissioned CostQuest Associates to develop such a model.

Q. WHAT IS THE BASIC APPROACH TO THE CALCULATION OF IMPAIRMENT USED BY BACE?

A. BACE provides a framework to determine whether a CLEC can economically provide telecommunication-based service, without the ability to obtain unbundled switching from the Incumbent Local Exchange Carrier (ILEC). BACE provides the framework to estimate the revenues available to CLECs in a geographic market and the outlays, or costs, CLECs will incur when providing services in that geographic market. The present value of the CLEC costs are compared to the present value of the CLEC revenues for specific geographic markets to determine the Net Present Value (NPV) of CLEC entry for that market, using an appropriate network infrastructure. BellSouth witness Dr.

Debra Aron explains how a positive NPV for CLECs in the geographic market being studied indicates an absence of impairment in that market.

Q. HOW IS THE BACE MODEL DOCUMENTED?

A. BACE has two forms of documentation, a Users Guide and a Methodology Manual. The BACE Users Guide is designed to help the user install the software, examine and modify study assumptions and produce output reports. The BACE Methodology Manual discusses how BACE addresses applicable regulatory guidelines, follows standard economic and business practices and calculates the cash inflows and outflows necessary to determine NPV during the study horizon.

I have attached to my testimony the BACE Users Guide as Exhibit JWS - 2, and the BACE Model Methodology Manual as Exhibit JWS - 3.

Section 3: BACE IS CONSISTENT WITH THE TRO

Q. WHAT IS YOUR UNDERSTANDING OF THE ROLE OF AN ECONOMIC MODEL IN ANY DECISION REGARDING WHETHER CLECS ARE IMPAIRED WITHOUT ACCESS TO ILEC SWITCHING?

A. My understanding is that state commissions are charged with considering three tests for impairment due to lack of the switching UNE in mass markets. The first two tests are "triggers" that involve an analysis of the existing levels of actual competition in relevant markets. The third test is more complex and involves an analysis of the viability of

"potential deployment" where actual competition does not meet the "triggers" involved in the first two tests. In essence, the third test involves a determination of whether the absence of the switching UNE makes CLEC entry into a market uneconomic. As I understand this third test, an evaluation of any operational barriers to CLEC entry in the relevant geographic markets and an analysis of economic barriers must be made. BACE assists in the evaluation of whether there are any economic barriers to CLEC entry in a particular geographic market. All of these tests are discussed in the Triennial Review Order "TRO" (FCC 03-36, released August, 21, 2003).

Q. HOW DOES BACE RELATE TO THE TWO SWITCHING TRIGGERS IDENTIFIED BY THE FCC IN THE TRO?

A. BACE is not tied to the FCC's triggers tests. Instead, BACE is used in addressing the FCC's "potential deployment" analysis when examining a geographic market where the FCC's triggers do not lead to a required finding of no impairment. BACE allows the user to determine whether CLEC entry is uneconomic without access to the switching UNE, regardless of the triggers tests for impairment.

For ease of discussion, I will generally use the phrases impairment, or modeling impairment, to refer to the third test for impairment (for uneconomic CLEC entry) and not to the two triggers tests.

Q. DOES THE TRO PROVIDE GUIDANCE FOR STATE COMMISSIONS IN CONSIDERING UNECONOMIC ENTRY IN THE ABSENCE OF THE SWITCHING UNE FOR THE MASS MARKET?

A. Yes. While the TRO does not provide strict criteria, it does provide guidance in paragraphs 517-520. These paragraphs include the following headings: Evidence of Whether Entry is Economic (¶ 517); Potential Revenues (¶ 518); and Potential Costs (¶ 520). Other relevant language exists at paragraphs 472, 485, and 495.

Q. IN ORDER TO BE CONSISTENT WITH THE TRO, WHAT ARE THE MAJOR CHARACTERISTICS OF AN ECONOMIC MODEL TO BE USED TO EVALUATE CLEC ENTRY?

A. While I am not a lawyer and am not attempting to offer a legal opinion, my team has reviewed the order to understand what guidance the FCC has provided. Based on this reading, my familiarity with the FCC's past work involving modeling, and my familiarity with the requirements that the FCC has imposed on modeling over time, certain characteristics appear to be the basic building blocks that the FCC requires for an economic model that examines impairment. These characteristics are as follows: 1) The model must be capable of granular analysis; 2) the model must allow inputs consistent with an efficient CLEC business model and efficient CLEC network architecture; 3) the model must incorporate all likely CLEC revenues and costs; and 4) the model must perform a business case analysis using Net Present Value (NPV) calculations.

Q. WITH RESPECT TO THE FIRST CHARACTERISTIC OF A MODEL, GRANULARITY, WHAT GUIDANCE DOES THE TRO PROVIDE WITH RESPECT TO AN ANALYSIS OF IMPAIRMENT?

A. The TRO notes the importance of granular analysis at several points. For example at ¶ 472 the FCC said "[w]e find that technical shortcomings in each of these studies [those studies filed previously with the FCC] preclude us from relying on their results to evaluate impairment at the national level. These shortcomings include...(2) insufficient granularity in their analyses." (emphasis added). Also, at ¶ 485 the FCC stated "[a]ll of these studies...strongly support the need for a more granular analysis of impairment. We have insufficient evidence in the record, however, to conduct this granular analysis. Such an analysis would require complete information about UNE rates, retail rates, other revenue opportunities, wire center sizes, equipment costs, and other overhead and marketing costs. ... That market-specific data is needed is indicated by the significant variation in the costs and revenues an efficient entrant is likely to face. For example, costs appear to vary significantly among locations and types of customers." (emphasis added). Likewise, at ¶ 99 the FCC noted "[w]e will also give consideration to cost studies, business case analyses, and modeling if they provide evidence at a granular level concerning the ability of competitors to economically serve the market without the UNE in question." (emphasis added).

Finally, at ¶ 495 the FCC stated "[r]ather, state commissions must define each market on a granular level, and in doing so they must take into consideration the locations of customers actually being served (if any) by competitors, the variation in factors affecting competitors' ability to serve each group of customers, and competitors' ability to target

and serve specific markets economically and efficiently using currently available technologies." (emphasis added).

Q. CONCERNING THE SECOND CHARACTERISTIC OF A MODEL, WHAT GUIDANCE DOES THE TRO PROVIDE WITH RESPECT TO AN EFFICIENT CLEC BUSINESS MODEL AND AN EFFICIENT CLEC NETWORK ARCHITECTURE?

A. At ¶ 517, the FCC found that "[s]pecifically, state commissions must determine whether entry is likely to be economic utilizing the most efficient network architecture available to an entrant. … The analysis must be based on the most efficient business model for entry rather than to any particular carrier's business model." (emphasis added). At footnote 1579, the FCC said: "State Commissions should determine if entry is economic by conducting a business case analysis for an efficient entrant." (emphasis added). Moreover at ¶ 495 the FCC said: " … competitors' ability to targetand serve specific markets economically and efficiently using currently available technologies." (emphasis added).

Q. TURNING TO THE THIRD CHARACTERISTIC OF A MODEL, WHAT GUIDANCE DOES THE TRO PROVIDE WITH RESPECT TO INCORPORATING ALL LIKELY CLEC COSTS AND REVENUES?

A. The TRO provides at ¶ 517 that "[i]n considering whether a competing carrier could economically serve the market without access to the incumbent's switch, the state

commission must also consider the likely revenues and costs associated with local wire center mass market service, as detailed below." (emphasis added). Thereafter, at footnote 1581, the TRO provides "[u]nlike in the *UNE Remand Order*, we do not intend that the availability of any UNE at state established wholesale (TELRIC) rates could by itself constitute impairment without considering all costs and revenues in a business case analysis." (emphasis added).

Also, the Final Rules, set forth in Appendix B, CFR § 51.319(d)(2)(iii)(B)(3), states "[s]pecifically, the state commission shall examine whether the costs of migrating incumbent LEC loops to requesting telecommunications carriers' switches or the costs of backhauling voice circuits to requesting telecommunications carriers' switches from the end offices serving their end users render entry uneconomic for requesting telecommunications carriers." (emphasis added).

Q. DOES THE TRO PROVIDE ADDITIONAL DETAIL WITH RESPECT TO INCORPORATING ALL LIKELY CLEC REVENUES?

A. Yes. At ¶ 519 the TRO states "... [i]n 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." (italics in the original, underline added).

Q. DOES THE TRO PROVIDE ADDITIONAL DETAIL WITH RESPECT TO INCORPORATING ALL LIKELY CLEC COSTS?

A. Yes. At ¶ 520 the TRO provides under the heading, *Potential Cost*s, that "[s]imilarly, the state must consider all factors affecting the costs faced by a competitor providing local wire center service to the mass market. If the state commission determines that a UNE-L strategy is the most efficient means of serving the customer, these costs would likely include (among others): the cost of purchasing and installing a switch; the recurring and non-recurring charges paid to the incumbent LEC for loops, collocations, transport, hot cuts, OSS, signaling, and other services and equipment necessary to access the loop; the cost of collocation and equipment necessary to serve local wire center customers in a wire center, taking into consideration an entrant's likely market share, the scale economies inherent to serving a wire center, and the line density of the wire center; the cost of backhauling the local traffic to the competitor's switch; other costs associated with transferring the customer's service over to the competitor; the impact of churn on the cost of customer acquisitions; the cost of maintenance, operations, and other administrative activities; and the competitors' capital costs. State commissions should pay particular attention to the impact of migration and backhaul costs on competitors' ability to serve the market. ..."

Q. TURNING TO THE FOURTH AND FINAL CHARACTERISTIC OF A MODEL, WHAT GUIDANCE DOES THE TRO PROVIDE WITH RESPECT TO A BUSINESS CASE ANALYSIS?

A. The TRO uses the phrase "business case analysis[analyses]" at several points, including footnote 1579. This phrase was also used in citations in the preceding three questions and answers. Similarly, at footnote 1579, the TRO states "...[e]ven if interconnection and unbundling are performed as efficiently as is technically feasible, these costs must still be considered in our business case analysis to determine whether entry is uneconomic without access to a particular network element." (emphasis added).

Q. WHAT GUIDANCE DOES THE TRO PROVIDE WITH RESPECT TO THE USE OF NET PRESENT VALUE (NPV)?

A. At footnote 260, the following language is included: "... Stated in more technical terms, the condition [of a firm entering the market, and hence no-impairment] is whether the net present value of the expected economic profit is positive." (emphasis added).

Q. IS BACE'S APPROACH TO DETERMINING IMPAIRMENT CONSISTENT WITH THE TRO?

A. Yes. BACE was developed to determine whether CLEC entry is economic in the absence of the switching UNE. In creating BACE, BellSouth was keenly aware of the FCC's finding of prior modeling deficiencies and of the needs and requirements of an impairment model in meeting a state commission's need to implement the TRO.

Q. IS BACE GRANULAR IN ITS APPROACH?

A. Yes, BACE is very granular in its approach. The model allows the user to input complete information about UNE rates, retail rates and other revenue opportunities specific to each wire center. BACE allows variations in product offerings and prices across five customer segments (residential and four business segments) and by customer-spend categories within each customer segment. The model provides for bundles of product and service offerings and price discounts. In addition, BACE identifies the specific operational and capital cost requirements of the CLEC in rolling out its network. Finally, cost and revenue information is developed at the wire center level, thereby allowing the user to roll the results up to any geographic level. The current geographic levels of analysis possible include:

a. LATAs;

b. Wire centers;

c. MSAs (Metropolitan Statistical Areas), as defined in 1990 and used in the FCC's special access decision);

d. MCSAs (Micropolitan Statistical Areas), as defined in 2003 by the OMB in its definition of MSAs and MCSAs);

e. CEAs (Component Economic Area);

f. UNE Zones; and

g. Any combination of the above.

Q. DOES BACE ALLOW THE USER TO EMPLOY INPUTS AND CHOICES THAT ARE CONSISTENT WITH AN EFFICIENT CLEC BUSINESS MODEL AND EFFICIENT CLEC ARCHITECTURE?

A. Yes. BACE provides user adjustable toggles and user input choices that are consistent with an efficient CLEC business model and an efficient CLEC architecture. For example, the model allows for least-cost choices of architecture (e.g., EELs or collocation); concentrates traffic to take advantage of cost savings; determines whether DSL offerings are economic; and determines whether entry into a geographic market and/or LATA is efficient using a business case analysis approach.

For reasons of practicality, the user of the model cannot consider every possible network architecture, potential product offerings, or business plan approach that a CLEC might choose. However, the purpose of the model is to replicate the business plan and architecture of an efficient CLEC. The model was built to allow the user to enter markets selectively and control the major choices and architectures available to a CLEC.

Q. DOES BACE HAVE THE ABILITY TO REFLECT THE EFFICIENT USE OF CURRENTLY AVAILABLE TECHNOLOGIES?

A. Yes. In developing BACE, my team designed the platform to accommodate numerous potential network inputs to allow the user to deploy an efficient CLEC network architecture. In creating this model approach, I relied upon network specialists from BellSouth to provide a description of the specific network components required for a CLEC to provide the modeled services, using currently available technologies. This

includes both CLEC capital investments (e.g., cash outlays for switches) and the use of unbundled network elements and wholesale services/components. This assumed network architecture is described in more detail in the testimony of BellSouth witness Mr. Keith Milner.

Q. DOES BACE ALLOW THE USER TO CONSIDER ALL CLEC REVENUES AND COSTS?

A. BACE is designed to let the user capture all CLEC costs including those capital outlays for CLEC-owned investments and the major sources of CLEC revenues, including: local service; vertical features; voice mail; long distance and switched access, data services including Digital Subscriber Line (DSL); line maintenance; service connection/installation; directory assistance; and data services. I would note, however, that BACE does not consider video services, programming or other services that a CLEC may offer and which may generate an additional value for the CLEC. Also, to the extent that a CLEC might create some brand new service that might generate additional revenues, such revenues would not be included in the model, but such products and revenues should improve the CLEC's ability to enter a market even further. Nonetheless, the services that are currently modeled in BACE are likely to represent the great majority of the services that CLECs will offer and that have been outlined in the TRO.

Q. DOES BACE PROVIDE A PLATFORM FOR A BUSINESS CASE ANALYSIS OF THE CLEC ENTRY DECISION?

A. Yes. BACE was specifically designed to evaluate whether CLEC entry is economic for user-defined markets, using a business case analysis approach. The model considers prices, market penetrations, and costs by market segment, by geography and by year. The potential for bundling of services is considered, as are opportunities for CLECs to make rational choices about their footprint by not serving some geographic areas and choosing between service approaches (EELs or collocation).

Moreover, BACE uses a discounted cash flow approach in evaluating the cash outflows (costs) and cash inflows (revenues) over time. Tax liabilities are also estimated and the final cash flows are discounted to net present value. In addition to the NPV calculations, BACE also provides estimates of accounting net income and cash flow over time. In total, the model provides the framework to perform a reasonable business case analysis for evaluating a CLEC entry decision.

Q. HOW DOES BACE PERFORM NET PRESENT VALUE CALCULATIONS?

A. The Net Present Value of a stream of cash flows is the difference between the present value of the cash inflows and the present value of the cash outflows. In other words, $NPV=PV_{inflows}-PV_{outflows}$. The Present Value (PV) of a cash flow is today's value of a cash in-flow (or out-flow) received (or paid) at some time in the future. Present Value takes into account the effects of the time value of money (which is reflected in the interest rate or discount rate). Present Value is calculated by applying the discount rate to the cash flow. In other words, $PV=FutureValue/(1+i)^t$, where i is the annual interest rate

(discount rate) and t is the number of annual periods. BACE calculates the discount rate i from user adjustable inputs. The annual periods in BACE are based upon a mid-year convention. That is, any cash transaction (e.g., an expenditure) that occurs during each year is assumed to occur, for present value purposes, at the mid point of the company's fiscal year. The exception to this rule is that BACE assumes that all initial start-up costs are assumed to occur at time zero and therefore require no present value adjustment.

Section 4: OVERVIEW OF THE MODEL ARCHITECTURE, VARIOUS PROCESSING STEPS, AND A DESCRIPTION OF SOME OF THE ADVANTAGES OF BACE

Q. WHAT CLEC CHARACTERISTICS AND RELATED FACTORS DOES BACE TAKE INTO ACCOUNT?

A. The model accounts for the following CLEC characteristics and related factors:

CLEC Size – recognizing that there are different sizes of CLECs, the model accounts for the key implications of the CLEC's size (e.g., impact on purchasing power, cost implications of outsourcing certain functions, etc.).

Customers – the model accounts for how many customers in total reside in the relevant markets, how many customers the CLEC might expect to serve (i.e., the CLEC market share), and the types of customers the CLEC will attract (e.g., what types and sizes of customers, and what products and services will they buy). It also accounts for how much customers will pay and the level of customer churn that may be experienced.

Products – the model accounts for the typical products the CLEC might offer, how those products may be bundled, and the implications of bundling on prices and customer take rates.

Quantities – the model accounts for the quantities of products to be sold to those customers choosing CLEC service.

Pricing – the model develops initial prices using user inputs, initial CLEC price discounts and product price changes over time.

Network Costs – the model accounts for the network infrastructure requirements specific to the markets, customer profiles, and product portfolios being modeled and how those network requirements might be met (e.g., lease or own).

Operational Costs – the model accounts for the nature and level of CLEC operating costs allowing for effects due to the size of the modeled CLEC.

Trends – the model accounts for the changes that might be experienced over a ten-year period (e.g., customer buying behavior trends, pricing trends, and cost trends).

Optimization – the model allows the user to assume that the CLEC management team will use reasonable judgment and as such may decide not to serve unprofitable products and markets. The user can control the degree to which a CLEC could/would identify unprofitable sub-markets and avoid service in such sub-markets.

Sensitivity of Assumptions – the model allows the user to create scenarios and analyze the impact of assumptions upon the financial metrics of impairment. Within the components (and inputs) outlined above, the BACE model computes a) the CLEC market share achieved (i.e., percentage of products purchased by market segment, by territory), b) the resulting revenue (including the impact of product bundling), and c) the network and operational costs incurred in serving the market (considering the implications of CLEC size).

The model allows the inputs and assumptions to change over a ten-year period as the CLEC grows, costs change, and as anticipated price trends are realized. The results are presented in terms of the anticipated cash flows for the ten-year period and the associated net present value calculated from the user adjustable discount rate.

Q. WOULD YOU PLEASE PROVIDE A BASIC OVERVIEW OF THE MODEL AND ITS ARCHITECTURE?

A. Yes. First, BACE allows the user to identify which products and services the CLEC will choose to offer. Second, BACE develops a price for products or groups of products (bundles) for each customer segment. This is the task of the "P-Process" within the model. Third, after the price has been established, a quantity demanded for each service or group of services in each wire center must be calculated. I will generally refer to "demand" to mean the quantity demanded and actually sold. This is the task of the "Q-Process" within the model.

Fourth, knowing the Price (P) and Quantity Demanded (Q) of each service or group of services, BACE can derive the total Revenue (P*Q) by product, location, and customer segment (and customer-spend sub-segment). Calculating the Revenue is the task of the "R-Process." Knowing the Gross Revenue available to the firm represents the total cash inflow for the period.

Fifth, cash outflows are calculated in the Operations and Network Process ("ON-Process"). This process is dependent upon the outputs of the P, Q, and R processes. The O portion of the ON-Process derives those expenses that are operationally associated with the firm. For example Sales, General and Administrative (SG&A), is an operational expense. The N portion of the ON-Process derives those outflows necessary to create a network sufficient to handle the voice and data traffic identified in the Quantity Process. In other words, the cash expenditures involved with setting up, maintaining and growing the telecommunications network.

Sixth, six optimization routines provide the opportunity to drop negative NPV products and geographic areas (three of which can be toggled on/off by the user).

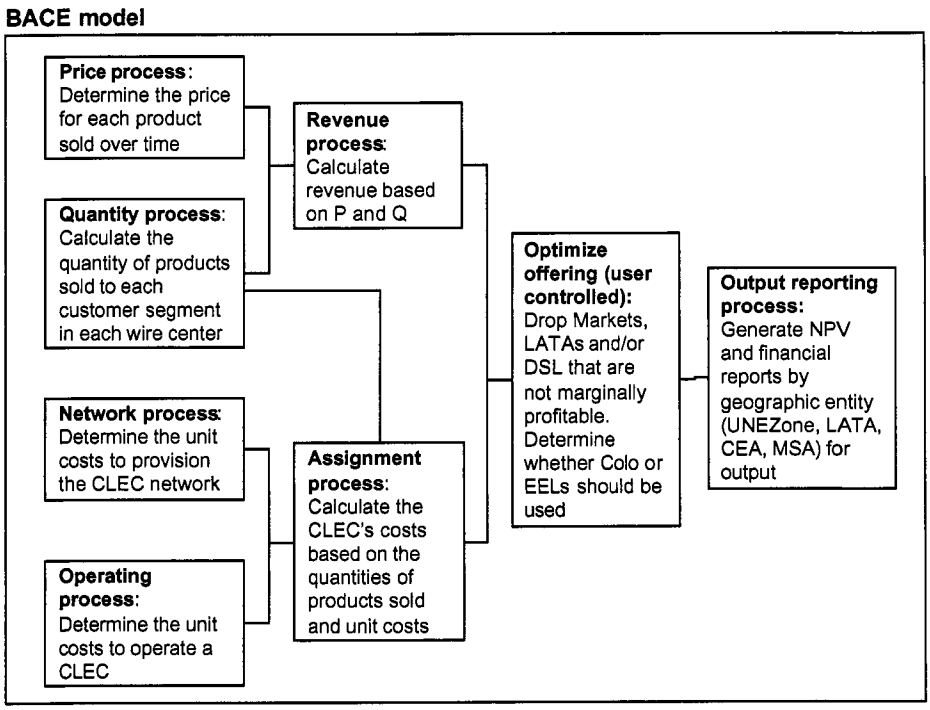
Seventh, income taxes are determined based on the year-by-year income and expenses of the modeled firm. These tax calculations allow for various treatment of tax losses and allow the user to input state-specific tax rates.

Eighth, output reports are generated reflecting NPV by geographic entity, and/or accounting-like net income statements.

Q. CAN YOU PLEASE PROVIDE A VISUAL REPRESENTATION OF THE MODEL ARCHETECTURE?

A. Yes, the table below provides a visual representation of the BACE architecture:

SIMPLIFIED PROCESS FLOW



Q. HOW IS USER INPUT AND PROCESSED OUTPUT DATA STORED AND UTILIZED IN BACE?

A. BACE retrieves and stores all input and output data in a consistent and logical format. Input and processed data are stored as a scenario database. Each scenario is a Microsoft Access database stored in a like-named folder within the scenario directory. Report data are stored in the same directory. Reports are created as either Microsoft Excel worksheet files or Excel compatible, comma separated variables (CSV) files.

Q. HOW DOES BACE ORGANIZE THE STUDY DATA?

A. BACE organizes study data in two ways: Scenarios and Inputs. A named collection of all Inputs used in a study is called a Scenario. The Scenario is the large-scale way of storing all study assumptions and inputs. Within a Scenario there are a series of tables used to manage individual inputs. Inputs are logically grouped and displayed within a table structure. Common tables are organized into groups. Data can be reviewed and managed manually or via a user-friendly wizard.

Q. IS THERE A HIERARCHY AMONG DATA COMPONENTS?

A. Yes, BACE uses four sets of hierarchies to drive cash flow calculations and reporting: location, customer, product, and cost. Hierarchies are necessary to allow the user to define, at a particular level, specifically how a cost or revenue is triggered (e.g., by line, minute, or initial provision of service in a LATA). The use of hierarchies allows cost and

revenue drivers to be set and output structured in a way as to make the cost and revenue implications of these actions clear and traceable to levels at which reporting will occur.

The location hierarchy is used to specify from broad levels of geography to narrow levels. The reason the location hierarchy is important is that certain costs are location specific, e.g., a switch placed in a LATA. The customer hierarchy allows the user to trigger certain costs or revenues based upon specific attributes of customer classes or segments. For example certain costs should be attributed a business customer (equipment to provide DS1 data service rather than DSL) but not a residential customer. The product hierarchy is similarly designed. It allows granular identification of products. And finally, the cost hierarchy is designed to let the user input a logical structure of the inputs that in turn flow to a logical structure in the reporting output.

Q. WHAT ARE SOME OF THE KEY ADVANTAGES OF BACE?

A. Many of the key advantages of BACE correspond to the characteristics that make BACE consistent with the FCC's TRO; BACE: 1) is granular in its analysis; 2) allows the user to provide inputs consistent with an efficient CLEC business model and architecture; 3) incorporates likely CLEC revenues and costs; and 4) performs a business case analysis using net present value.

Many of the other advantages of BACE are embodied in the abilities of the model that the user can decide to use (or not use) and the degree of control the user has over the inputs and the impairment analysis. The user can adjust, control, and consider (or not consider) the following factors (not an exhaustive list): 1) prices, 2) market penetration, 3) cost

levels, 4) cost drivers (i.e., how costs are assigned); 5) whether some forms of optimization will occur; 6) whether to use a wizard or perform calculations "manually" (i.e., without the wizard); 7) the types of reports generated; 8) consider NPV and/or accounting metrics; 9) trends in many of the factors above over time; and 10) size and scope of the CLECs operations.

Another advantage of BACE is that it uses a scenario structure to allow the user to bundle assumptions together into a scenario that identifies the inputs and outputs that correspond with one another. By maintaining a separate inputs database and reporting structure for each scenario, BACE simplifies what-if analysis and sensitivity tests.

Section 5: <u>OVERVIEW OF THE BACE DATA REQUIREMENTS.</u>

Q. WHAT TYPES OF DATA DOES BACE USE?

A. BACE uses five broad categories of data: 1) customer, 2) products and services, 3) price, 4) quantity, 5) CLEC properties; and 6) cost.

Q. WHAT CUSTOMER DATA IS USED BY BACE?

A. Total market (CLEC plus ILEC) customer data is required by wire center, by customer segment (residential and four business segments) and by customer spend level (high to low level groupings of customers). BACE imports an Wire center Demographic table that provides total customer population for each BellSouth wire center. BACE uses one residential segment and four business segments: 1) 1-3 line small office/home office

(SOHO in the model); 2) 4-8 lines small-sized business (SME/A in the model); 3) 9-23 line medium-sized business (SME/B in the model); and 4) 24+ line large-sized business (SME/C in the model). Each customer segment is further divided into categories based on the amount of customer spending. The residential segment is divided across the state into five spend categories (quintiles) with an equal number of customers in each. Each of the four business segments is divided across the state into three spend categories (high spend, medium spend, and low spend) with an equal number of customers in each. Since the expenditure categories are determined at the state level, each wire center will contain a unique profile and count of the customer segment /spend data.

Q. WHICH PRODUCTS AND SERVICES ARE INCLUDED IN BACE?

A. BACE allows for consideration of the following types of services: local access; customer calling features, long distance usage and switched access; Digital Subscriber Line (DSL); DS1 Internet access; line maintenance; service connection/installation; and directory assistance. The user has the ability to determine whether the CLEC sells a service and/or whether there is a non-zero, positive price for each service. As noted in Section 3 above, BACE represents the great majority of telecommunication services that are likely to be offered but not the absolute scope of services that might be offered (e.g., video is not included).

Q. WHAT PRICE DATA IS USED BY BACE?

A. BACE requires a baseline price file that contains the current market price for each of the products offered, by customer segments, by customer-spend categories. BACE uses six

main product classifications: 1) Long distance services; 2) voice mail; 3) switched access services (payments by long distance/inter-exchange carriers to terminate local calls to CLEC customers); 4) DSL (standard high-speed connection); 5) non-DSL business data service; and 6) Local (this includes local access, local usage, subscriber line charge (SLC), directory assistance (DA)/operator services, and customer calling features other than voice mail). BACE allows the user to include separate prices, quantities, and revenues for line maintenance if the user has the relevant values, including quantities, for this service.

BACE also recognize the current market trend of bundling by allowing the user to identify bundles of services, and prices (or price discounts) for the bundled offerings.

In addition, BACE allows the user to change each price in each year over the 10-year study period.

Q. WHAT QUANTITY DATA IS USED BY BACE?

A. "Quantity" is a term that BACE uses to refer the number of products or services demanded and actually sold, not the number of customers. BACE uses quantities by wire center, for each of the products offered, by customer segment, by customer-spend category. Note the user has the option to establish zero quantities for some segments (e.g., no sales of non-DSL data services to residential customers). BACE also allows for the quantities of products and services that are sold in bundles as well as those sold a-la-carte. In addition, quantities can change by year over the 10-year study period.

Q. WHAT CLEC GLOBAL PROPERTIES DATA IS USED BY BACE?

A. The "CLEC global properties data" inputs are those that define the characteristics of the CLEC and how it performs its business. These inputs consist of four basic types: 1) those that act as filters; 2) those that act as descriptors; 3) those whose value will have an impact on calculated values; and 4) those that are toggles for optimization.

Filter inputs tell BACE whether a value should be used or filtered out. An example of such a filter input is whether to include (or not) a terminal value for CLEC assets at the end of the 10-year study period. Descriptor data inputs are optional and can be used for documentation and informational purposes only. Many of the CLEC properties data inputs have values that are used in the calculations. These include: tax rates; equity percentage, pre-tax cost of capital, and scope of CLEC operations contained within the BellSouth service territory. And finally, toggles for optimization control how BACE optimizes the CLEC's business offerings within a state. This includes analyses of product offerings for the efficient operating footprint of the firm.

Section 6: <u>THE PRICE CALCULATIONS IN BACE.</u>

Q. CAN YOU DESCRIBE THE PRICE PROCESS (P-PROCESS)?

A. Yes. As noted above, the Price Process (P-Process) derives the market prices for each of the six main products and product bundles offered by the CLEC, by customer segment, by year.

The challenge in the P-Process is to find not only the per-unit price for each individual product sold, but also to account for the implied price of individual products sold as components within bundles. In BACE, a bundle is a group of products or services that are sold together as a single unit. The user defines each bundle and its component products in the Bundles Table. In order to generate inputs for BACE's Revenue Process (R-Process), implied "prices" for each product/component of a bundle are imputed and stored. This implied or imputed price approach for bundled product/components allows for revenue calculation and reporting of revenues at distinct levels along the location and customer hierarchies.

Q. WHAT INPUTS ARE REQUIRED FOR THE P-PROCESS?

A. Several tables provide input to the P(rice) Process. The tables and their key input fields are described below. The relevant tables can be thought of as having two characteristic dimensions: 1) bundles versus *à-la-carte*; and 2) starting versus future prices.

The following tables are used in the P-Process:

Baseline Bundle Price - This table defines the initial bundle prices offered to each customer segment in a defined geographic area.

Bundle Price Curves - This table defines the price trend (expressed as a decimal) per year for each product bundle over the ten-year study. This will capture any expected bundle price increase or decreases over time.

Baseline Product Price - This table defines the current prices of individual products by geographic area. The values in this table can be thought of as representing initial market prices off of which the user can apply a CLEC discount to. This discount may reflect the market entry discount to expand market share.

Baseline Bundle Price - This table defines the current prices of the bundles by geographic area.

Product Price Curves – This table defines the price trend (expressed as a decimal) per year for each product over the ten-year study. The values in this table will capture any increase or decrease in product prices over time. (Note that in BACE, the term "curve" is used to reflect changes in values over time, by year, during the 10-year modeling period).

CLEC Baseline Price Discount - This table defines any discounts off of the current prices and is used to create the initial CLEC prices of individual products by geographic area.

Q. WHAT TASKS ARE PERFORMED BY BACE DURING THE P-PROCESS?

A. Once the tables described above are populated, BACE performs seven key tasks (or categories of tasks) during the P-Process. The first three tasks develop prices for individual products and bundles, while the later three tasks relate to the prices that are implied for the components of bundles.

The first task is to create the bundle price profile over time. This is done by multiplying the initial bundle price (Baseline Bundle Price) by the bundle price curves (Bundle Price Curves table). The Bundle Price Curves table reflects changes in bundle prices over time. This task calculates a price per bundle per year for every year, for each relevant market. This information is added to the BACE processing table P1.

The second task is to develop the initial discounted price for each product by applying the CLEC pricing discount to the Baseline Product Price. This task discounts current baseline market-like prices for assumed CLEC discount levels. This information is added to the BACE processing table P2 (e.g., baseline CLEC price per product, per market).

The third task is to calculate the CLEC product price profile over time. This is done by multiplying the initial discounted product price (found in table P2) by the CLEC price curves (in the Product Price Curves table). This leads to a calculation of the CLEC à-*la-carte* product price for each year. This information is added to the BACE processing table P3.

Q. PLEASE DESCRIBE THE P-PROCESS TASKS RELATED TO THE IMPLIED PRICES FOR SERVICES WITHIN A BUNDLE.

A. During the fourth task, using the *à-la-carte* product price in table P3, these inputs are combined with the Bundle table to find the sum of *à-la-carte* prices in a given bundle in a given area by year. This derives the price that would exist if the bundle were sold at list or retail price for each of the individual components (i.e., at *à-la-carte* prices). This information is appended into the BACE processing table P4.

Fifth, bundle adjustment factors are determined for each product in each market. By comparing the sum of *à-la-carte* prices in table P4 (for a given customer bundle in a given area with actual demand levels) with the actual bundle price for the same area and customer group (table P1), a retail price to bundle price adjustment factor can be calculated. The user has the ability to indicate to which products within the bundle this adjustment should be applied. The resulting adjustment factor is added into the BACE processing table P5.

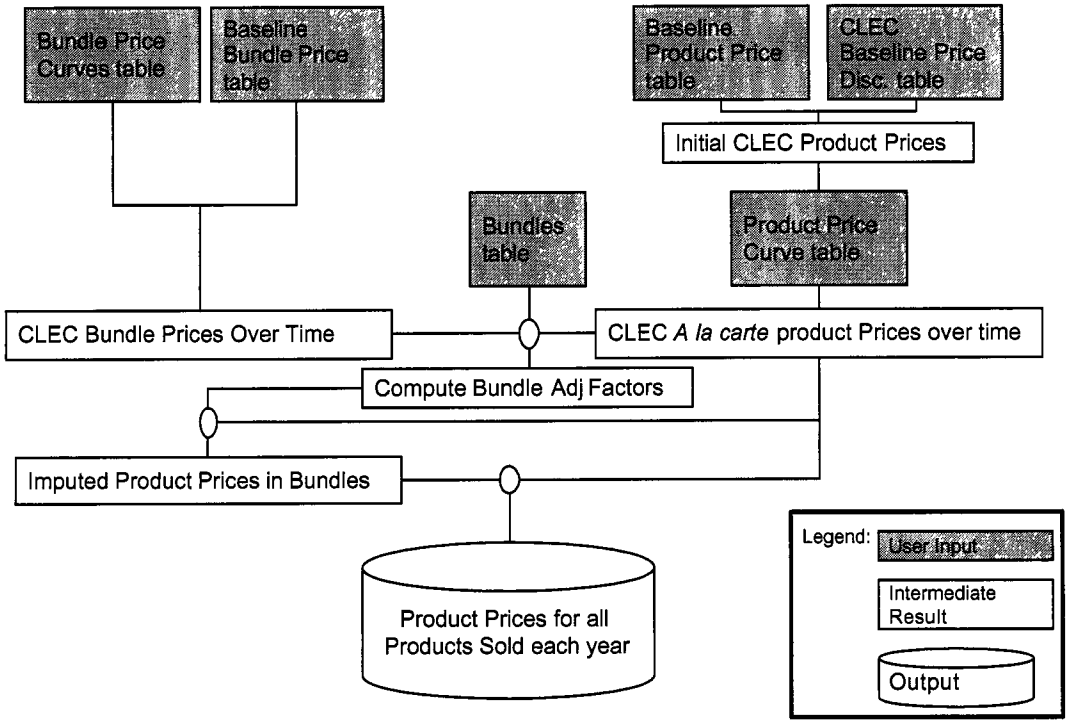
The sixth task is to determine the implied or imputed product prices for each product (this is controlled by the user as noted in the prior paragraph) within the bundles. This is accomplished by multiplying bundle adjustment factors from P5 for each bundle by the a-la-carte prices for each bundle component. As noted above, the user has the option of excluding bundle components from this discounting process. At this stage, BACE has determined the per-unit product price (or implied price) for each individual product offered a-la-carte, and within each bundle by all levels of location and customer hierarchy.

The seventh task is to append these product prices (both *à-la-carte* and bundles) into the BACE processing master pricing table, PMaster. All prices that were established on an *à-la-carte* basis have "*à-la-carte*" appended into the bundle field.

Q. CAN YOU ILLUSTRATE THE P-PROCESS WITH A DIAGRAM?

A. Yes, a diagram summarizing the P-Process is shown below:

P-Process: Determine the Price for *a la carte* and bundled product offerings



Section 7: THE QUANTITY CALCULATIONS IN BACE (Q-PROCESS)

Q. WHAT IS THE PURPOSE OF THE QUANTITY PROCESS (Q-PROCESS)?

A. The Quantity Process (Q-Process) derives the quantity demanded/sold for each product and service offered by the CLEC. Calculating the quantity demanded of CLEC products

takes into account customer segment demographics, anticipated CLEC market share, year of product rollout, and anticipated customer churn (disconnects).

The starting point for BACE's Q-Process is a set of user input tables necessary to calculate CLEC quantities.

Q. WHAT TABLES ARE NEEDED FOR THE Q-PROCESS?

A. In addition to the demographics tables (described in Section 5 above), users provide additional input in the following tables:

CLEC Profile Products - This table allows the user to indicate which products are offered by the CLEC and within what study year the product is first offered. Beyond the first year, the user can also input the product's last offering year.

Baseline Demand - The Baseline Demand table describes the expected initial demand for products and services offered by the CLEC.

Demand Curves - The Demand Curves table describes the total anticipated market demand change for each product by customer segment, by customer-spend category, by year for study years 2 through 10.

Penetration Curves for Products - This table describes the anticipated CLEC market share of customers for each product by customer type over the ten-year study horizon. This table relies upon user adjustable inputs, and also allows the user to tie product penetration to DSL Addressability.

Churn - This table allows the user to describe the annual churn for each customer grouping for each product offered by the CLEC. For BACE, churn is described in terms of disconnects each year by product.

Bundles - The Bundles table describes those products and services that are sold within each bundle.

CLEC Profile Bundles - This table allows the user to indicate which bundles are offered by the CLEC and within what study year the bundle is first offered. Beyond the first year, the user can also input the bundle's ending year.

Penetration Curves For Bundles - This table allows the user to determine the proportion of CLEC customers whose product sales occur via bundles, by year, by customer segment and customer-spend category, over the ten-year study horizon. For example, a penetration rate of .5 indicates that 50% of the customers of the CLEC for a particular customer segment subscribe to the CLEC services through bundles.

Market Growth – This table allow the user to indicate how the current customer base will grow over time. This represents the growth of population and businesses over time.

Q. WHAT TASKS ARE PERFORMED IN THE Q-PROCESS?

A. Given the contents of the demographics and user input tables, BACE performs ten key Q-process tasks. The first six tasks are related to the calculation of the number of customers subscribing to products, by type and location, the CLEC will serve over time. A key concept to understand is that there is a CLEC market penetration of customers and then within those customers a market penetration of the CLEC products. For example, a CLEC may sign up a customer that takes local service and DSL, but chooses a different carrier for long distance services.

In the first task, BACE develops the CLEC customer penetration for each product on a percentage basis. This key data is contained in the Penetration Curves for Products table. This table contains the product records defining the "anchor" product the customer will buy. In effect, this defines the customer count for the CLEC. This table also contains non-anchor product penetrations. These penetration values are applied against the anchor penetration percentages to derive the customer penetration for the various non-anchor products. This data is adjusted to match the first year the CLEC offers each product. This is done by extracting from the CLEC Profile Products table the first year for which the CLEC offers the product or service, and adjusting the market share per period found in table the Penetration Curves for Products table. The starting year is used to reflect the CLEC market share in the first year the product is offered. After the ending year (if it occurs before the end of the study horizon), CLEC market share percentage is set to 0. This information is appended into the BACE processing table Q2.

Second, BACE accounts for the fact that a portion of the products are sold as bundles. Similar to the way BACE adjusts the product offerings, the user controls the bundle offerings by adjusting the bundle penetration curves in the Penetration Curves for Bundles table that match up to when the CLEC will offer each bundle (provided by the CLEC Profile Bundles table). This customer/product penetration information is appended into the BACE processing table Q4.

Third, using the percentage of each customer segment taking CLEC products in general (table Q2) and those taking CLEC bundles of products (table Q4) specifically, this step delineates the CLEC market share for each product per period by how the product is sold (i.e., as part of a bundle or *a la carte*). This information is used to update the BACE processing table Q4.

Fourth, BACE retrieves the initial number of total market customers (assumed to include ILEC plus CLEC customers) by wire center, by customer segment and customer-spend category from the Wire center Demographics table.

Fifth, BACE allows the user to identify growth in the number of total market customers, by year, over the 10-year period (in the Market Growth table). This is combined with the Wire center Demographic table to create a total customer curve, representing the change in the number of total market customers year by year.

Sixth, CLEC market share percentages (on a product basis) must be translated into an absolute number of customers taking each CLEC product. BACE calculates this by multiplying the CLEC market share values (table Q4) with the demographics of each

customer segment and customer-spend category found in the Wire center Information table (adjusted for market growth). These data are appended into the BACE processing table Q6.

Q. WHAT TASKS ARE PERFORMED IN THE Q-PROCESS AFTER THE NUMBER OF CLEC CUSTOMERS IS DETERMINED?

A. After the first six tasks, the focus changes from determining the numbers of customers subscribing to products to calculating quantities of products sold.

In the seventh task, BACE allows the user to identify changes in the baseline demand (from the Baseline Demand table) per customer segment and sub-segment by product, by year using the Demand Curve table . (Note, user-adjustable changes in quantities of products demanded per customer is different from task 2, which accounted for growth in the number of customers). The end result provides the expected average customer market demand over time for each product, by study year. These data are added to the BACE processing table Q3.

Eighth, CLEC customer counts by product on a wire center basis are multiplied by the expected per-customer product quantities, by wire center, to determine total CLEC product quantities. Using a mid-year convention, the quantity of CLEC product demanded for the year is calculated as the average of the end of year demand and prior year's end of year demand. Therefore, the amount reported is actually the mid year balance. This information is appended into the BACE processing table QMaster.

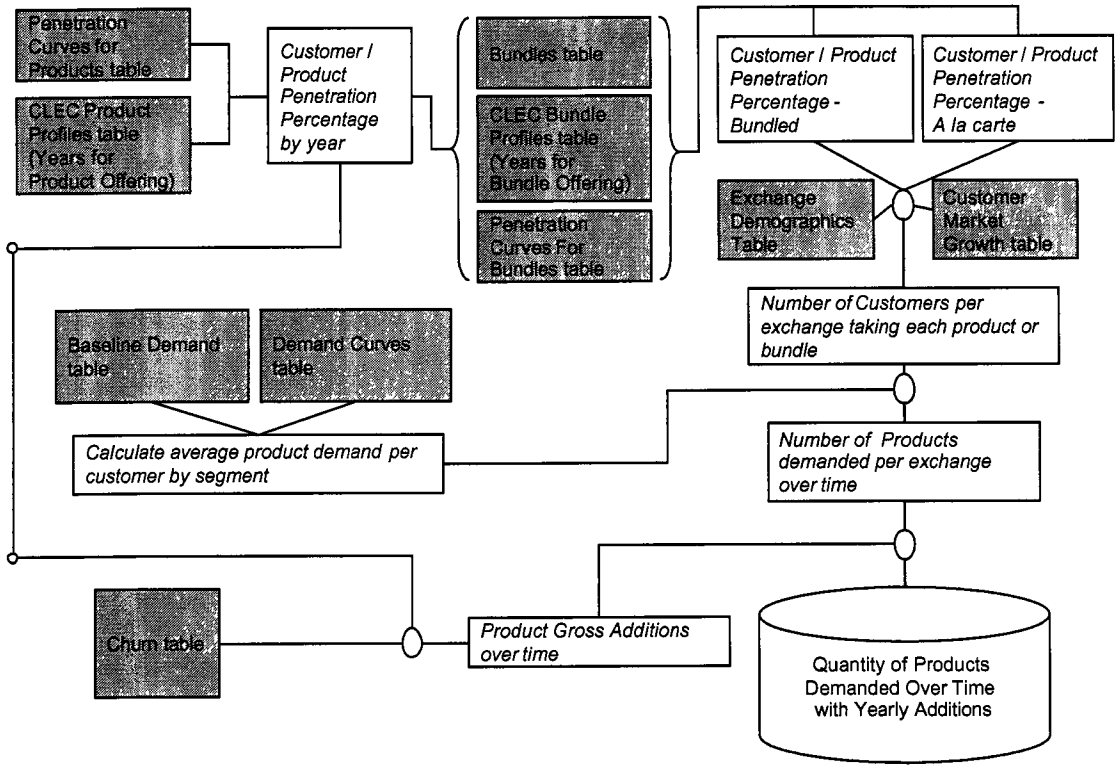
Ninth, BACE calculates the percentage of expected CLEC net additions for each product by year. These percentages are calculated on a product-by-product basis for each customer type. Percentages are derived by applying the disconnect percentages (from the Churn table) to the expected product penetration levels (Penetration Curves for Products table) over the ten years. These net addition percentages are applied to the customer count information in the Wire center Demographic table to derive the counts of customer additions.

Tenth, the count of product quantity additions (over the prior year), are appended into table QMaster. These are used to determine the number of customer/product installs in each year.

Q. CAN YOU ILLUSTRATE THE Q-PROCESS WITH A DIAGRAM?

A. Yes, a diagram summarizing the Q-Process is shown below.

Q-Process: Determine the quantity of products demanded/sold



Section 8: THE REVENUE CALCULATIONS IN BACE (R-PROCESS)

Q. IN GENERAL TERMS, HOW ARE CLEC REVENUES CALCULATED IN BACE?

A. In BACE, the Revenue Process (R-Process) takes information from the Price and Quantity Steps and derives the Gross Revenue due to the CLEC.

Q. WHAT DATA IS USED BY BACE TO CALCULATE REVENUES?

A. Five data tables are used as inputs by BACE in the R-Process. Table P Master contains the CLEC price information for each product by customer type in each served location (wire center) over the ten years of the study. Table Q Master contains the CLEC quantity sold information for each product by customer type in each served location (wire center) over the ten years of the study. Table USF – Interstate Access Support and table USF – High Cost Loop Support provide inputs on the universal service funds available in the state to a CLEC. Finally, table Alternative Units of Measure provides inputs to allow the user to define additional cost drivers for the O and N processes, which are described later in this testimony.

Q. WHAT STEPS ARE USED IN THE R-PROCESS?

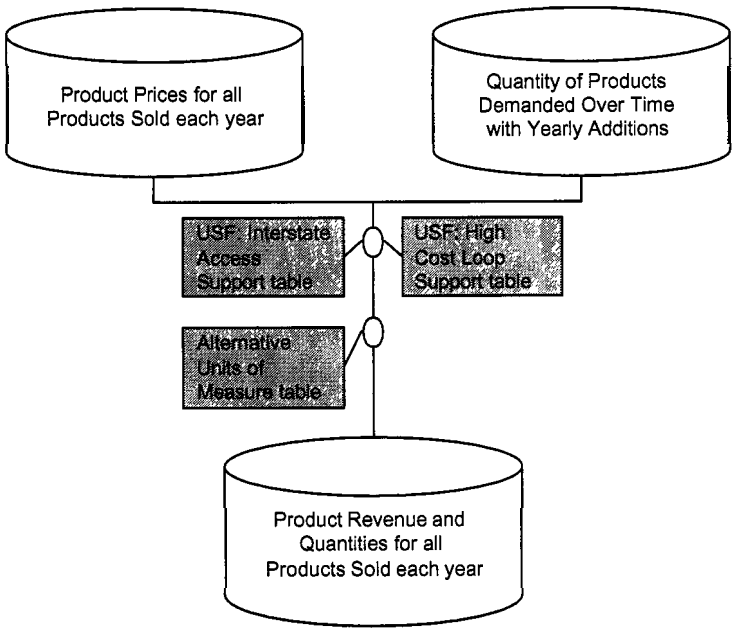
A. The R-Process process is a four-stage process. First, the CLEC quantity of each product demanded (by customer segment and location) from table Q-Master is multiplied by the CLEC price of each product (by customer segment and location) from table P-Master. This information is calculated for each study year and appended into table R-Master as the revenue in each study year. Second, using the universal service funding tables (USF – Interstate Access Support and USF – High Cost Loop Support) the amount of revenue from these funding sources is appended to the R-Master table. Third, to allow the user to drive costs based on specific product quantities, data from table Alternative Units of Measure is applied against the R-Master table to develop additional quantity records. These records are appended to R-Master. Fourth, the present value of the revenue is derived. The present value is derived on a mid year basis; in other words, Year 1 is

discounted six months, Year 2 discounted 18 months, etc, to bring the values back to time zero.

Q. CAN YOU ILLUSTRATE THE R-PROCESS WITH A DIAGRAM?

A. Yes, a diagram summarizing the R-Process is shown below.

R-Process: Determine the revenue (Price x Quantity)



Section 9: COST CALCULATIONS IN BACE (ON-PROCESS)

Q. HOW DOES BACE ACCOUNT FOR CLEC CASH OUTFLOWS?

A. BACE accounts for CLEC cash out flows in the Operations/Network Cost Process (ON-Process). For ease of discussion, I will use the term "cost" to generically refer to cash outflows. The 'N' portion (of the ON-Process) calculates investments and costs specific to the network engineering necessary to originate, transport and terminate CLEC voice and data traffic. As I noted previously, to create the network infrastructure process, I relied upon network specialists from BellSouth to provide a description of the specific network components that would be required by the CLEC. These components include both CLEC capital investments as well as unbundled network elements and wholesale network services/components. The 'O' Portion calculates cash outflows specific to the operations of the company. Additional detail on the 'N' and 'O' processes can be found in the BACE Methodology Manual, attached to my testimony as Exhibit JWS - 3.

CLEC income tax liabilities (and cash outflows) while part of the O and N processes, are handled as separate step in the processes. The calculation of income taxes will be described in more detail later in this testimony.

Q. IN BACE, WHAT KINDS OF ACTIVITIES CAUSE CASH OUTFLOWS?

A. In BACE cash flows are caused by (driven by) the following factors: 1) the existence of the CLEC as an operating entity in total (e.g., certain of the sales, general and administrative, SG&A costs); 2) the existence of CLEC service within a geographic area

(e.g., the placement of a switch for each LATA); 3) the acquisition of a customer; 4) the initial choice of a specific product or service by a customer (e.g., the customer chooses to take DSL); 5) the volumes of products and services used; 6) the disconnection of a customer (as evidenced through churn); and 7) composite triggers as the total number of customers or the total volume of products or services within an area can exhaust the usable capacity of equipment (e.g., the number of lines in a wire center), causing the expansion of equipment placed.

Q. WHAT INPUTS ARE REQUIRED FOR THE ON-PROCESS?

A. Several tables provide input to the O and N Process. The tables are described below.

Cost Input Network and Cost Input Operations – these are the key tables in the determination of the costs of the CLEC. The entries in these tables largely determine the magnitude of a CLEC's network infrastructure and operations costs and how these costs are incorporated into the BACE analysis. The tables also allow the user to include cost records that apply to various CLEC network and operational scenarios. From these tables, the ON-Process determines the appropriate cost records to be included in the BACE analyses in accordance with the quantities of products sold obtained from the Q, P, and R processes and user entries in other BACE tables including those that specify cost drivers (as described in the question and answer above).

Within the Cost Input tables for Network and Operations, the fields are used in three ways: 1) as filters or cost triggers (identifying whether a value is relevant to

a particular product or geographic area); 2) as descriptors for ease of understanding and documentation; and 3) as values used for cost calculations.

Inplant and Loadings – this table provides the inputs to turn the material prices of the capital inputs in the Cost Input Network table into fully capitalized costs that could include: engineering, power, land, building, supplies, and other items.

Retirement Inputs – this table provides the inputs required to determine the levels of replacement capital due to the retirement of plant. The inputs are used in the Gompertz-Makem retirement rate estimation approach, described later in this testimony.

Tax Depreciation Schedule – this input contains the IRS MACRS tables. These tables are used in the calculation of income taxes.

Q. HOW DOES BACE TREAT CAPITAL EXPENDITURES (CAPEX)?

A. Capital expenditures are treated as any other cash flow and recorded at the time the investment is made. Capital within BACE is deployed as needed based on the quantities of the cost drivers that require the capital. Since some types of plant investments are more economic when built for multiple years of demand, BACE does allow the user to define a time period of demand (DemandYearForBuild field) to use in sizing plant (i.e., the plant placed today is sized sufficiently to meet the demand into future years).

In addition to the initial capital deployment, BACE recognizes that plant retires over time and needs to be replaced. BACE uses a probabilistic approach to retirements based upon

the Gompertz-Makem retirement curves. These Gompertz-Makem curves are a standard approach used in the telecom industry to understand the retirement patterns of telecommunication assets. From the use of Gompertz-Makem, BACE derives the probability of retirement, by type of asset, in each year. This probability is used to estimate the expected value of plant replacement in year.

Finally as noted previously, initial start-up investments are assumed to occur at time zero and no discount is applied to the cash outflow. All other capital placements, growth in assets over time and the retirement replacement capital are assumed to occur mid-year for discounting purposes.

Q. DOES BACE USE AMORTIZED COST COMPONENTS FOR DEPRECIATION?

A. BACE uses an amortized measure of depreciation expense only in the income tax module of the model (which I will discuss later) and the associated calculations of accounting net income. For a discounted cash flow calculation, the original cash outflow for the capital expenditure is all that is required; depreciation expense is not needed (and would not be appropriate) for a discounted cash flow, net present value calculation. Since the full cash outlay for the capital expenditure is recorded in the year that it occurs, adding depreciation expense would be tantamount to double counting these costs in a discounted cash flow.

Q. DOES BACE REFLECT A HIERARCHY OF COST INPUTS?

A. Yes. However, cost hierarchy inputs are typically for information only and are referred to as descriptor inputs. They are used in reporting to clarify costs to levels of the CLEC location, product or customer hierarchy; in limited cases, they are used as filters. The cost hierarchy is: cost family, cost area, cost center, and cost element.

Q. WHAT IS THE ORDER OF THE TASKS PERFORMED IN THE ON-PROCESS?

A. The Operations and Network ON-Process is split into three major phases. First is the cost preparation phase during which all of the costs are filtered and arranged in preparation for aligning the costs with the results of the price, quantity and revenue processes. The second phase develops appropriate network and operational costs using the cost records prepared in the first phase. The third phase of the ON process incorporates a series of optimization routines to assist in reflecting efficient CLEC operations.

Q. WHAT ARE THE MAJOR TASKS THAT OCCUR IN THE COST PREPARATION PHASE?

A. The following tasks are performed in the cost preparation phase:

1) The first task is to identify all of the possible investment items that can be driven by BACE. This requires resolving all of the wildcard logic that exists in the Network and Operations Cost Input tables. Wildcard inputs and the corresponding model logic are used to minimize the input requirements for the BACE user.

2) Since BACE's network and operations cost tables may have inputs for various alternative network and operational scenarios, BACE has several user inputs that act as filters on the network and operations cost input tables. These include: CLECType, DS1ToDS0XOver, and UseSPAorUNET.

3) BACE applies the user-adjustable scope and purchase power factors to reflect the CLEC's scope of operations and relative purchase power vis-à-vis BellSouth.

4) Loadings are applied to capital investments. These loadings allow the user to capture capital expenditures beyond the material price. These may include: engineering, supplies, storage/warehousing, land, power, building, and other items.

5) BACE identifies how the vendor prices and investment values will change over the 10-year study. These factors are a user input into the Cost Trends table.

6) The implications of customer churn are considered. The rate of customer churn has an impact on how often some costs will occur. This is reflected in the Weight value in the Cost Input tables

7) Next, to accommodate the fact that a CLEC, by installing certain equipment in a LATA, may be able to serve customers via UNEs from carriers other than BellSouth within that same LATA, BACE includes a variable accounting for the percentage of these UNE-available customers within each LATA that are served by BellSouth. This allows BACE to apportion some of the fixed costs within a LATA to both the BellSouth operating area and the other ILECs within the LATA.

8) BACE translates all monthly non-capital recurring costs into annual cost amounts (since the present value calculations are performed on an annual basis).

Q. WHAT ARE THE MAJOR TASKS THAT OCCUR IN THE NETWORK REQUIREMENT AND COST DEVELOPMENT PHASE?

A. With the appropriate cost records identified, annualized, and trended through time, BACE develops the foundation for determining costs incurred by the CLEC by calculating the underlying service and equipment requirements. Results from the Q-Process that identify demand (where appropriate) for each of the various levels of the product, customer and location hierarchies provide the basis for establishing an appropriately sized CLEC network architecture.

For network equipment purchased by the CLEC, determining the appropriate equipment and number of units to install relies on network engineering rules and equipment capacities. Practically, CLEC engineers would likely examine demand forecasts for a period of time (the time frame is dependent on the type of equipment), work with vendors to identify the equipment appropriate to meet the demand and purchase equipment sufficient to accommodate the expected demand, any administration requirements, spares and perhaps growth. The identification of the number of capital cost units to install within BACE is similar to this process.

For each of the capital cost records, BACE develops the demand requirements in each year based on the product, customer and location hierarchies specified in the Network Cost Input table (based upon output of the Quantity process). BACE accounts for the years to build for and minimum/maximum ranges for sizes of network components.

For non-capital cost records that have a Frequency of Recurring or NonRecurring, BACE uses the demand requirements in each year (from the Q Process) based on the product, customer and location hierarchies and the UNEZone and RateCenter entries in the Network and Operations Cost Input tables to determine the year by year cash outflows. For capital components and non-capital cost records that have a Frequency of NonRecurringNetwork, BACE uses the incremental change in demand year over year to determine the year-by-year cash outflows.

Next BACE determines the replacement capital expenses based upon the retirement of plant. Based on the user entered asset class specific values in the Retirement Input table, Gompertz-Makem survival curves are used to estimate the likelihood of retirement in each year.

Finally, with the costs of each network component and/or service developed for each year of the 10-year period based on demand, BACE develops the net present value for each cost record using the methods I described earlier. Whether the terminal values of assets (at the end of the 10 years) is included or ignored (i.e., assumed to zero) in this calculation is user adjustable.

Q. WHAT ARE THE MAJOR TASKS THAT OCCUR IN THE NETWORK OPTIMIZATION PHASE?

A. With the NPV of each cost record identified, BACE lets the user control the ability to identify economically efficient ways for the CLEC to optimize its operations. BACE provides for six types of optimization processes, five of which are user adjustable. The

six types of optimization processes each search for specific activities that yield a negative net present value, and then eliminate that activity. The six activities can be optimized are: 1) the use of EELs and/or full end-office collocation; 2) the provision of DSL within the wire center (not user adjustable); 3) keep or eliminate CLEC service in total for a wire center; 4) keep or eliminate CLEC service for Mass Market customers for a market; 5) keep or eliminate CLEC service for a market; and, 6) keep or eliminate CLEC service in total for a LATA.

Q. EARLIER YOU DESCRIBED HOW BACE IS CONSISTENT WITH THE TRO. WOULD YOU PLEASE DESCRIBE IN ADDITIONAL DETAIL HOW BACE CAPTURES THE COST CATEGORIES DISCUSSED IN THE TRO?

A. Yes. BACE is designed to allow the user to capture all likely potential costs corresponding to CLEC entry. Below I list the cost items specifically mentioned in the TRO, and how each item is incorporated into BACE.

1) "Costs of purchasing and installing a switch" (TRO, ¶ 520) - Incorporated into table Cost Input Network.

2) "[T]he recurring and non-recurring charges paid to the incumbent LEC for loops" (e.g., TRO, ¶ 520, and n. 1588) - Incorporated into table Cost Input Network.

3) "[T]he recurring and non-recurring charges paid to the incumbent LEC for ... transport" (e.g., TRO, ¶ 520, and n. 1588) - Incorporated into table Cost Input Network.

4) "[T]he recurring and non-recurring charges paid to the incumbent LEC for ... hot cuts" (TRO, ¶ 520) and "... costs of migrating incumbent LEC loops to

requesting telecommunications carriers' switches ..." (Appendix B – Final Rules, page 22, 51.319(d)(2)(iii)(B)(3)) — Incorporated into table Cost Input Network.

5) "[T]he recurring and non-recurring charges paid to the incumbent LEC for ... signaling" (TRO, ¶ 520) - Incorporated into table Cost Input Network.

6) "[T]he recurring and non-recurring charges paid to the incumbent LEC for ... other services and equipment necessary to access the loop" (TRO, ¶ 520) - Incorporated into table Cost Input Network.

7) "[T]he cost of collocation and equipment necessary to serve local wire center customers in a wire center" (TRO, ¶ 520) - Incorporated into table Cost Input Network.

8) "... taking into consideration an entrants likely market share" (TRO, ¶ 520) - Incorporated into table Penetration Curves for Products.

9) "taking into consideration ... the scale economies inherent to serving a wire center and the line density of the wire center" (TRO, ¶ 520) - Incorporated in BACE's approach to cost development.

10) "taking into consideration ... the cost of backhauling the local traffic to the competitor's switch" (TRO, ¶ 520, and similar language at Appendix B – Final Rules, page 22, 51.319(d)(2)(iii)(B)(3)) - Incorporated into table Cost Input Network.

11) "taking into consideration ... other costs associated with transferring the customer's service over to the competitor" (TRO, ¶ 520) - Incorporated into table Cost Input Network.

12) "taking into consideration ... the impact of churn on the cost of customer acquisitions" (TRO, ¶ 520) - Incorporated into table Churn and table Cost Input Network.

13) "taking into consideration ... the cost of maintenance, operations" (TRO, ¶ 520) - Incorporated into table Cost Input Operations.

14) "taking into consideration ... the cost of ... other administrative activities" (TRO, ¶ 520) - Incorporated into table Cost Input Operations.

15) "taking into consideration ... the competitors' capital costs" (TRO, ¶ 520) - Incorporated into table CLEC Study Properties.

Section 10: TREATMENT OF INCOME TAXES IN BACE

Q. HOW ARE INCOME TAXES TREATED IN BACE?

A. The final step in BACE processing is the calculation of the income tax liability. The calculation of tax liability (profit/positive liability as well as any loss/negative liability) uses inputs from the core of BACE, but the tax calculations are essentially performed in a separate module. This is because unlike discounted cash flow calculations of net present value, income taxes for most corporations are calculated on an accrual basis.

Q. HOW IS THE ACCRUAL TREATMENT OF ASSETS (E.G., FOR TAX CALCULATION PURPOSES) DIFFERENT FROM CALCULATIONS OF NET PRESENT VALUE OF CASH FLOWS?

A. With cash flow calculations, the cash outlay for an asset is simply shown in its entirety at the time it occurs. For tax purposes, under the accrual method, a capital expenditure generates tax-deductible expenses over time via depreciation expense.

Q. HOW IS THE COST OF DEBT AND EQUITY TREATED FOR TAX PURPOSES AND IN THE CASH FLOW PORTION OF BACE?

A. For corporate income tax purposes, the cost of debt is reflected as a tax-deductible expense like other expenses. For corporate income tax purposes, the cost of equity is the one economic cost that is not considered a tax-deductible expense. In discounted cash flow calculations, the cost of debt and the cost of equity are reflected via the discount rate; i.e., when a cash outflow is made in time zero, but revenue (cash inflows) occur at future time periods, the discount rate implicitly captures the costs of debt and equity as the future revenue cash inflows are discounted.

Q. HOW ARE LOSSES FOR ANY GIVEN YEAR TREATED IN BACE?

A. The user can choose how a tax loss (a negative tax liability) will be treated. The user has the option of carrying any loss forward to future years to offset future taxable profits, or taking the loss during the year in which is incurred as a current offset to current taxable profits in other divisions. If the user selects "CurrentYearCredit" the tax loss is actually shown as a contra-expense in that year for cash flow purposes. This selection implies that the CLEC has other "profitable" business entities, and that the modeled operations loss will be used to offset some portion of the total CLEC tax liability created from accounting profits in its other operations. Otherwise, the loss is carried forward to offset future profits.

Q. DOES BACE ESTIMATE NET INCOME FOR TAX PURPOSES?

A. Yes. Once the user selects the Tax-treatment method, BACE calculates an estimated net income statement for tax calculation purposes. This includes an estimate of the yearly tax depreciation (which is based on the IRS's depreciation lives for each of the plant items in BACE). In addition, an estimate of the yearly interest expense is made using the sum of the capex in the current period and from succeeding periods multiplied by the debt percentage (1-EquityPct) and a debt rate calculated in the model from the user's inputs in the CLEC Study Properties for EquityPct, EquityRate, PreTaxCostOfCapital.

From the net income statement, the model calculates the estimated annual income taxes based upon an effective tax rate that is based on the user inputs in the CLEC Study Properties for StateTaxRate and FedTaxRate. The effective tax rate accounts for the fact that state taxes impact federal tax liabilities.

Q. FOR EASE OF REPORTING, DOES BACE ASSIGN INCOME TAXES TO PRODUCTS AND GEOGRAPHIC AREAS?

A. Yes. Once the estimated income taxes are calculated, a tax-to-NPV ratio is developed so that the income taxes can be apportioned down to the reporting levels in BACE. This apportionment is only performed to allow the user to analyze impairment using any of the various data dimensions in the model.

Section 11: REPORTS FROM BACE

Q. WHAT REPORT GENERATING CAPABILITIES EXIST IN BACE?

A. Several standard reports are available through the BACE wizard and from predefined report templates. In addition, there is a very wide array of reports and data views that can be user defined.

Q. WHAT STANDARD REPORTS ARE AVAILABLE THROUGH THE BACE WIZARD?

A. The four major categories of reports available through the BACE wizard are: 1) NPV by market; 2) average revenue by product category per customer by market; 3) total estimated net income; 4) total estimated net income per line.

Q. WHAT ADDITIONAL REPORTS ARE AVAILABLE THROUGH BACE?

A. BACE comes pre-populated with a number of report templates. These templates can be used to create various reports including: cost and revenues over time, cost summaries, negative margin markets, etc.. User-defined reports and data views can vary widely. The limits of the possible reports are largely determined only by the data used by and produced by BACE. Typically, a user-defined report is determined with four steps: 1) identify the data source (e.g., cash flow data); 2) identify the calculations within BACE to view (e.g., NPV by customer segment by year); 3) identify any desired selection criteria (e.g., specific level of geography or geographic area); and 4) describe how the data is to

be reported. An example of a user-defined report is one showing all operating expenses in a state for two specific LATAs for the 10-year study. BACE allows the user to save reports and report templates.

Section 12: TESTING BACE

Q. HAS BACE BEEN TESTED AS A MODEL?

A. Yes. My team and I tested BACE to confirm it worked logically (i.e., implementation corresponding to intent, processes proceeded logically), to confirm it worked technically (i.e., the model processes are mathematically correct); and to identify problems or errors in the model and to identify improvements to the model

Q. WHAT TYPES OF TESTS WERE PERFORMED?

A. Four types of tests were performed: 1) transactional tests (which focused largely on the P, Q, and R processes); 2) output reasonableness tests (which focused on the overall results and the change in results as input values changed); 3) processing tests (running the model and reports in various ways); and 4) platform mechanics test (e.g., that it loads properly and runs with the hardware specified).

Q. WHAT DO YOU MEAN BY TRANSACTIONAL TESTING?

A. The logic of each process was broken down into key steps and the key components and drivers of the process were identified. Tests were designed to confirm that the processes

handled the driver (or variable) correctly and that the system's calculations were mathematically correct.

Q. WHAT WERE THE RESULTS OF YOUR TESTING?

A. BACE passed all four types of testing.

Section 13: <u>BACE ALLOWS THE USER TO ADDRESS ISSUES 2 (B) AND 5 (D)</u>

Q. HOW DOES BACE ALLOW THE USER TO ADDRESS ISSUE 2 (B), THE VARIATION IN FACTORS AFFECTING CLECS' ABILITY TO SERVE EACH GROUP OF CUSTOMERS?

A. BACE allows the user to address the variation in factors affecting CLEC's ability to serve customers in several ways. For example, as outlined in Section 3 above, BACE allows analysis at several geographic levels: LATAs; wire centers; MSAs; MCSAs; CEAs; UNE Zones; and any combination of the above. Second, BACE allows variations in product offerings and prices across five customer segments (residential and four business segments) and by customer-spend categories. Third, BACE allows the user to identify bundles of product and service offerings and price discounts that can vary over time. Fourth, the user can adjust customer penetration by segment and customer-spend categories by year. Fifth, BACE allows the user to choose the products offered. Finally, BACE allows the user to determine whether certain optimization techniques are employed (e.g., to drop negative NPV wire centers).

Q. HOW DOES BACE ALLOW THE USER TO ADDRESS ISSUE 5 (D), MARKETS IN WHICH POTENTIAL ECONOMIC BARRIERS MAY RENDER CLEC ENTRY UNECONOMIC?

A. BACE allows the user to address CLEC costs, which were discussed above in Section 9. There, I describe how BACE incorporates the relevant CLEC costs, which factors are largely incorporated through the table Cost Input Network. The ON cost process is also described in more detail in the BACE Model Methodology, which is attached to my testimony.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

List of Acronyms

BACE:	BellSouth Analysis of Competitive Entry model
CLEC:	Competitive Local Exchange Carrier
CEA:	Component Economic Area
CSV:	Comma Separated Variable
DSL:	Digital Subscriber Line
EEL:	Enhanced Extended Link (loop + interoffice transport)
FCC:	Federal Communications Commission
ILEC:	Incumbent Local Exchange Carrier
LERG:	Local Exchange Routing Guide
MCSA:	Micropolitan Statistical Areas
MSA:	Metropolitan Statistical Area
NPV:	Net Present Value (discounting both costs and revenues to a common time period)
ON:	Operations and Network
P:	Price
PV:	Present Value
Q:	Quantity
SG&A:	Sales, General and Administrative
TRO:	Triennial Review Order (FCC 03-36, released August 21, 2003)
UNE:	Unbundled Network Element
UNE-L:	UNE Loop, without the switching UNE

BELLSOUTH TELECOMMUNICATIONS, INC

The BellSouth Analysis of Competitive Entry Model

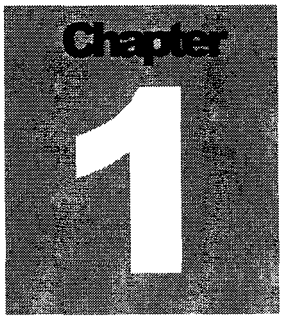
Users Guide

BACE Model– BellSouth Analysis of Competitive Entry

DOCUMENTATION VERSION: 2.0
DISTRIBUTION VERSION: 2.0
November 26, 2003

A NOTE ABOUT INPUTS AND SETTINGS SHOWN IN THIS MANUAL
All inputs and system settings shown in this document are illustrative. They may or may not match values used in a study or proceeding. Nor, should they be construed to represent a view of any party in a proceeding.

Table of Contents



The BellSouth Analysis of Competitive Entry Model (BACE)

BACE is a business case tool which models the startup, operation and growth of a competitive local exchange carrier (CLEC). Based upon user adjustable inputs and supplied customer demographics and demand information, BACE calculates a series of cash in-flows and out-flows. These cash flows are the expected result of entry, operation and growth of a CLEC over a 10 year operating period. This series of cash flows is discounted to generate a Net Present Value (NPV) for the CLEC.

Because of the flexibility and the granularity of information available, BACE can determine NPV at multiple geographic levels (wirecenters, market areas, LATAs and states) or over multiple types of CLEC business plans (local provider only, long distance/bundled offerings, DSL provider, etc). Further, BACE can also take into account the aspects of the CLEC's economic scope and scale such as its purchasing power of the CLEC relative to the incumbent.

Learning About BACE

BACE documentation is available in two forms.

The *BACE Users Guide* is designed to help you install the software, examine and modify study assumptions and produce output reports.

The *BACE Methodology Manual* discusses how BACE complies with applicable regulatory guidelines, follows standard economic and business practices and calculates the cash inflows and outflows necessary to determine NPV during the study horizon.

Getting Help

If you need help with BACE, support is available from a number of sources.

First, consult this manual or the *BACE Methodology Manual.*

Second, email the designated support contact provided by BellSouth Telecommunications, Inc at BACE.support@bellsouth.com .

System Requirements

The business case assumptions BACE analyzes are complicated and computationally intensive. Thousands of user inputs are run through the calculation engine before results can be developed.

Despite the complexity of the modeling task, BACE runs on business class computers under Microsoft Windows 2000® or Microsoft Windows XP Professional® operating systems. Minimum recommended hardware requirements are listed below.

- Microsoft Windows 2000® or Microsoft Windows XP Professional® compatible personal computer with Pentium® III 1.5 GHz or equivalent processor
- 25 Gb available hard drive space
- 512 Mb RAM
- CDROM Drive
- Video adaptor and monitor capable of displaying 1024 x 768 resolution

Software requirements include the following:

- BACE Setup Application
- Microsoft Excel 2000® or XP® to display reports.

Although not required to run BACE, Microsoft Access® may be useful for inspecting large reports.

Installing BACE

BACE is installed by running the setup package. The BACE setup package is provided either on CD or downloaded via secure file transfer.

Regardless of how you obtained BACE, locate the setup application **BACE_2_0.exe**

To start the installation, close all open applications and double-click the setup program icon. Then, follow the on-screen prompts.

During installation, depending on your version of Microsoft Windows®, you may be prompted with a warning that BACE is trying to install a version of a file older than a file currently on your computer.

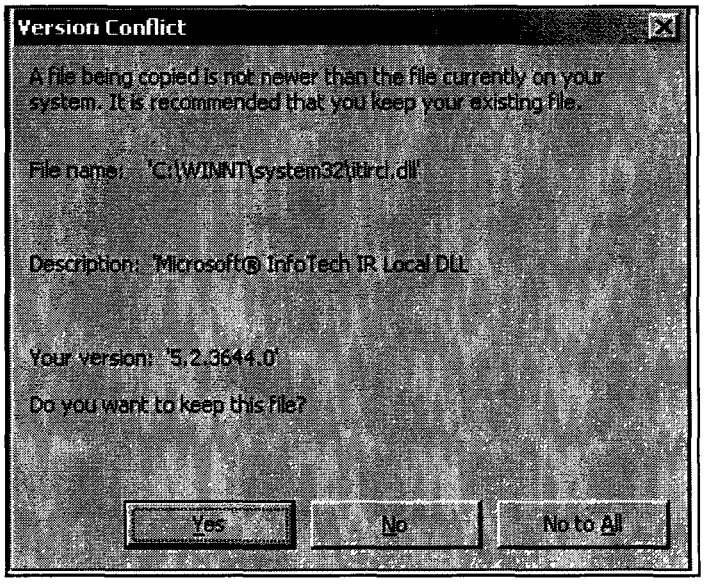


Figure 1-Version Conflict Warning

If this happens, keep the version of the file currently on your computer by clicking **Yes.** You may need to reboot your computer to complete the installation.

Before the application installs, you will need to read and agree to abide by the license agreement displayed.

Installing Processed Scenario Data

You can also obtain a self extracting file containing processed scenario data. The processed scenario data gives you access to a fully processed BACE run with corresponding output reports.

Locate the setup application **BellSouth_XX.exe (where XX represents the two letter state abbreviation).** To start the installation, close all open applications and double-click the setup program icon.

By design, the processed scenario data installs to the default BACE installation directory (c:\program files\bace). If you installed BACE to a different directory, modify the target path to your BACE directory before starting the data installation process.

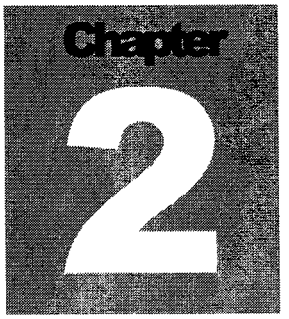
When installing the processed data, you may be prompted that you are overwriting existing files. This is intentional, you will be overwriting and empty scenario with the processed data.

Logging In

Because the BASE application and data are confidential and proprietary, you must provide a User Id and password each time you run the application.

The initial User ID is **tro_user** The initial password is **une*001**

After you start BACE for the first time, you will be prompted to create a new password. BACE requires you to reset the password every sixty days. If you forget your password, you must reinstall BACE. Password rules are provided in Chapter 7 of this document.



Getting Started

This section of the *BACE Users Guide* will walk you through the setup of a business case using the BACE wizard.

It is important to remember that the Wizard was designed to walk you through key inputs and to simplify business case production. However, there may be circumstances where you would like to modify detailed assumptions like product prices or equipment costs. These detailed assumptions are beyond the scope of the Wizard. If this is the case, the appendix in the *BACE Methodology Manual* describes each of the data tables and their intent. You can then modify the detailed tables and run a manual study (see Chapter 5) outside of the Wizard.

When you start BACE, the Wizard will automatically appear. At any other time, you can click on the Wizard's hat icon. The Wizard guides you through 3 major steps: Selecting the Input Scenario, Modifying Inputs and Selecting Reports.

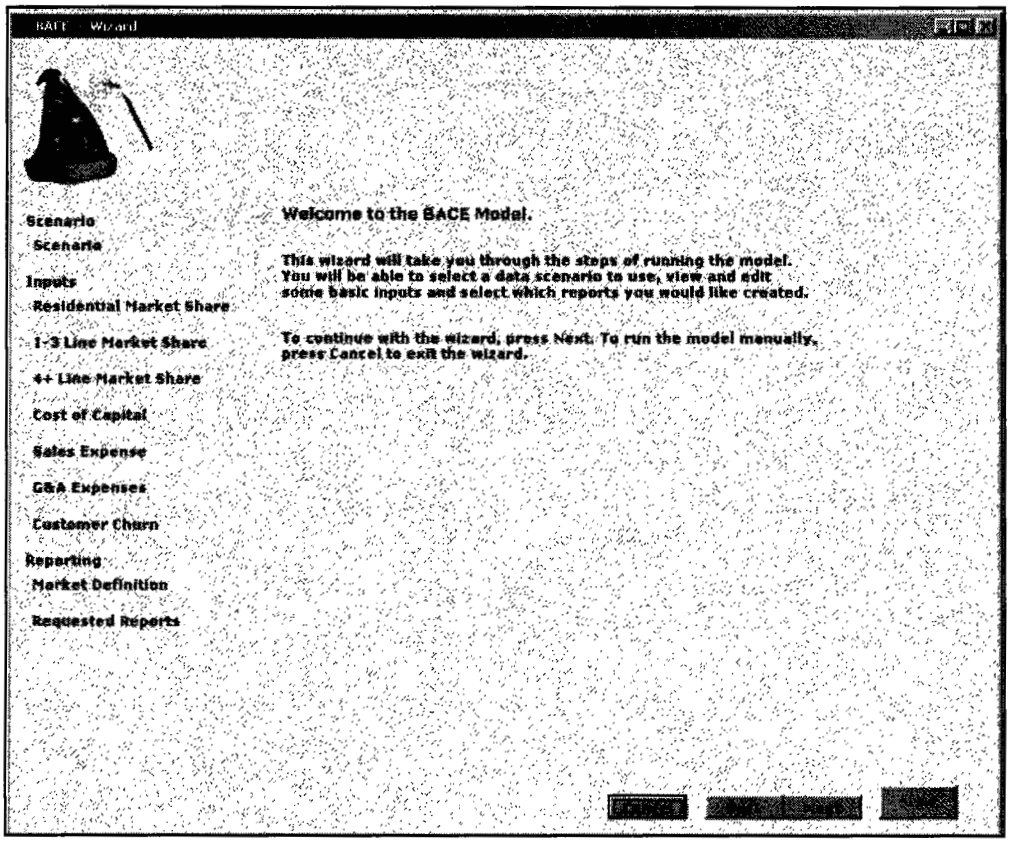


Figure 2–Wizard Main Screen

The Wizard guides you through a series of questions. The questions help define parameters of the study. The questions which BACE poses, follow the topics on the left edge of the Wizard screen (e.g., Residential Market Share, Cost of Capital, etc.).

You can also press the **Back** button to move to a prior screen or **Next** to advance to a later screen.

Selecting the Input Scenario

The Wizard's first step allows you to either select an existing scenario or create a new scenario to process.

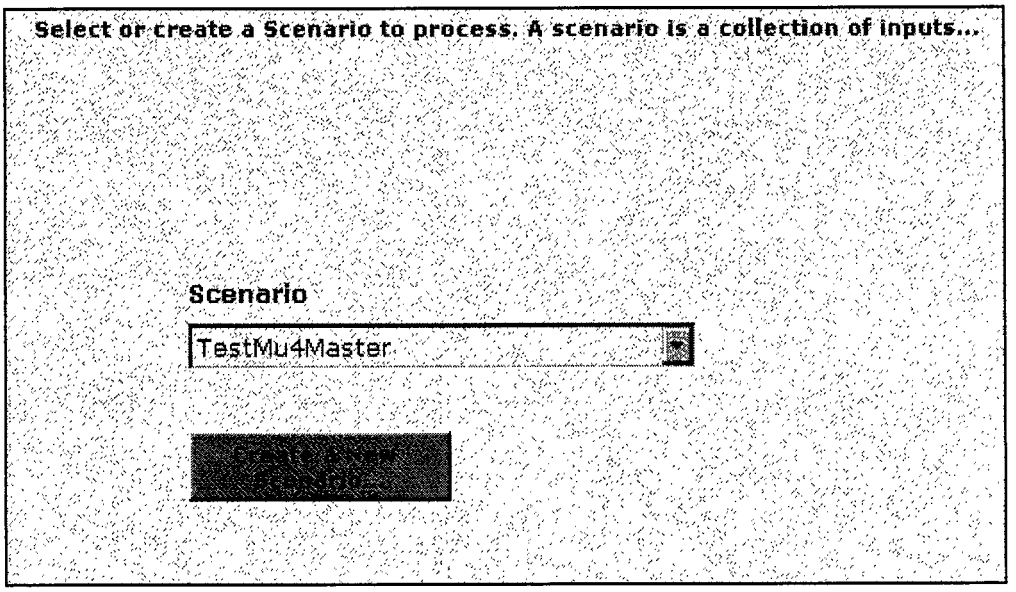


Figure 3--Wizard Scenario Selection

In BACE a scenario is a collection of inputs and processed data.

When you elect to create a new scenario, BACE will ask you to copy from any of the existing scenarios.

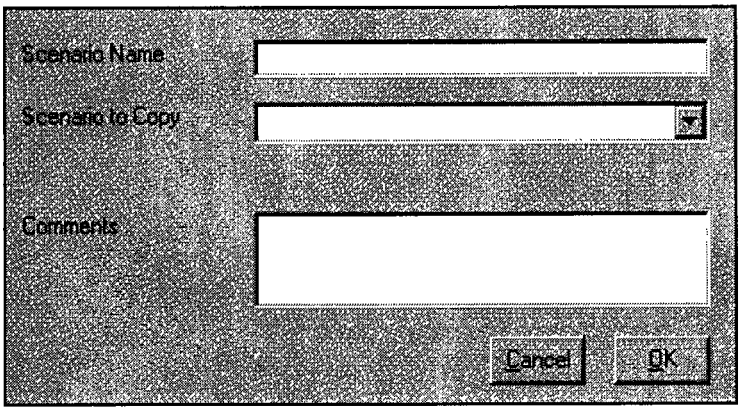


Figure 4--Wizard Creating a New Scenario

Copying from an existing scenario preserves the original scenario, while allowing you to make the changes as you create a new scenario. In this way, you can see the effects of your change without overwriting information in the copied scenario.

On the other hand, if you elect to use an existing scenario, the modifications made in the Wizard will force a permanent change to the existing scenario's inputs.

Note: The default scenario BellSouth_XX (where xx represents the state) can not be modified. You can copy this scenario to a new scenario, but you can not overwrite the BellSouth_XX inputs.

Defining Market Share

The first Wizard screens prompt you for information regarding the modeled CLEC's market share. The market share inputs are broken down across 3 screens: residential, business 1-3 lines and business greater than 4 lines.

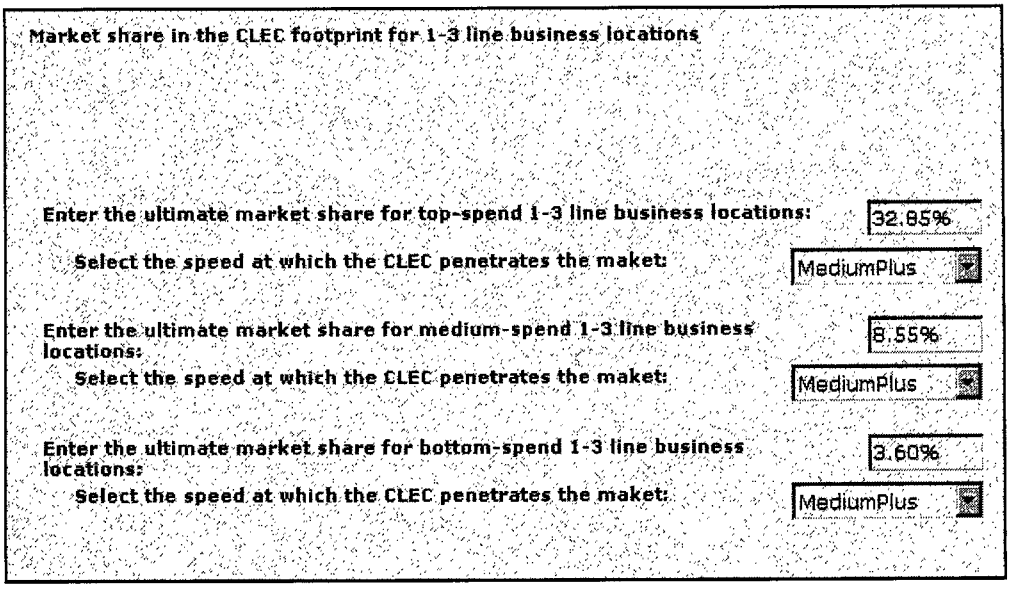


Figure 5–Wizard Setting Business Market Share

BACE asks you for input regarding the ultimate market share (between 0 and 100) and the speed (Fast: 0.5, Medium: 0.35, and Slow: 0.25) at which this market share is achieved. These values are used in a simplified Bass[1] curve to produce yearly penetration values over the 10 year study. The values shown in the Wizard are the current default values in the scenario you selected in the initial step.

BACE requests this input for the following customer segments

- Quintile 1 (Top 20% spend) residential customer locations
- Quintile 2 (20-40% spend) residential customer locations
- Quintile 3 (40-60% spend) residential customer locations
- Quintile 4 (60-80%) residential customer locations

[1] BACE uses a simplified Bass Curve to determine yearly market share. The simplification comes from the fact that the coefficient of internal influence is assumed to be 0.

- Quintile 5 (Bottom 20% spend) residential customer locations
- 1-3 line top spend business customer locations
- 1-3 line medium spend business customer locations
- 1-3 line bottom spend business customer locations
- 4-8 line business customer locations
- 9-23 line business customer locations
- 24+ line business customer locations

If you wish to exclude a segment from consideration, enter the ultimate penetration value as a zero.

Changes made on this screen affect the Product Penetration table.

Define the Pre Tax Cost of Capital

Next, BACE asks you to input the CLEC's PRE-TAX weighted average cost of capital.

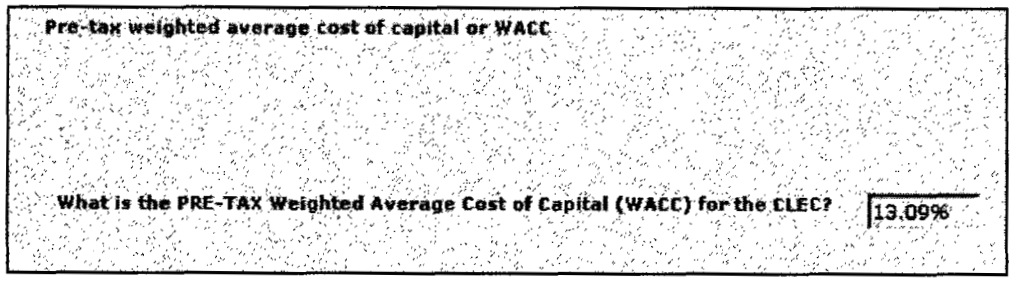


Figure 6–Wizard Setting the Weighted Average Cost of Capital

The value displayed initially is the value stored in the **CLEC Study Properties table PreTaxCostOfCapital**

Sales Expense

The following screen asks you to define the sales expense (customer acquisition expense.)

[2] BACE uses this value along with the values of EquityPct and EquityRate in the CLEC Study Properties table to calculate the After Tax Cost or Capital (i.e., After Tax WACC) that is used by BACE to develop the Net Present Values ("NPV") for impairment analysis.

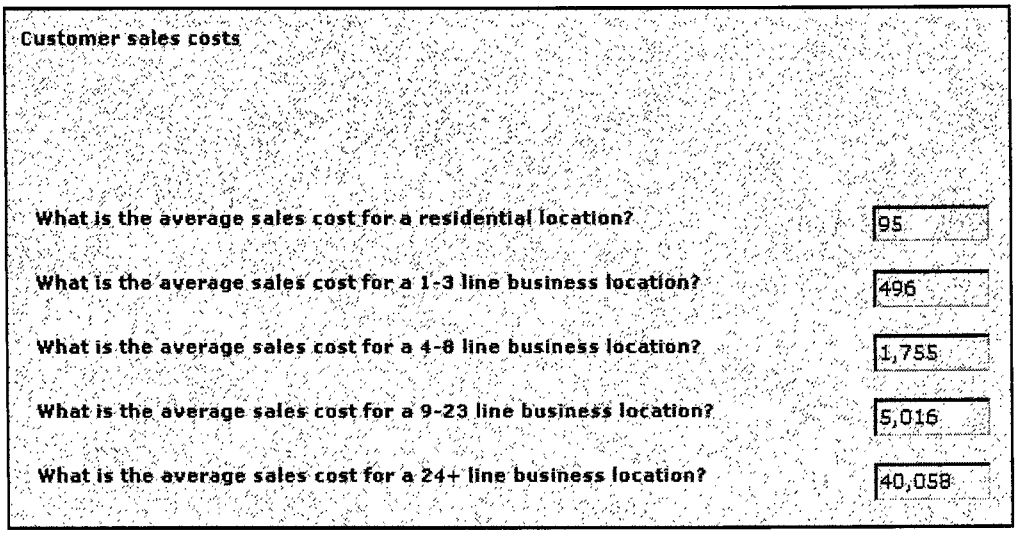


Figure 7–Wizard Entering Customer Sales Costs

Customer Acquisition cost is defined in terms of the size of the customer: 1-3 line customer locations, 4-8 line customer locations, 9-23 line customer locations, 24+ line customer locations. The value displayed initially is the value shown in the Operations Cost Input table.

General and Administrative Expense

BACE then asks you to provide the G&A cost as a percent of revenue for providing local services (excluding sales).

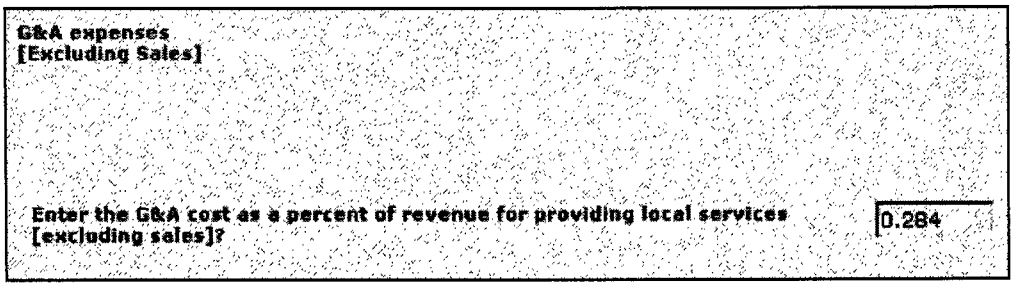


Figure 8–Wizard Setting the G&A Expense

This will update the local services G&A expense in the Cost Input Operations table.

Customer Churn

The Wizard then asks you for information on monthly customer churn rates for all residential customers, 1-3 line businesses, 4-8 line businesses, 9-23 line businesses and 24+ line business locations.

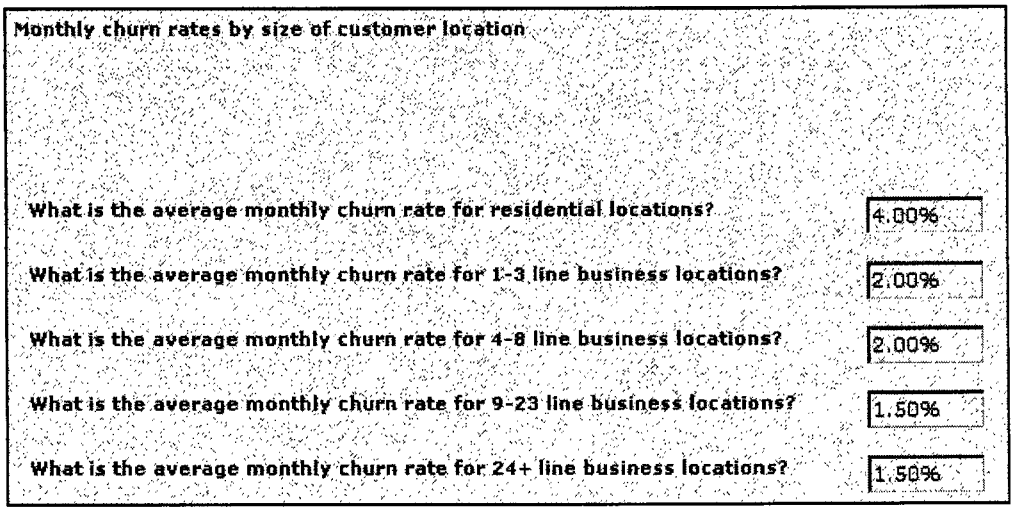


Figure 9–Wizard Entering Customer Churn

While the value entered is in terms of a monthly churn rate, BACE annualizes[3] it before updating the **Churn** tables.

After completing the last input screen, BACE has the information necessary to process the scenario. The remaining questions concern how you wish to see the reported output.

Report Setup

The next three Wizard screens guide you through the setup of reporting output.

The first question asks if you wish to include 4-8 line businesses in the Mass Market designation. If you answer "Y", the 4-8 line customers are reported in Mass Market results. If you answer "N", the 4-8 line customers are reported in the Enterprise market results.

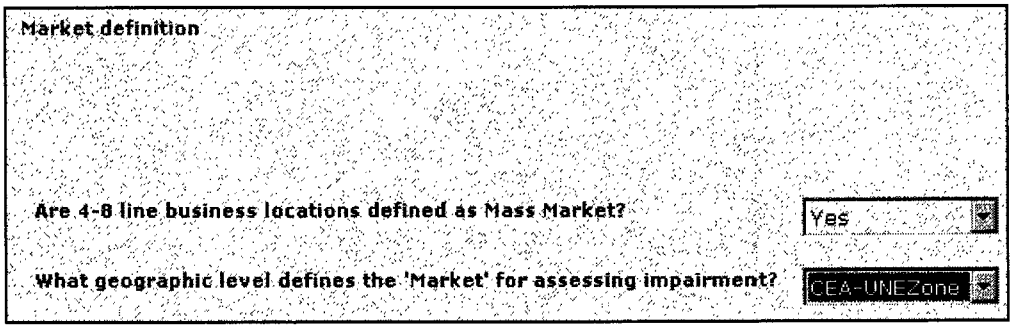


Figure 10–Wizard Setting Market Definitions

[3] BACE annualizes the monthly churn using the following formula:
Annual Churn = 1 – (1 – MonthlyChurn)^{12}

The last question on the screen asks you to define the geographic level of reporting the results. That is, are you interested in seeing reports at the LATA, MSA, or CEA level, combined with the UNEZone? Each of these geographic areas is defined (in terms of the wirecenters contained in each) within the **Exchange Demographics** Table.

Report Output

The final portion of the Wizard asks which standard BACE report you wish to run. The BACE wizard provides the following standard reports.

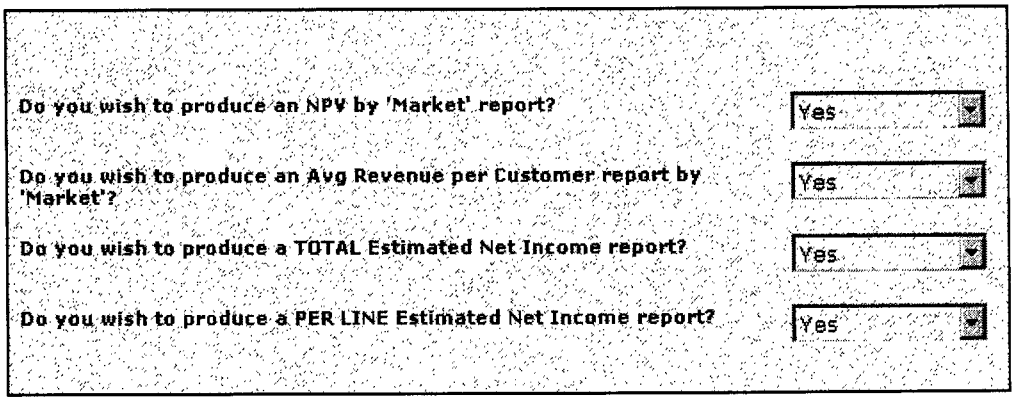
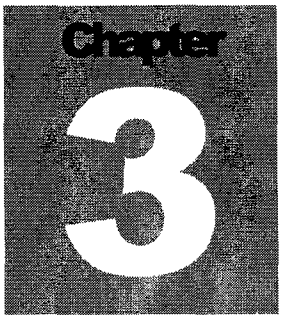


Figure 11–Wizard Report Selection

- NPV by Market report
- Average Revenue Per customer By Market report
- Total Estimated Net Income report
- Per Line Estimated Net Income report

When you have answered all of the Wizard questions, press the **Start** button. BACE will begin processing the scenario. When processing is complete, reports will be opened in Excel. Report files-reflecting the onscreen results-will be saved in the scenario directory.



Navigating BACE

Despite the complexity and granularity of the business case, BACE was designed to run under standard business class computers using the Microsoft Windows® operating system. BACE was designed to be user friendly like any other Windows-based application.

This section of the Users Guide will describe the BACE interface.

BACE's Main Screen

When you start BACE and exit from the Wizard screens, you will see the main screen. From this screen, you will be able to access all functions necessary for an impairment study.

Along the upper portion of the screen, you will note the familiar Windows Menu Bar. The left hand portion of the screen displays the BACE Navigation Bar. The icons on the navigation bar provide shortcuts to the most frequently used BACE features. Along the bottom of the screen is the Status Bar. The Status Bar shows several important things. First, it provides the name of the scenario you are working on (Chapter 4 will provide more detail on scenarios). Second, it displays your User ID. Third, it will display notes or warnings on current processing.

A typical Main Screen is shown below.

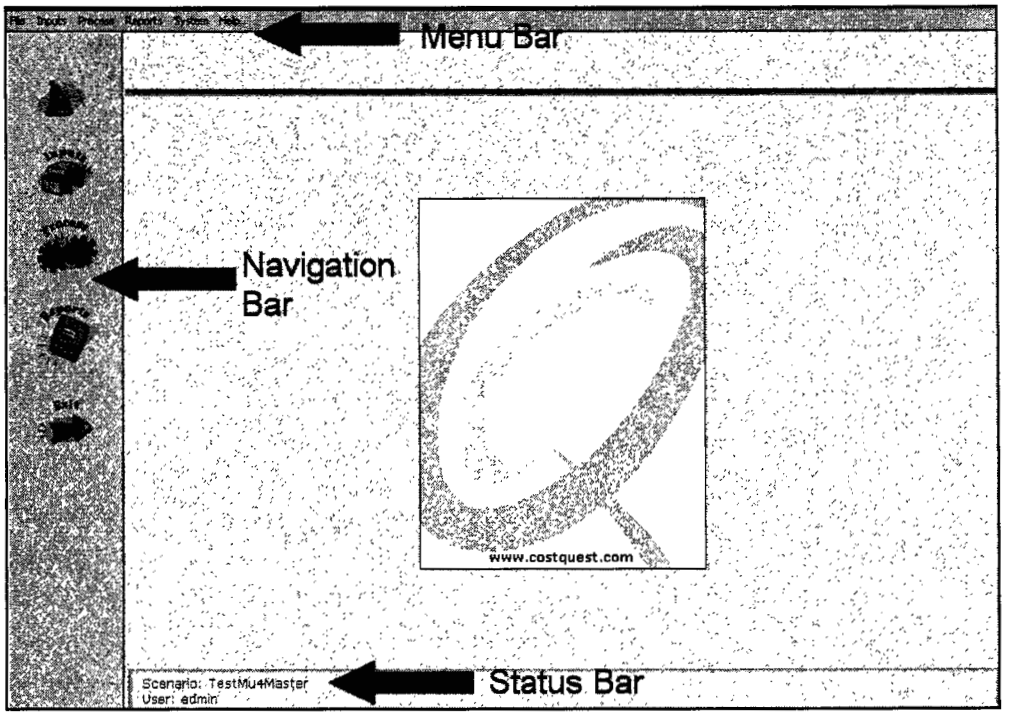


Figure 12–BACE Main Screen

Data Architecture

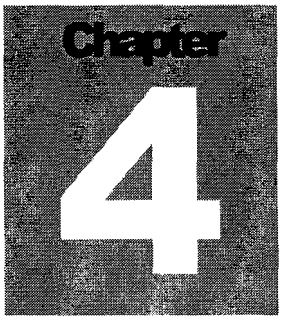
BACE retrieves and stores all input and output data in a consistent and logical format.

Input and processed data are stored as a scenario database. Each scenario is a database stored in a similarly named folder within the scenario directory.

Report data are stored in the same directory. Reports are created as either Microsoft Excel™ worksheet files or Excel compatible, comma separated variables (CSV) files.

Figure 13–BACE Data Architecture

If you send tables to Excel (a feature under the Inputs Menu), these tables will be placed in this directory as well.



Organizing Study Data

BACE organizes study data in two ways: Scenarios and Inputs. A named collection of all Inputs used in a study is called a Scenario. The Scenario is the large scale way of storing all study assumptions and inputs and processed results.

Within a Scenario there are a series of tables used to manage individual inputs. Inputs are logically grouped and displayed within a table structure. Common tables are organized into groups.

The intent of this chapter is to describe both the management of scenarios and inputs.

Scenario Management

Scenario management is analogous to managing the databases and folders described in Chapter 3's topic, Data Architecture.

There are three features in BACE used to help manage scenarios.

Creating a New Scenario

You can create a new scenario by following this procedure.

1. From the **File** menu, select **New Scenario**

2. When the **New Scenario** box appears, enter a name for your Scenario. You should use standard Windows naming conventions (e.g.,. no reserved characters like '/')

3. Select a Scenario to copy from. A new BACE scenario must always be based on an existing scenario. In other words, which existing scenario will provide initial inputs values used in your new Scenario?

4. Enter any relevant notes into the **Comments** box. These notes are a useful way of tracking the intent of the new scenario.

Opening a New Scenario

When BACE opens, it opens to the last scenario used. If you prefer to open a different scenario, follow this procedure.

1. From the **File** menu, select **Open Scenario**

2. When the **Open Scenario** box appears, select the Scenario you would like to open.

Modifying the Default Scenario

By design the default inputs, **BellSouth_XX.exe (where XX represents the two letter state abbreviation), cannot be modified. You will need to create a new scenario with BellSouth_XX.exe as the scenario to be copied from before you can make any modifications.**

Viewing Scenario Properties

BACE allows you to view the comments for each scenario, entered when the scenario was created.

To view the currently open scenarios properties, select **Scenario Properties** from the **File** menu.

Managing Inputs

BACE uses the Edit Inputs option to guide you through the input management process. Click on the **Edit Inputs** icon along the left side of BACE's main screen to begin editing scenario inputs.

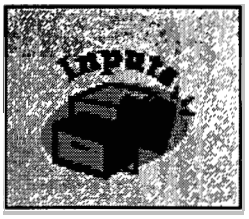


Figure 14—Inputs Icon

BACE provides two tools to help manage inputs. The first is the Table List. The Table List groups common tables into a series of hierarchical folders. This organization scheme lessens the need to sift through multiple tables individually. The second tool is the inputs grid itself. The inputs grid provides database like access to each table in BACE.

Table List

The Table List works to categorize input tables into common groups. For example, each table that is related to **CLEC Study Properties** is grouped into one folder.

Double clicking on a folder will open the folder and allow you to view the individual tables.

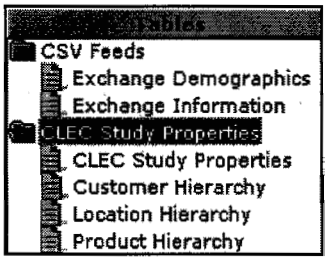


Figure 15–Table List

From the Edit Inputs screen you can hide the table list by clicking on the **Hide List** text. The **Hide List** text is located directly above the Table List.

Inputs Grid

BACE's input grid allows you to modify the data in input tables, using a database-like format.

Columns are resizable by holding your mouse over the column lines until your mouse cursor becomes a double arrow.

Figure 16–Resizing a column

At this point, you can hold your left mouse button and resize the columns.

Columns can be moved by holding your mouse over the column heading until your cursor becomes a downward facing arrow.

Figure 17–Moving Columns

At this point, you can hold your left mouse button and drag and drop the column into its new location.

Adding and Deleting Records from Tables[4]

Certain input tables are designated with an [A] or [D] or [A,D]. These bracketed characters indicate that you can [A]Add, [D]Delete or [Add and Delete] records from this table.

For designated tables, records can be added by clicking into the last row in the grid. This will be an empty row with an asterisk in the left most column.

For designated tables, records can be deleted by clicking on the leftmost column adjacent to the row you wish to delete (which will highlight the entire row), and then press the **Delete** key on your keyboard.

Time Based Inputs

Many inputs used by BACE are specific to a give year. Churn rate, for example is specified not only by customer segment, but by year.

To support these time-based inputs, keep in mind that BACE allows you to specify their value each year within the ten year study horizon.

[4] While BACE is an open tool controlled by the user, care must be taken when tables are modified. BACE is a relational model. As such, table changes can impact how the entire system functions.

Chapter 5

Manual Processing

In addition to the Wizard described in Chapter 2, BACE allows you to manually process Scenarios. The Wizard is the optimal method when you want to modify the high level, key aspects of a Scenario. Manual processing is best suited when you want to make detailed changes to scenarios or batch process multiple scenarios. To start Manual Processing, click on the Process icon, on the left side of BACE's main screen.

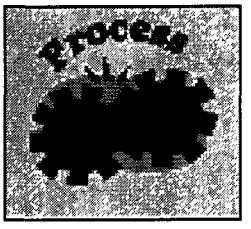


Figure 18—Process Icon

BACE Processes

BACE processing is defined by a series of four major processes as it calculates NPV. The processes are briefly described below. Further detail can be found in the *BACE Methodology Manual.*

The P-Process calculates the prices of sold products and services.

The Q-Process calculates the quantity of sold products and services.

The R-Process calculates the revenue due to he firm based upon the prices and quantities determined in prior steps.

The ON-Process calculates the cost for the CLEC's operations, sales, marketing, capital expenditure (capex) and retirement capex. The ON-Process also develops the estimated net income analysis and the estimated taxes.

Manual Process

BACE's manual process screen allows you to run one scenario or batch process multiple scenarios. To manually process a scenario, follow the procedure below.

1. Select the **Process** Icon from BACE's Main Screen

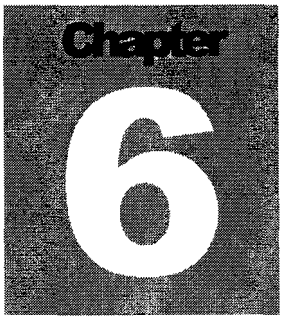
2. Select the Scenario(s) you wish to process. You can select as many Scenarios as you wish, by clicking the check boxes on.

3. Select the reports that you would like the system to automatically run at the end of the processing. These reports are based on the Saved Report Settings (Chapter 6).

Once processing is completed, these reports are stored in the scenario directory that you are processing.

4. Press the **Process** button to begin processing.

You should also select the Compact Database during processing option. This option will compress the Microsoft Access™ Database created by BACE. If you don't compress the databases, BACE may stop processing due to errors encountered when the processed scenario database exceeds the size limitation imposed by Microsoft Access.



BACE Reporting

Rather than providing a limited number of predefined system reports, BACE is designed to give you access to the wealth of calculated data.

The reporting engine was designed with flexibility and simplicity in mind. Several standard reports are available, but creating your own reports or views of data is equally simple and described in the following section.

Retrieving Information

BACE's reporting interface allows you to query and analyze large amounts of data, while minimizing interaction with Structured Query Language (SQL). You can view the reporting engine by clicking on the Reports Icon shown on the left side of BACE's main screen.

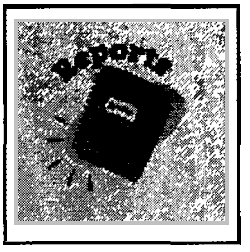


Figure 19—Reports Icon

SQL is used to retrieve data or to provide rudimentary statistics (Sums, Counts, Averages, etc) from data stored in a database. If you were writing SQL code, you would write a SQL statement to describe retrieval (selection) or statistical instructions.

Typically a SQL statement to retrieve data is constructed in four parts.

1) A designation of from where you wish to pull the data from. In other words, what database or table will be the source of this information? In BACE, this information is provided in the Report Data Source pull down box.

Figure 20–Report Data Source

2) A description of how you want to deal with the presented data. That is, if you want summary statistics, how should they appear in your output? In BACE, this information is provided under **Calculations To View**

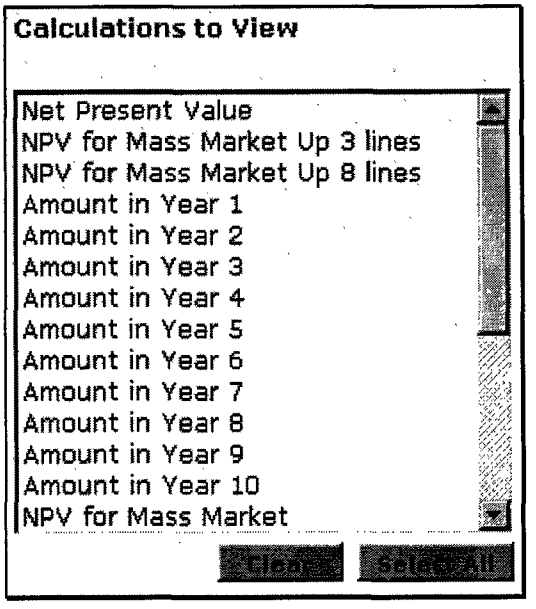


Figure 21--Calculated Fields Box

3) A description of any selection criteria to be applied to the fields you select. That is, do you want all of the data or a filtered subset of the data to examine? This description is made in BACE's **Filter Fields and Values** boxes.

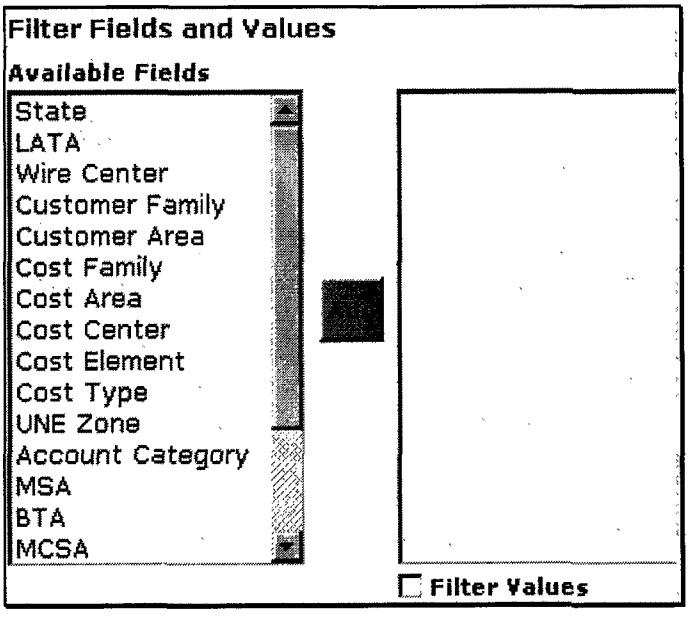


Figure 22--Where Or Conditional Fields

4) A description of how the data should be reported. In other words, what should appear in the output? This description is made in BACE's **Fields To View** section.

As you work with the interface, you'll note that when you select a **Filter Fields and Values**, the **Fields to View** section will automatically update with the field selected.

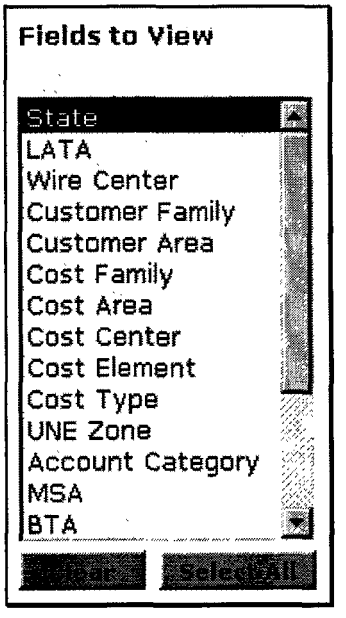


Figure 23—Fields To View

Reporting Examples

The best way to understand BACE's reporting engine is to create a few reports. The following section will provide a quick tutorial in its use.

Example One-Report all wirecenters in the study and their NPV.

Creating this report requires three elements of information. First, what is the data source to use? In this case, use the *Revenue and Cost* Report Data Source.

Second, what fields should be listed and used to create subtotals? At this point, we only want to view the *State* and *Wirecenter*. These should be the only selections under the **Fields To View**

Third, what calculated data should be shown? As described above, we want to view the NPV by wirecenter. If you wish to see the yearly new cash flows, you could select the *Amounts in Year (1-10)* as well as the *NPV*.

Configuring BACE's reporting interface would yield the following

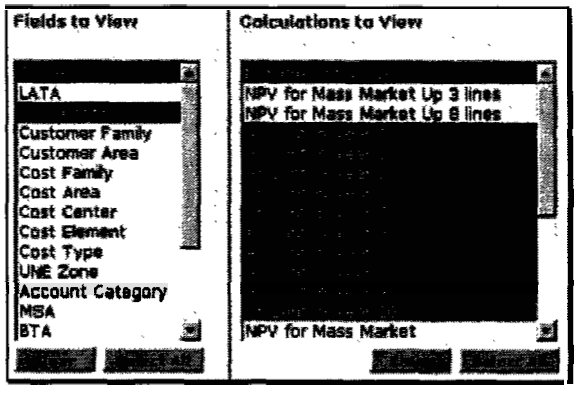


Figure 24–Reporting The NPV of wire centers

The Excel report file would appear as shown below.

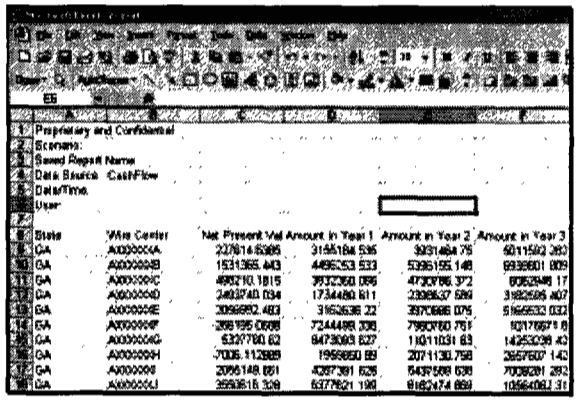


Figure 25–CSV format output

Example Two—Produce a report of all operating expense in Georgia for LATAs 438 and 442 by wire center during the 10 year study

This report is a bit more complicated than the first. The first element to isolate is the data source. Again, use *Revenue and Cost* as the **Report Data Source**

Next, select the calculated **Fields To View** For this example, select *Amount in Year 1, Amount in Year 2* through *Amount in Year 10.* If you also would like the NPV of these flows, select *NPV.*

Third using the **Where/Conditional Fields**ection, filter your data so that you view only Operating Expenses (OPEX). This is done by selecting **Account Category** Notice that when you make this selection, BACE looks up all possible values in this field (Note: this may take a few minutes for each filter since BACE is analyzing all potential values). After these values are determined, **Account Category Values** populate the right box. Next, select *OPEX* and click the **Add** button. This selection, where *Account Category* equals *OPEX*, will be added to the **Current Where Selections** box.

Finally select the *LATAs* for this report. This is done by setting *Location Center(LATA)* equal to LATAs *438* and *442* in the **Where/Conditional Fields** section. Then, adding this criteria to the **Current Where Selection** box.

With these steps complete, start the report by clicking the **Run Report** button.

An example of the settings needed to run this report is shown below.

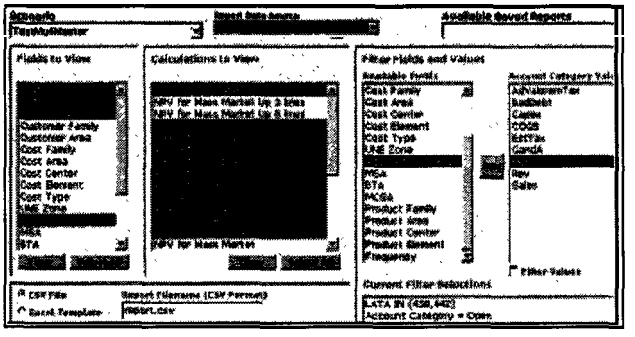
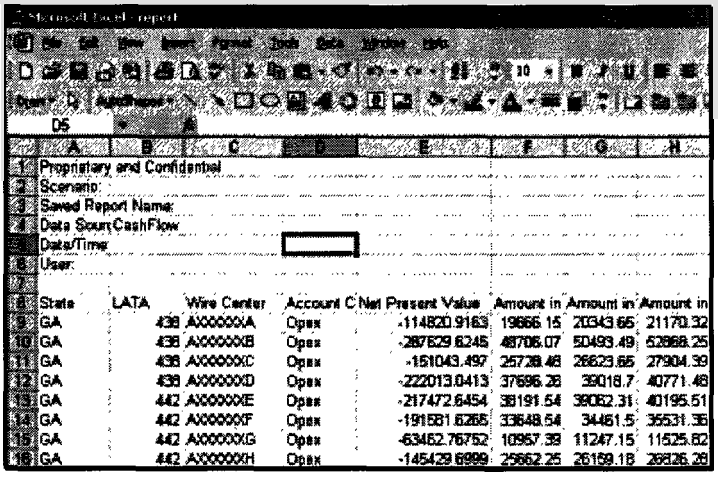


Figure 26–Finding the OPEX in LATAs

Note: The Filter Values checkbox allows you to constrain succeeding **Where/Conditional Fields** selections based upon values in the **Current Where Selections** box. For example, if you first selected Account Category = Opex, then selected the Filter Values checkbox, then selected Cost Center as your available field, the only values that would appear in the **Cost Center Values** box would be those Cost Centers associated with the Account Category of Opex.

The Excel report file would appear as shown below.



	A	B	C	D	E	F	G	H
1	Proprietary and Confidential							
2	Scenario:							
3	Saved Report Name:							
4	Data Sour: CashFlow							
5	Date/Time:							
6	User:							
7								
8	State	LATA	Wire Center	Account C	Net Present Value	Amount in	Amount in	Amount in
9	GA	438	AX00000XA	Opex	-114820.9163	19866.15	20343.65	21170.32
10	GA	438	AX00000XB	Opex	-287629.6245	48706.07	50493.49	52868.25
11	GA	438	AX00000XC	Opex	-151043.497	25728.48	26623.65	27904.39
12	GA	438	AX00000XD	Opex	-222013.0413	37696.28	39018.7	40771.48
13	GA	442	AX00000XE	Opex	-217472.6454	38191.54	39082.31	40195.51
14	GA	442	AX00000XF	Opex	-191581.6265	33648.54	34461.5	35531.36
15	GA	442	AX00000XG	Opex	-63452.76752	10957.39	11247.15	11525.82
16	GA	442	AX00000XH	Opex	-145429.6999	25662.25	26159.18	26826.26

Figure 27–Reporting CSV Output

Managing Reports

BACE allows you to save a report template by entering a name into the **Save Report Settings As** box. When you press the **Save Repor** button, the values in the report will be saved. As noted in Chapter 5, these saved reports will show up as user selections on the Processing screen.

You can retrieve report settings by using the **Saved Report Settings** pulldown menu.

Selecting the **Open File in Excel** checkbox will open a saved report as a Microsoft Excel or compatible file. There may be times when you create a report larger than Excel can display. If this occurs you will get an error message from Excel indicating that the file was not loaded completely. This message indicates that your report exceeds that maximum length (more than 64,000 records) accommodated by Excel. To inspect this report, use Microsoft Access to open the resulting CSV file.

Standard Data Sources

BACE is provided with several built in data sources. Each data source will be briefly described below.

Revenue and Cost Data Source. This data source provides information about firm revenues and cost.

Price Data Source. This data source provides the Average Product Price by Location, Customer Segment and Product Segment.

Quantity and Customer Counts Data Source. This data source provides the quantity and customer count by Location, Customer Segment and Product Segment.

Avg Revenue Per Line. This data source provides Average Customer Revenue for Voice, Long Distance and Data by Geographic Area.

Net Income Total (estimated). This data source provides an estimated net income statement for the 10 years of the study.

Net Income Per Line (estimated). This data source provides an estimated net income statement on a per line basis for the 10 years of the study.

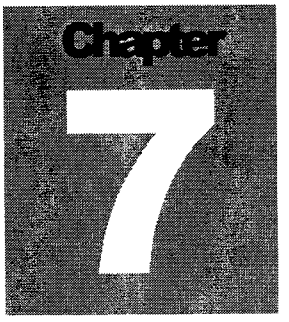
Omitted Markets. This data source provides information on markets that were omitted during BACE optimizations.

Standard Reports

BACE ships with a large number of standard reports. These reports can be applied to most processed scenarios.

Standard reports include the following:

- Capex by Cost Category-Capital Expenditures by Cost Category
- Cost & Revenue-Time Flow-Cost and Revenue over time
- Cost-Summary-Summarized Cost Information
- Customers-Customer Type-Customer/Product Demographic Information
- Line Quantity-Customer Type-Customer/Line Demographic Information
- Negative Margin Markets-Data on Negative Margin Markets within study area
- Net Income-Per Line-An estimated per line net income report
- Net Income-Total-An estimated total net income report
- NPV-CEA UNE Zone-Net Present Value by UNE Zones in CEAs
- Revenue-CEA UNE Zone-Re venue by UNE Zones in CEAs



System Options

BACE has several system options that you should be aware of.

Changing Your Password

BACE allows you to manually change your password. You can change your password with the following procedure.

1. From the **System** option of the menu bar, select **Change Password.**

2. Enter the new password, exactly as you wish it to be recorded. You must enter the password in both the **New** and **Repeat Password**boxes. Password entry is case sensitive.

Password Rules

BACE enforces the following password rules. If the password you entered does not comply with these rules, BACE will ask for a new password.

- Passwords shall be manually entered in order to log into any BellSouth computer asset.
- No password shall be used for longer than sixty days.
- Passwords shall be a minimum of six characters in length. System administrative and other special privileged user passwords should be a minimum of eight characters in length.
- Passwords shall contain at least one alpha character and at least one numeric character unless prevented by the computer asset.
- Passwords shall not contain a string of three or more identical characters, letters or numbers such as 777 or XXX.
- Passwords shall not contain a string of three or more ascending or descending numeric or alphabetic characters such as 123, XYZ.

- Passwords shall not contain a string of four or more characters of the same type, either alpha, numeric or special/punctuation characters.

BELLSOUTH TELECOMMUNICATIONS, INC

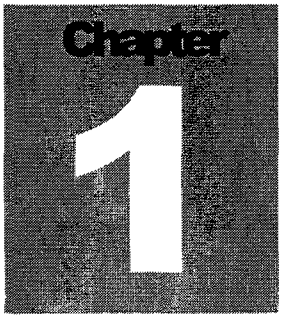
The BellSouth Analysis of Competitive Entry Model

Methodology Manual

DOCUMENTATION VERSION: 2.0
DISTRIBUTION VERSION: 2.0

A NOTE ABOUT INPUTS AND SETTINGS SHOWN IN THIS MANUAL
All inputs and system settings shown in this document are illustrative. They may or may not match values used in a study or proceeding. Nor, should they be construed to represent a view of any party in a proceeding.

Table of Contents



BellSouth Analysis of Competitive Entry (BACE)

BACE

BACE is a competitive entry business case model. Based on user inputs, which include expected product prices, product demand, and costs, BACE calculates the discounted cash flow over a ten-year period resulting from CLEC entry into specific geographic areas.

BACE's Role

BACE allows the user to assess whether lack of access to the incumbent local exchange carrier's (ILEC's) unbundled switch element (switch UNE) makes entry by a CLEC uneconomic. To do this the model estimates the net present value (NPV)[1] of the 10-year cash flows that would be generated by the core products of the CLEC.

The approach used by the model is much like that of a financial model used to develop a business case for entering the CLEC business. It evaluates the opportunities to generate revenue based upon marketplace factors (e.g., customers and prices) and the full array of costs that could be anticipated to enter and operate the business.

The model accounts for the following factors:

CLEC Size – recognizing that there are different sizes of CLECs, the model accounts for the key implications of the CLEC's size (e.g., impact on purchasing power, cost implications of outsourcing certain functions, etc.).

Customers – the model accounts for how many customers in total reside in the relevant territories, how many customers the CLEC might expect to serve (i.e., the CLEC market share), and the types of customers the CLEC will attract (e.g., what types and sizes of customers, and what products and services will they buy). It also accounts for how much customers will pay and the level of customer churn that may be experienced.

[1] The user can choose to include the terminal value of the CLEC's assets in the NPV value in addition to the 10-year cash flows.

Products – the model accounts for the typical products the CLEC might offer, how those products may be bundled, and the implications of bundling on prices and customer take rates.

Quantities – the model accounts for the quantities of products to be sold to those customers choosing CLEC service.

Pricing – the model develops initial prices based on user inputs, initial CLEC price discounts and product price changes over time.

Network Costs – the model accounts for the network infrastructure requirements specific to the markets, customer profiles, and product portfolios being modeled and how those network requirements might be met (e.g., lease or own).

Operational Costs – the model accounts for the nature and level of CLEC operating costs allowing for effects due to the size of the modeled CLEC.

Trends – the model accounts for the changes that might be experienced over a ten-year period (e.g., customer buying behavior trends, pricing trends, and cost trends).

Optimization – the model allows the user to not serve negative NPV products and markets. The user can control the degree to which a CLEC could/would identify unprofitable sub-markets and avoid service in such sub-markets.

Sensitivity of Assumptions – the model allows the user to create scenarios and analyze the impact of assumptions upon the financial metrics of impairment.

Within the components (and inputs) outlined above, BACE computes a) the CLEC market share achieved (i.e., percentage of products purchased by market segment, by market), b) the resulting revenue (including the impact of product bundling), and c) the network and operational costs required to serve the market (considering the implications of CLEC size).

The model allows the inputs and assumptions to change over a ten-year period as the CLEC grows, costs change, and as anticipated price trends are realized.

The results are presented in terms of the anticipated cash flows for the ten-year period and the associated net present value calculated from the user adjustable discount rate.

Regulatory Guidelines

BACE was developed to calculate whether CLEC entry is economic in the absence of the switching UNE as state regulators satisfy their obligations under the FCC's triennial review order (TRO).[2] Keep in mind however, the model does not provide a framework

[2] In Re Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers (First Report and Order on Remand and Further Notice of Proposed Rulemaking), FCC 03-36, released August, 21, 2003 (hereinafter TRO).

to determine whether either of the "triggers" described in the TRO are satisfied for a determination of no impairment.[3]

The basic elements of an impairment analysis tool were identified in the TRO. The following are some of the keys aspects the TRO describes as the requirements of an economic model for impairment determination (emphasis added).

Capable of granular analysis

§472 ..."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...(2) *insufficient granularity in their analyses."*

§485 All of these studies...strongly support the need for a *more granular analysis of impairment.* We have insufficient evidence in the record, however, to conduct this granular analysis. *Such an analysis would require complete information about UNE rates, retail rates, other revenue opportunities, wire center sizes, equipment costs, and other overhead and marketing costs.* ... That market-specific data is needed is indicated by the significant variation in the costs and revenues an efficient entrant is likely to face. For example, costs appear to vary significantly among locations and types of customers.

§495 ... Rather, state commissions must define each market on a *granular level*, and in doing so they must take into consideration the locations of customers actually being served (if any) by competitors, the *variation in factors affecting competitors' ability to serve each group of customers, and competitors' ability to target and serve specific markets* economically and efficiently using currently available technologies."

Based on efficient business model and network architecture

§517 ...Specifically, state commissions must determine whether entry is likely to be economic utilizing the *most efficient network architecture* available to an entrant...The analysis must be based on the *most efficient business model for entry rather than any particular carrier's business model.*

§495 ... competitors' ability to target and serve specific markets *economically and efficiently using currently available technologies.*

Provides a business case analysis

n. 1581... to evaluate the feasibility of self-deploying a switch, states should perform a *business case analysis* of providing local exchange service...cost factors listed should not be considered in isolation, but only in the context of a *broad business case analysis that examines all likely potential costs and revenues.*

Incorporates all likely revenues and costs

§519... 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*

[3] The triggers for a finding of no impairment involve a finding of three or more self provisioned CLECs in the market (see TRO paragraph 501), or when two or more providers offer wholesale switching within a market (see TRO paragraph 504).

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.*

TRO Appendix B – Final Rules, page 22, 51.319(d)(2)(iii)(B)(3) … Specifically, the state commission shall examine whether the *costs of migrating incumbent LEC loops to requesting telecommunications carriers' switches* or the *costs of backhauling* voice circuits to requesting telecommunications carriers' switches from the end offices serving their end users render entry uneconomic for requesting telecommunications carriers.

Uses NPV as the test of impairment

footnote. 260 … Stated in more technical terms, the condition [of a firm entering the market, and hence no-impairment] is *whether the net present value of the expected economic profit is positive.*

Has well-supported parameters

§472 …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…(4) *inadequate support for the parameters they employed.*

BACE Meets the TRO Guidelines

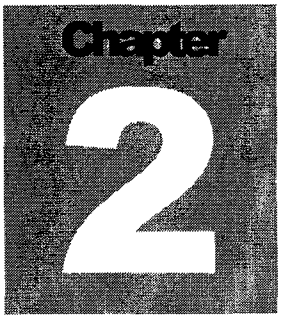
BACE was developed to identify whether CLEC entry is economic in the absence of the switching UNE. In creating BACE, BellSouth was keenly aware of the FCC's finding of prior modeling deficiencies and of the needs and requirements of the model in meeting the state commission's TRO implementation desires. As such, BACE:

1) Is granular in its approach. The model allows the user to input complete information about UNE rates, retail rates and other revenue opportunities specific to each wire center. BACE allows variations in product offerings and prices across five customer segments (residential and four business segments) and by customer-spend categories. The model provides for bundles of product and service offerings and price discounts. In addition, BACE identifies the specific operational and capital requirements of the CLEC in rolling out its network. Finally, part of the power of BACE is that the cost and revenue information is developed at the lowest level, thereby allowing the user to roll the results up to any geographic level. The current geographic levels of analysis include[4]:
    a. LATAs,
    b. Wire centers,
    c. MSAs Metropolitan Statistical Areas
    d. MCSAs Micropolitan Statistical Areas,

[4] BACE can be easily modified to include other geographic entities as long as the areas can be tied to wire centers.

e. CEAs (Component Economic Area),
f. UNE Zones, and
g. Any combination of the above.

2) BACE allows the user to provide inputs consistent with efficient CLEC entry. As such, the model allows for least-cost choices of architecture (e.g., EELs or collocation); concentrates traffic to take advantage of cost savings; determines whether DSL offerings are economic; determines whether entry into every wire center and/or LATA is efficient using a business case analysis approach.
3) BACE is quite simply, a business case model to determine if, how and where a CLEC should enter the marketplace.
4) BACE accounts for the major sources of CLEC revenues, including local service, vertical features, voice mail, long distance, and data services.
5) BACE allows the user to test impairment using NPV analysis of the cash flows.
6) Finally, BACE allows the user to document inputs within the scenarios.



Analyzing the Modeled Firm

BACE was designed to allow a granular analysis of economic/uneconomic CLEC entry in the absence of the switching UNE in a way generally familiar to members of the financial and investment community. BACE evaluates the CLEC entry business case by calculating discounted cash flows (i.e., by calculating a net present value of entry).

Characteristics of a Business Case

At its core, BACE is a business case model. In other words, BACE was designed to provide inputs, processes, and outputs that comport with considerations of a business case. This section will briefly address some of the attributes that must be part of any business case[5].

Standard Financial Measures

BACE provides output in terms of Net Present Value (NPV) of cash in-flows and out-flows. Displaying raw cash in-flows and out-flows as well as the NPV gives BACE the ability to produce results in terms consistent with the FCC's TRO.

Explicit, variable assumptions

Because a model is, by definition, an abstraction of the real world—BACE is based upon assumptions.

Many of these assumptions can be modified via user adjustable inputs and rules. Using the Edit Inputs process or the Wizard, the user is able to modify assumptions about the business case under study.

Clearly defined scope and problem boundaries

BACE's scope is limited to the telecommunication operations of the CLEC. For example, the modeled CLEC can offer long distance services, voice mail, switched access services, DSL, non-DSL business data service and local service.

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[5] Business Case Essentials: A Guide to Structure and Content, Marty J. Schmidt, MBA, PhD: A Solution Matrix, Ltd. White paper.

Through a defined cost, customer, product, and location hierarchy, the user is able to expand or limit the scope of operations. The reporting engine allows analysis along these hierarchies. Finally, revenue and expense are driven using accepted causative cost and revenue approaches.

Scenarios

In order to support sensitivity analysis, BACE allows the user to bind his or her assumptions together in the form of a scenario. This allows the inputs and outputs to be held in one place. Each scenario, in turn, represents either a new business case or a permutation of an existing business case.

Documented/Auditable Cost Model

BACE was explicitly designed to follow a rational business case model. Revenues, Expenses, Capital Investment, and Engineering assumptions are applied based upon algorithms developed by the BACE development team.

Financial Metrics

As noted, the FCC's TRO discusses relevant costs and revenues and notes the use of Net Present Value (NPV). The evaluation of a business case using cash inflows and outflows and Net Present Value became the most direct financial measure. This section will briefly describe NPV, its calculation and its relation to other financial measures.

Net Present Value

The Net Present Value of a stream of cash flows is the difference between the present value of the cash inflows and the present value of the cash outflows. In other words,

$$NPV = PV_{inflows} - PV_{outflows}$$

The Present Value (PV) of a cash flow is today's value of a cash inflow (or outflow) received (or paid) at some time in the future. Present Value takes into account the effects of the time value of money (which is reflected in the interest rate or discount rate). Present Value is calculated by applying the discount rate to the cash flow. In other words,

$$PV = FutureValue/(1+i)^t$$

Where i is the annual interest rate (discount rate) and t is the number of annual periods.[6]

The objective of NPV is to bring all negative and positive cash flows back to the same point in time. This allows comparison of different investment alternatives that involve cash flows at different points in time. By calculating NPVs, the relative economic attractiveness or unattractiveness of a series of cash flows occurring at different times in the future can be compared. This is why the use of NPV > 0 is common within business case assessments as is NPV(scenario 1) vs. NPV(scenario 2).

[6] Financial Management-Concepts and Applications-3rd edition. Ramesh K. S. Rao, Southwestern College Publishing, 1995.

BACE's use of NPV

BACE calculates cash inflows and outflows using a mid-year convention. Any cash transaction (e.g., an expenditure) that occurs during year 1, is assumed to occur, for present value purposes, at the mid point of the company fiscal year. (The exceptions are that initial start-up costs are assumed to occur at time zero and therefore require no adjustment to present value and that any terminal value occurs at the end of year 10.)[7] That is, if X cash flowed into the firm at any time during year 1, the Present Value of this cash flow (as of the start of year one) would be calculated as:

$$PV=X/(1+i)^{1-0.5}$$

Where i is the discount rate and the compounding period is 1 year less 0.5 year or 0.5 years (six months). The present value (as of the start of the first year) of a cash outlay X incurred any time during the second year is assumed to $= X/(1+i)^{2-0.5} = X/(1+i)^{1.5}$. The mid-year convention simplifies the present value calculations (as compared to monthly or daily calculations).

Cash Flow Modeling

BACE focuses on discounted cash flows. For ease of discussion, the term "cost" will be used to capture cash outflows. Also, to be clear, "cost" here refers to the cash out-flows of the CLEC, not the cost to the ILEC from which the CLEC may purchase collocation space or unbundled network elements.

The BACE cash flow modeling process embraces the familiar concept in telecommunications incremental costs of "cost causation." That is, BACE identifies the relevant investments, operating expenditures, and customer driven revenues that result from CLEC entry and operation.

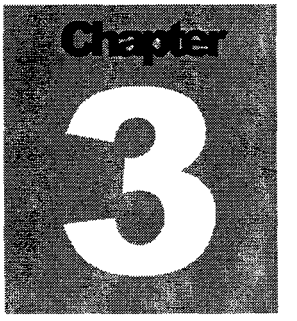
The importance of understanding what causes a cash in-flow or out-flow is the reason why BACE was designed with "filter fields." Filter fields help BACE identify which specific circumstances trigger a cash flow (i.e., what causes each cost). These triggers are referred to as drivers.

BACE cash flows are caused by (driven by) the following factors: 1) the existence of the CLEC in total (certain of the sales general and administrative, SG&A, common-like costs); 2) the existence of CLEC service within a geographic area (e.g., the placement of a switch for each LATA; 3) the acquisition of a customer; 4) the initial choice of a product or service by a customer (e.g., the customer chooses to take DSL); 5) the volumes of products and services used; 6) the disconnection of a customer (if the customer does disconnect); and 7) composite triggers as the total number of customers or the total volume of products or services within an area can exhaust the usable capacity of equipment, causing the placement of an expansion in equipment.

[7] The replacement of startup assets, e.g., billing software systems, are treated in the subsequent year in which they occur and do require a present value calculation corresponding to the year in which the subsequent replacement occurs.

Each cash out flow is tracked according to the factor that drives it.

The remainder of this manual will discuss how BACE models cash flow from revenues as well as outflows from expenses.



Modeling the Costs and Revenues of the CLEC

This chapter will explore how BACE models the Costs and Revenues of the CLEC. There are three main questions to be answered. First, from a financial perspective, what happens within BACE's processing engine? Second from a technical standpoint, how is BACE designed and implemented, and which financial process corresponds to each BACE process? And third, what is BACE's customer, location and product hierarchy?

The Cash Flows of the CLEC

For ease of discussion, this manual will generally use the term "product" to refer to CLEC products and services. BACE starts from the initial point that some[8] products have a price associated with them. BACE then develops a price for products or groups of products (bundles) for each customer segment. This is the task of the "P-Process."

After the price has been established, a quantity demanded for each service or group of services in each wire center must be calculated. In this document, "demand" will generally be used to refer to the quantity demanded and sold. This is the task of the Q-Process.

Knowing the Price (P) and Quantity Demanded (Q) of each service or group of services, BACE can derive the total Revenue (P*Q) by product by location, and customer segment. Calculating the Revenue is the task of the "R-Process."

Knowing the Gross Revenue available to the firm represents the total cash inflow for the period.

Cash outflows are calculated in the Operations and Network Process (ON-Process). This process is dependent upon the outputs of the P, Q, and R processes. The O portion of the ON-Process derives those expenses that are operationally associated with the firm. For example Sales, General and Administrative (SG&A), is an operational expense.

[8] Not all "products" within BACE have to have associated revenue. For example, if the user decides that non-recurring or installation costs are not charged, the price can be set to zero. This will result in a zero revenue product.

The N portion of the ON-Process derives those outflows necessary to create a network sufficient to handle the voice and data traffic identified in the Quantity Process. In other words, the cash expenditures involved with setting up, maintaining and growing the telecommunications network.

Optimizations in BACE

BACE provides for six types of optimization processes. The optimization algorithms search for specific activities that yield a negative net present value (i.e., the present value of the relevant revenues less the relevant costs is negative), and then eliminate that activity. The six activities that can be optimized are: 1) the use of EELs and/or full end-office collocation; 2) the provision of DSL within the wire center (not user adjustable); 3) implement or eliminate CLEC service in total for a wire center; 4) implement or eliminate CLEC service in total for Mass Market customers in a market; 5) implement or eliminate CLEC service in total for all customers in a market; and 6) implement or eliminate CLEC service in total for a LATA.

BACE's Architecture

BACE was designed to give the user the necessary control to create a robust, realistic business case. The model architecture is illustrated in the figure below.

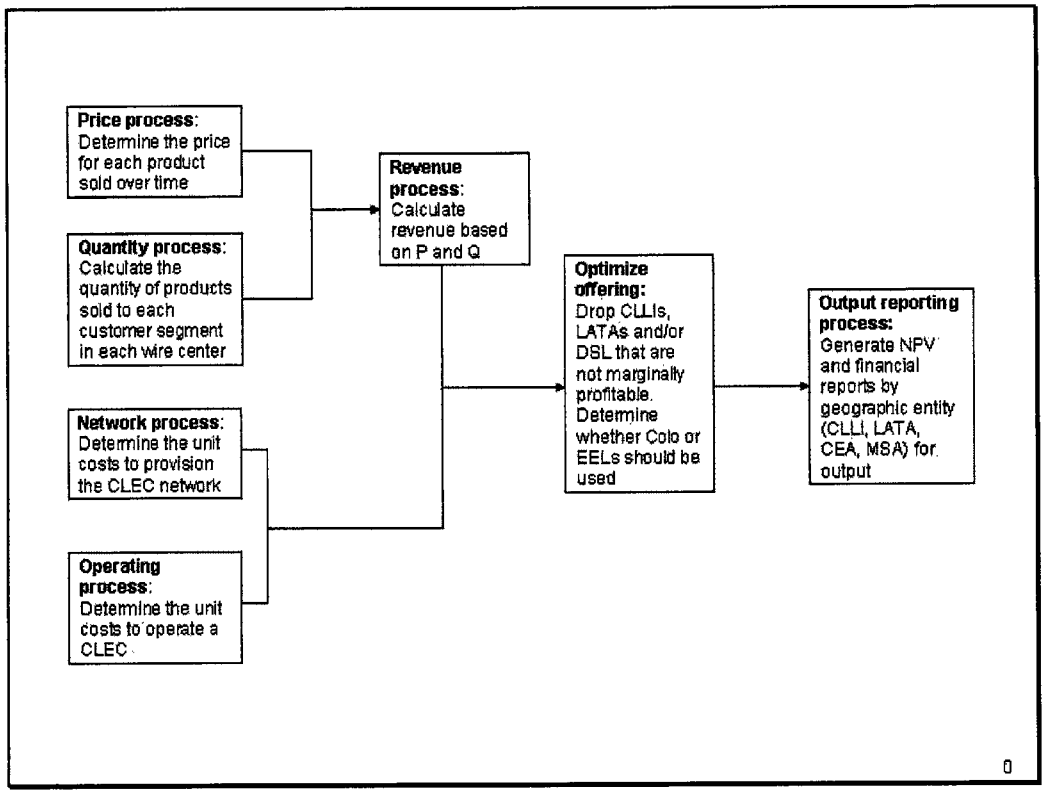


Figure 1–BACE Architecture

BACE Design Attributes

BACE has the following core design attributes.

Familiar

Rather than a complicated text-driven mathematical application, BACE uses standard Microsoft Windows® GUI (Graphical User Interface) conventions. Inputs are manipulated in a tree view; processing and reporting can be done through a simple wizard format. BACE is a very complex model, but the interface was designed to be user friendly and familiar.

Open

BACE was designed to use Microsoft Access as the primary storage and processing database. All data is stored in Access format. Inputs can be reviewed, intermediate tables can be inspected using desktop tools most financial professionals are comfortable with.

The model itself was written in Microsoft Visual Basic® 6.0 SP5. The Visual Basic language is easy to follow and the Structured Query Language code necessary to perform database manipulations is open and understandable.

Granular

BACE was designed to allow granular control. Rather than allowing access to only a few variables, the user can modify granular inputs like the product price per wire center. Or, the user can modify how the CLEC operates-like allowing Colo versus EEL deployment. The user can control what items of equipment are triggered by location placement or use by a particular type of customer/service. Finally, the user can use the reporting engine to view NPV along a geographic, product or cost hierarchy.

Scenario Based

In a business case, understanding the impact of assumptions is particularly important. BACE uses a scenario structure to allow the user to identify the inputs and outputs that correspond with one another. By maintaining a separate inputs database and reporting structure for each scenario, BACE simplifies What-If analysis and sensitivity tests.

Pragmatically Constructed

BACE processing mimics the steps described in the first section of this chapter. For example, while the P-Process is running, Prices are being determined. While Q is running, the quantity of products sold is being determined.

Further, the cost and product hierarchies mimic the organization of an actual CLEC. These hierarchies assist in not only accurately driving costs and revenues, but they assist in creating reports.

Hierarchies

BACE uses three sets of hierarchies to drive cash flow calculations and reporting. Hierarchies are necessary to allow the user to define—at a particular level—specifically how a cost or revenue is triggered.

For example, because certain products may only be sold to a given customer segment (a level in the customer hierarchy, such as a non-DSL business data service) revenues are attributable to a given customer segment. Further, if the analysis is only concerned with a particular LATA, BACE must be able to track the attributable revenue to that customer segment in those wire centers within the LATA. Because the sale of these products trigger the need to place equipment (or drive other cash outflows), costs are triggered which are attributable to the customer segment, product sold and wire center under study. The use of hierarchies allows cost and revenue drivers to be set and output structured in a way as to make the cost and revenue implications of these actions clear and traceable to levels at which reporting will occur.

Location Hierarchy

The location hierarchy is used to specify from broad levels of geography to narrow levels. The reason the location hierarchy is important is that certain costs are location dependent, e.g., a switch placed in a LATA. The location hierarchy is used to describe specifically those locations for which the existence of CLEC service triggers a certain cost. An example of the BACE location hierarchy is shown below. Please note how the geographic area gets smaller from the Location Family to the Element.

Location Family (LocFam)	Location Area (LocArea)	Location Center (LocCenter)	Element
BellSouth	NC (state)	250 (LATA Code)	GTWDNCMA

Table 1–Location Hierarchy

Note: the hierarchies are used to not only distinguish amongst costs, but also revenue, traffic/weightings (i.e., probability of occurrence is different in different states).

Customer Hierarchy

The customer hierarchy also allows the user to trigger certain costs or revenues based upon specific attributes of customer classes or segments. For example certain costs should be attributed a business customer (equipment to provide DS1 type service rather than DSL) but not a residential customer. An example is below.

Customer Family (CustFam)	Customer Area (CustArea)	Customer Center (CustCntr)	Customer Element (CustElem)
Res	Quintile	Quintile1	NONE
Res	Quintile	Quintile2	NONE

Table 2–Customer Hierarchy

Product Hierarchy

The product hierarchy is similarly designed. It allows granular identification of products. An example is below.

Product Family (ProdFam)	Product Area (ProdArea)	Product Center (ProdCntr)	Product Element (ProdElem)
PSTN	Local	Account	Subscription
PSTN	Local	Line	Subscription
PSTN	Local	Usage	Flat

Table 3–Product Hierarchy

Special Table Values

BACE uses three special values to populate some hierarchy fields. In many cases the hierarchy values are used to join or link some attributes across common data elements (e.g. join overall demand and CLEC market share to the number of products sold in an wire center). If BACE was to be populated with all possible value to accommodate these joins, inputs would multiply exponentially.

Therefore, several special field values were added into BACE.

The Wildcard

BACE uses a % sign to indicate a wildcard field. A wildcard field allows the join[9] to occur on any value in this field. For example if the user were trying to trigger a cost that would apply only to residential customers, regardless of the Customer Center, and Customer Element, the user could populate the Customer Hierarchy as:

Customer Family (CustFam)	Customer Area (CustArea)	Customer Center (CustCntr)	Customer Element (CustElem)
Res	%	%	%

Table 4—Wildcard Values

Else

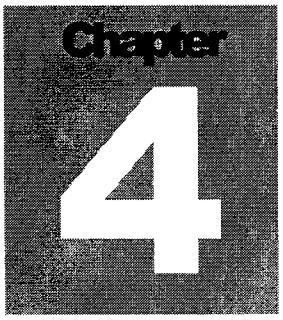
The Else value is similar to a wildcard, but it acts more as a record expansion. An Else in a table directs BACE to expand this record with all possible values for the field that has an Else value. The distinction between an Else value and a wildcard value is that an Else value will duplicate a record across all possible field values except where the expansion of the record creates a duplication in the source table (e.g., a user may specify a unique value for a specific state, while the Else value will cover all other). The Else value is used mainly on the product hierarchy. Because it programmatically expands a record across many possible solutions, Else logic has a processing time implication. The more Else

[9] A "join" is a term specific to Structured Query Language. A join describes how tables of information are linked.

logic implemented, the slower overall processing. Else logic is not recommended for use in the network tables.

Else values populate many of the product tables. In the **Baseline Product Demad** table, the Else in the UNEZone column means that this record is applicable over all possible UNEZones. When BACE processes this table, it will create a new record for each distinct entry in the UNE Zone table.

None
The None value signifies that there is no value for this level of the hierarchy.



CLEC Study Properties Table

The **CLEC Study Properties** table is a core table within BACE. It provides the user the ability to establish characteristics of the CLEC to be examined and of the BACE analyses in general.

CLEC Study Properties Input Structure

The table mainly contains toggles and values that direct the system if, when and how to perform various analyses within BACE. The table is organized into 6 columns, each of which is described below.

- Property – the name of the BACE variable used within the analysis is identified in this column.
- Value – user-adjustable value of each variable is entered in this column. Where the system requires one of a set of pre-identified values, the user will select from a pull down menu or list box.
- Description – provides some explanation of the property and, when appropriate, the format of the entry.
- Source – user-adjustable field that can help the user in documenting the source of the values entered.
- Notes – user-adjustable field providing additional space for variable documentation.

The entries in the **CLEC Study Properties** table serve several purposes within BACE and can be thought of in several ways.

First, several inputs act as filters identifying characteristics of the CLEC's operations or network which then determine which costs are used within the analyses. The filter variables generally interact with user adjustable inputs in other BACE tables. Table variables, listed in the Property column, that are filters include:

- **AllowColo**
- **AllowEELs**
- **CLECType**
- **DS1ToDS0XOver**
- **IncludeTerminalValue**
- **State;**
- **TaxTreatmentForLoss; and,**
- **UseSPAorUNET**

Second, some of the fields in this table act as Descriptors. Descriptors have no impact on the analysis or results but exist for documentation and information purposes only. All of the data entered in the Description, Source, and Notes columns are examples of Descriptor inputs.

Third, many of the variables reflect factors that are used within the calculations and have a numerical impact on the final result. The following variables are Factors:

- **AccessToLocalMOUFactor;**
- **BSTAsPctOfScopeOfOperations;**
- **EquityPct;**
- **EquityRate;**
- **FedTaxRate;**
- **PreTaxCostOfCapital;**
- **PurchasePower;**
- **StateTaxRate;**
- **TerminalValueMultiplier; and**
- **Year1.**

Finally, there are variables that are optimization toggles. These include:

- **AllowColo**
- **AllowEELs**
- **FilterNegativeMarginCLLIs**
- **FilterNegativeMarginMassMarketInMarkets;**
- **FilterNegativeMarginMarkets; and,**
- **FilterNegativeMarginLATAs**

Note that **AllowColo** and **AllowEELs** are identified as both filter variables and optimization toggles. This, along with a description of each variable, will be explained below.

CLEC Study Properties Table Inputs

The following section will describe the variables for each Property entry in the **CLEC Study Properties** table.

AccessToLocalMOUFactor

Since local minutes are not routinely measured and captured, it is necessary to use another source of measured minutes as a platform from which to develop local minutes of use. Access minutes are routinely measured for billing purposes, so these minutes are multiplied by the **AccessToLocalMOUFactor** to generate the number of local minutes.

AllowColo and AllowEELs

Based on the wholesale services offered by BellSouth, the CLEC has multiple options for how they establish their wire center network architecture. To serve customers connected to a BellSouth end office the CLEC can use EELs and collocate at a distant wire center, or collocate at the end office as well as a distant wire center (e.g., BellSouth Access tandem). The **CLEC Study Properties** table has toggles for the user to identify whether the CLEC will:

a) establish collocation space at each end office (**AllowColo** = "Y" and **AllowEELs** ="N");

b) use EELs and not collocate at any end offices (**AllowColo** = "N" and **AllowEELs** ="Y"); or,

c) allow BACE to determine the most economic approach for each end office (**AllowColo** = "Y" and **AllowEELs**="Y").

Further, these fields act to filter the cost records in the **Network Cost Input** table. Network cost records with **COLOOrEEL** = COLO will be included in the analysis if **AllowCOLO** = Y. Cost items that have **COLOOrEEL** = EEL will be included in the analysis if **AllowEEL** = Y. Note: If **COLOOrEEL** = ALL for a cost record identified in the **Network Cost Input** table, the cost record is not impacted by the collocation or EEL network architecture. Thus it will be included in all cases.

BookingConvention

The BookingConvention is fixed to mid-year.

BSTAsPctOfScopeOfOperations

The **BSTAsPctOfScopeOfOperations** percentage accounts for the operational scope of CLECs that serve customers outside of the BellSouth state being analyzed. Appropriate values are between 0 and 100 (inclusive) and represent the state specific percentage of the CLECs total coverage territory. The value entered in the **CLEC Study Properties** table is applied to each cost record with **ScopeCat** = Y.

CLECType

The **CLECType** variable has legitimate entries of Small, Medium and Large and represents the size of the CLEC being analyzed. This field works as a filter to ensure that BACE includes only those cost records which meet the user criteria entered in the **CLEC Study Properties**table (and those cost records with **CLECType**= ALL).

DS1ToDS0Xover

The user can select values of 4 or 9 for the **DS1ToDS0Xover**field and represents whether the CLEC begins using DS1s to serve customers with 4 or 9 lines. Possible entries for the analogous input in the **Network Cost Input**table are 4, 9 and ALL. If a cost record has an entry of ALL it is used for both crossover scenarios, otherwise BACE will include only those cost records that match the user input from the **CLEC Study Properties**table.

EquityPct

The user enters the CLEC's percentage of total capital that is equity. The value should be entered in decimal form (0-1), e.g., 0.6 represents a 60%/40% equity to debt ratio.

EquityRate

The user enters the CLEC's cost of equity and the value should be entered in decimal form (0-1), e.g., an entry of 0.213 represents a cost of equity of 21.3%.

FedTaxRate

The user enters the CLEC's effective Federal tax rate and the value should be entered in decimal form (0-1), e.g., 0.35 represents a tax rate of 35%.

FilterNegativeMarginCLLIs

The **FilterNegativeMarginCLLIs**optimization toggle allows the user to determine if BACE will automatically remove wire centers that have a negative NPV. If this toggle is set to "Y", BACE examines the direct costs (and wire center-specific indirect costs) and revenues for each wire center to determine if it provides a positive contribution to the overall operation of the CLEC, i.e., positive NPV, over the 10-year study time frame. If serving customers within any wire center have a negative NPV, BACE assumes that the CLEC would not offer services in that wire center and thus the costs and revenues for that wire center are removed from the overall analysis. If the **FilterNegativeMarginCLLIs**toggle is set to N, all wire centers remain in the analysis.

FilterNegativeMarginMassMarketInMarket

The **FilterNegativeMarginMassMarketInMarket**optimization toggle allows the user to determine if BACE will automatically remove Mass Market customers from Markets in which the Mass Market customers have a negative NPV. If this toggle is set to "Y",

BACE examines the aggregate direct costs and revenues for Mass Market customers for the positive contribution-wire centers (if the **FilterNegativeMarginCLLIs** is set to Y, all wire centers otherwise) within each market to determine if those customers provide a positive contribution to the CLEC, i.e., positive Mass Market NPV within each market, over the 10-year study time frame. If serving Mass Market customers within any Market has a negative NPV, BACE assumes that the CLEC would not offer services to these customers and thus the costs and revenues are removed from the overall analysis. If the **FilterNegativeMarginMassMarketInMarkets** toggle is set to N, all remaining Mass Market customers remain in the analysis.

FilterNegativeMarginMarket

The **FilterNegativeMarginMarkets** optimization toggle allows the user to determine if BACE will automatically remove Markets that have a negative NPV. If this toggle is set to "Y", BACE examines the aggregate direct costs (and wire center-specific indirect costs) and revenues for all remaining customers in the market (post user specified testing resulting from the use of **FilterNegativeMarginCLLIs** and **FilterNegativeMarginMassMarketInMarkets**) to determine if the customers provide a positive contribution to the CLEC, i.e., positive NPV within each market, over the 10-year study time frame. If serving customers within any Market has a negative NPV, BACE assumes that the CLEC would not offer services to these customers and thus the costs and revenues are removed from the overall analysis. If the **FilterNegativeMarginMarkets** toggle is set to N, all remaining Market customers remain in the analysis.

FilterNegativeMarginLATAs

The **FilterNegativeMarginLATAs** optimization toggle allows the user to determine if BACE will automatically remove LATAs that have a negative NPV. If this toggle is set to "Y", BACE examines the aggregate direct costs (and LATA-specific indirect costs) and revenues for the positive contribution customers within each LATA (post user specified testing resulting from the use of **FilterNegativeMarginCLLIs, FilterNegativeMarginMassMarketInMarkets,** and **FilterNegativeMrginMarkets**) to determine if the LATA overall provides a positive contribution to the CLEC, i.e., positive LATA NPV, over the 10-year study time frame. If serving customers within any LATA has a negative NPV, BACE assumes that the CLEC would not offer services in that LATA and thus the costs and revenues are removed from the overall analysis. If the **FilterNegativeMarginLATAs** toggle is set to N, all remaining LATA customers remain in the analysis.

IncludeTerminalValue

The user can either have the model include or exclude a terminal value in the derivation of the model's NPV. If the user sets **IncludeTerminalValue** = "Y" then BACE will include a multiple of the net book value of the assets in the NPV calculation. The model assumes the CLEC business, including its assets, is sold (e.g., as an ongoing business) at the end of year 10 for a value equal to the net book value of the remaining assets. The

net book value is discounted appropriately. If the user sets **IncludeTerminalValue** = "N" then BACE will not include any terminal value in the NPV. (Note: The multiple used is the value of the **TerminalValueMultiplier)**

PreTaxCostOfCapital

The user enters the CLEC's pre tax weighted average cost of capital (WACC) in decimal form (0-1), e.g., entry of 0.15 represents a WACC = 15%.

PurchasePower

The **PurchasePower** factor entered in the **CLEC Study Properties** table represents the CLEC's purchasing power relative to BellSouth. To the extent that a CLEC has the same purchasing power as BellSouth, the **PurchasePower** factor should be set to 100 (e.g., the CLECs PurchasePower as a percentage of BellSouth's Purchasing Power. For CLECs that have larger purchasing volumes than BellSouth and may be able to obtain lower pricing from some vendors, the **PurchasePower** factor should be set to less than 100. CLECs with less purchasing power may have a **PurchasePower** factor greater than 100. For **Network Cost Input** table records with the **AffectedByPurchasePower** toggle set to Y, the **Amount** will be multiplied by the **PurchasePower** factor.

State

The user selects one of the nine BellSouth regional states from the drop down list box provided. The selection of a state acts as a filter to the extent that the database may include data for multiple states.

StateTaxRate

The user enters the CLEC's effective State tax rate net of the Federal benefit. The value should be entered in decimal form (0-1), e.g., 0.05 represents a tax rate of 5%.

TaxTreatmentForLoss

The **TaxTreatmentForLoss** toggle allows the user to determine how taxes on tax net income losses are handled. If the user sets **TaxTreatmentForLoss = "CarryOver"** any tax income net loss in any year is rolled into the succeeding year. The tax in the current year is then set to zero. The tax in the following year is then calculated based on the current year tax income and the rollover loss from the prior year. If the user sets **TaxTreatmentForLoss = "CurrentYearCredit"** the user is assuming that the loss is used as an offset in the current year against other CLEC operating profit (from other business ventures). As such, it is a contra-expense in the year of the tax income loss.

TerminalValueMultiplier

The **TerminalValueMultiplier** is used in conjunction with the toggle **IncludeTerminalValue.** If the user sets **IncludeTerminalValue = "Y"** the

TerminalValueMultiplier is multiplied by the present value of the net book of the assets that is added into the NPV.

UseSPAorUNET

The **UseSPAorUNET** toggle in the **CLEC Study Properties** table allows the user to select if the CLEC network should use Special Access (SPA) or Unbundled Network Element Dedicated Transport (UNET) for the transport facilities between the CLEC collocation sites at the BST end offices and their collocation site at the BST Access Tandem. The **CLEC Study Properties** table toggle works in conjunction with the **SpAOrUNETTransport** field in the **Network Cost Input** table as a filter to include or exclude a cost record depending on the entry.

Year1

In the **Year1** field of the **CLEC Study Properties** table, the user enters the first year of the ten-year period to be analyzed within BACE. The entry in the **Year1** field can be no more than 20 years beyond the **FirstYear** date identified in the **Cost Trends** table.

Optimization Steps

The BACE user controls how the model optimizes the output based on user inputs in the **CLEC Study Properties** table. As noted above, there are 6 variables that guide the optimization:

- **AllowColo**
- **AllowEELs**
- **FilterNegativeMarginCLLIs**
- **FilterNegativeMarginMassMarketInMarkets;**
- **FilterNegativeMarginMarkets;** and,
- **FilterNegativeMarginLATAs**

With the toggles set, BACE approaches optimization in the following stages:

DSL deployment is first determined. This is a non-user adjustable optimization. Within each wire center, BACE tests whether the DSL present value of 10 years of revenue exceeds the DSL present value of 10 years of direct costs. If the PV revenue does not exceed PV costs, DSL is assumed to be not deployed from the wire center.

EELs or COLO engineering is then decided for each wire center (**AllowColo** = Y and **AllowEELs** = Y). This determination includes the positive value of DSL deployment against the COLO costs, since the model assumes that DSL can only be deployed with a COLO approach.

Wire centers with a negative margin are then removed (**FilterNegativeMarginCLLIs** Y). If a wire center has a negative NPV, all revenues and costs for the wire center are removed.

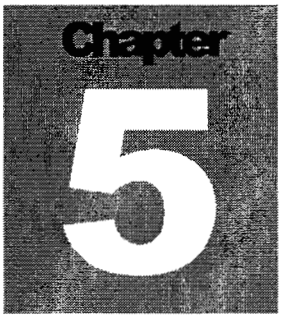
Mass Market customer with a negative margin within a market are then removed (**FilterNegativeMarginMassMarketInMarkets = Y**
With the MassMarket customers removed from various wire centers, the economics of EELs versus COLO may change. Therefore, the model re-tests each wire center to determine whether COLO or EELs should be used in each wire center.

Next, Markets with a negative margin are removed (**FilterNegativeMarginMarket** = Y).

Finally, BACE tests the remaining customers within a LATA to determine if the entire LATA should be removed (**FilterNegativeMarginLATAs** Y).

The end result of the optimization should be the selection of the appropriate CLEC values in a state for:

- Wire center engineering;
- Served customer segments; and
- Operating footprint.



CLEC Products, Price, Quantity, & Revenue Processes

BACE calculates the present value of cash outflows (costs) and cash inflows (revenues). In order to generate revenues, BACE identifies CLEC products, prices for the products, and quantities sold of the products for each year of a ten-year period. BACE uses six main product classifications: 1) Long distance services; 2) voice mail; 3) switched access services (payments by long distance/inter-exchange carriers to terminate local calls to CLEC customers); 4) DSL (standard high-speed connection); 5) non-DSL business data service; and 6) Local (this includes local access, local usage, subscriber line charge (SLC), directory assistance (DA)/operator services, and vertical features other than voice mail).[10] BACE represents the great majority of services that are likely to be offered but not the absolute scope of services that might be offered (e.g., video is not included).

CLEC prices for these six products as well as prices for CLEC bundles of these products are developed by customer segment, and customer-spend category by year.

BACE uses one residential segment and four business segments: 1) small office/home office (SOHO); 2) small-sized business (SME/A); 3) medium-sized business (SME/B); and 4) large-sized business (SME/C). Each segment is further divided into categories based on the amount of customer spending (spend bands). The residential segment is divided into five spend bands (quintiles) with an equal number of customers in each. Each of the four business segments is divided into three spend bands (high spend, medium spend, and low spend) with an equal number of customers in each. Since the spend bands are determined at the state level, each wire center will contain a unique profile and count of the customer segment/spend data. These segments and spend bands allow the user to vary pricing and penetration (and implicitly, marketing strategies) at a granular level. Quantities of individual CLEC products and CLEC bundles of products are also developed by customer segment and customer value, by year. CLEC

[10] BACE allows the user to include separate prices, quantities, and revenues for directory assistance (DA) services, operator services (OS), and line maintenance if the user has the relevant values for these services.

revenues are developed simply as the multiplication of product price by the corresponding product quantity.

The Price Process

As briefly discussed in Chapter 3, the Price Process (P-Process) derives the market prices for each of the six main products and product bundles offered by the CLEC, by customer segment, by year.

The challenge in the P-Process is to find not only the per-unit price for each individual product sold, but also to account for the implied price of individual products sold as components within bundles. In BACE, a bundle is a group of products or services that are sold together as a single unit. The user defines each bundle and its component products in the Bundles Table.. In order to generate inputs for BACE's Revenue Process (R-Process), implied "prices" for each product/component of a bundle are imputed and stored. This implied or imputed price approach for bundled product/components allows for ease of revenue calculation and reporting of revenues at distinct levels along the location and customer hierarchies.

P-Process Inputs

Several tables provide input to the Price Process. The tables and their key input fields are described below. When reviewing the tables, please note how the customer, location and product hierarchies are used to determine how specific price records are applied. Also note, that the hierarchies are critical in triggering the use of the appropriate prices within this multi-step process. The following tables are used in the P-Process.

Table Bundle Price Curves - This table defines the price trend (expressed as a decimal) per year for each product bundle over the ten-year study. This will capture any expected bundle price increase or decreases over time. (Note that in BACE, the term "curve" will be used to reflect changes in values over time, by year, during the 10-year modeling period).

Table Baseline Bundle Price - This table defines the initial bundle prices offered to each customer segment in a defined geographic area.

Table Baseline Product Price - This table defines the initial prices of *á la carte* products by geographic area. The values in this table can be thought of as representing initial standard market prices since the user can apply a CLEC discount to these prices (i.e., the market entry discount to increase market share).

Table Product Price Curves – This table defines the price trend (expressed as a decimal) per year for each product over the ten-year study. The values in this table will capture any increase or decrease in product prices over time.

Table CLEC Baseline Price Discount - This table defines the initial prices of individual bundle products by geographic area.

P-Process Methods

The first task is to create the bundle price profile over time. This is done by multiplying the initial bundle price (**Baseline Bundle Price**by the bundle price curves (**Bundle Price Curves**table.). The Bundle Price Curves table reflects changes in bundle prices over time. (Indeed, in BACE, the term "curve" is used to denote changing values over time) This task calculates a bundle price per bundle per year for every year, for each relevant market.

The second task is to develop the initial discounted price for each product by applying the CLEC pricing discount to the Baseline Product Price. This task discounts current baseline market-like prices for user-adjusted CLEC discount levels. In essence, it creates an initial discounted price per product by multiplying the baseline product price by the CLEC product discount (from table **CLEC baselineProduct**discount) where records match on the product hierarchy.

The third task is to calculate the CLEC product price profile over time. This is done by multiplying the initial discounted product price by the CLEC price curves in the **Product Price Curves**table. This leads to a calculation of the discounted CLEC *á la carte* product price each year.

Fourth, using the *á la carte* product price, these data are joined with the **Bundle** table to find the sum of *á la carte* prices in a given bundle in a given area by year. This shows the price that would exist if the bundle were sold at list or retail price for each of the individual components (i.e., at 'á la carte' prices).

Fifth, bundle adjustment factors are determined for each product in each market. By comparing the sum of *á la carte* prices (for a given customer bundle in a given area) with the actual bundle price for the same area and customer group, a retail price to bundle price adjustment factor can be calculated. The user has an option to exclude certain products in each bundle from this bundle discount calculation through the **IncludedInDiscount**field.

The sixth task is to determine the implied or imputed discount off of the *á la carte* product prices for each product (this is controlled by the user as noted in the prior paragraph) within the bundles. This is accomplished by multiplying bundle adjustment factors for each bundle by the á la carte prices for each bundle component. As noted, the user has the option of excluding product components from this implied discounting process. Alternatively, the user could assume only toll products should receive the discount by adjusting the **IncludeInDiscount** field for only toll products within the bundle definition.

This calculation of implied or imputed prices for products within a bundle does not affect the NPV (vis-à-vis a calculation with bundle prices only). However, this assumption allows for greater ease in modeling (in the P, Q, and R processes) and reviewing model results at various levels along the product, customer and location hierarchies.

At this stage, BACE has determined the per unit product price (or implied price) for each individual product offered *á la* carte, and within each bundle by all levels of location and customer hierarchy.

The final step is to append these product prices into the BACE processing master pricing table, PMaster. All prices that were established on an *á la carte* basis have "á la carte " appended into the bundle field.

The diagram below summarizes the major tasks of the Price Process.

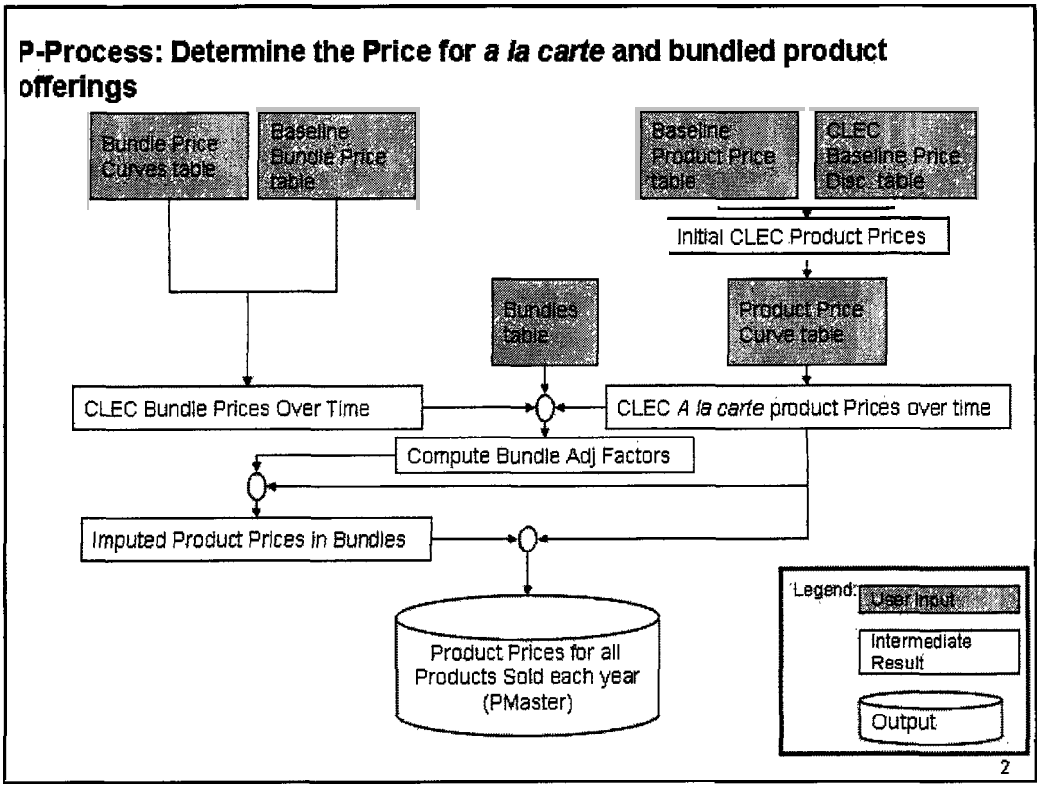


Figure 2--BACE P-Process

The Quantity Process

As discussed in Chapter 3, the Quantity Process (Q-Process) derives the quantity demanded/sold for each product and service offered by the CLEC. (The terms "demand" and "quantity demanded" will be used to refer to quantities that are demanded and actually sold.)

Calculating the quantity demanded of CLEC products takes into account customer segment demographics, anticipated CLEC market share, year of product rollout, and anticipated customer churn (disconnects).

Q-Process Inputs

BACE relies on external market demographics. These data are provided in two input tables. Each table contains information on customer and wire center profiles.

Exchange Info – The **Exchange Information** table profiles each BellSouth wire center. The table describes each wire center in terms of its membership in various geographic zones (LATA, CEA, BellSouth UNE Zones, etc). The airline distance from the BellSouth end office to the primary BellSouth access tandem within the corresponding LATA is also provided.

Exchange Demographics – The **Exchange Demographics** table profiles the customer population of each wire center. The wire center population is divided into residence and four business segments described earlier. This segmentation supports granular demand, pricing, market share considerations, and revenue analysis

Beyond these demographics tables, users provide additional input in the following tables.

CLEC Product Profiles - This table allows the user to indicate which products are offered by the CLEC and within what study year the product is first offered. Beyond the first year, the user can also input the product's last offering year.

Baseline Demand - The **Baseline Demand** table describes the expected initial demand for products and services offered by the CLEC.

Demand Curves - The **Demand Curves** table describes the total anticipated market demand change for each product by customer segment, by customer-spend category, by year for study years 2 through 10.

Penetration Curves For Products - This table describes the anticipated CLEC market share for each product by customer type over the ten-year study horizon. This table relies upon user adjustable inputs, and also allows the user to tie product penetration to DSL Addressability.

Churn - This table allows the user to describe the annual churn for each customer grouping for product offered by the CLEC. For BACE, **Churn** is described in terms of disconnects each year by product.

Bundles - The **Bundles** table describes those products and services that are sold within each bundle.

CLEC Profile Bundle - This table allows the user to indicate which bundles are offered by the CLEC and within what study year the bundle is first offered. Beyond the first year, the user can also input the bundle's ending year.

Penetration Curves For Bundles - This table allows the user to determine the proportion of CLEC product sales that occur via bundles, by year, by customer segment and customer-spend category, over the ten-year study horizon. For example, a penetration

rate of .5 indicates that 50% of the customers of the CLEC for a particular customer segment subscribe to the CLEC services through bundles.

Market Growth – This table allow the user to indicate how the current customer base will grow over time. This represents the growth of population and businesses over time.

Q-Process Methods

Given the contents of the demographics and user input tables, BACE performs ten key Q-process tasks. The first six tasks are related to the calculation of the number of customers subscribing to products, by type and location, the CLEC will serve over time. A key concept to understand is that there is a CLEC market penetration of *customers* and then within those customers a market penetration of the CLEC *products*. For example, a CLEC may sign up a customer that takes local service and DSL, but chooses a different carrier for long distance services.

First, BACE develops the CLEC customer penetration for each product on a percentage basis. This data is contained in the **Penetration Curves for Products** table. This data is adjusted to match the first year the CLEC offers each product. This is done by extracting from the **CLEC Product Profiles** table, the first year for which the CLEC offers the product or service and adjusting the market share per period found in table the **Penetration Curves for Products** table. The starting year is used to reflect the CLEC market share in the first year the product is offered. After the ending year (if it occurs before the end of the study horizon), CLEC market share percentage is set to 0.

Second, BACE accounts for the fact that a portion of the products are sold as bundles of products, by adjusting the bundle penetration curves in the **Penetration Curves for Bundles** table for each bundle to match the first year the CLEC offers each bundle (in the **CLEC Profiles Bundle** table) in the same way as it was adjusted for individual products.

Third, using the percentage of each customer segment taking CLEC Products and taking CLEC bundles of products, this step delineates the CLEC market share for each product per period by how the product is sold (i.e., as part of a bundle or *á la carte*).

Fourth, BACE retrieves the initial number of total market customers (assumed to include ILEC plus CLEC customers) by wire center, by customer segment and customer-spend category from the **Exchange Demographics** table.

Fifth, BACE allows the user to identify growth in the number of total market customers, by year, over the 10-year period (in the Market Growth table). This is combined with the Exchange Demographic table to create a total customer curve, representing the change in the number of total market customers year by year.

Sixth, CLEC market share percentages (on a product basis) must be translated into an absolute number of customers taking each CLEC product. BACE calculates this by multiplying the CLEC market share values (table Q4) with the demographics of each

customer segment and customer-spend category found in the **Exchange Information** table (adjusted for market growth).

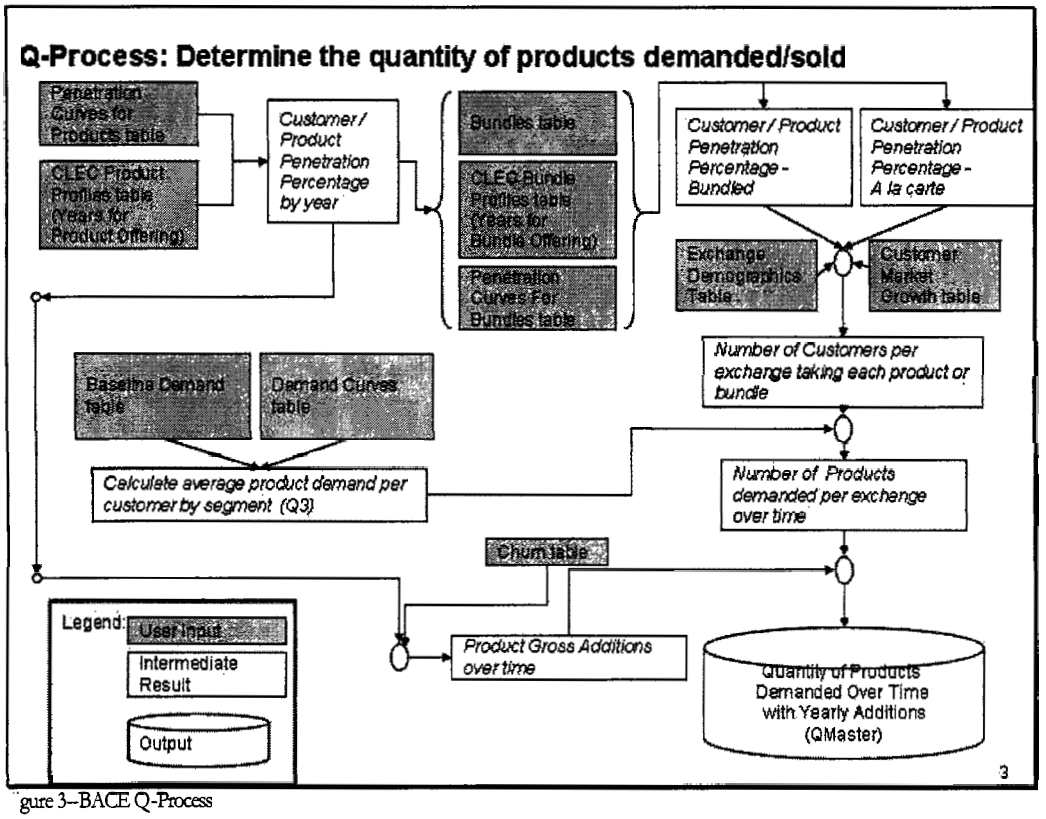
Seventh, the focus changes from numbers of customers to quantities of products sold. BACE allows the user to identify changes in the baseline demand (from the baseline demand table) per customer segment and sub-segment by product, by year, using the Demand Curve table. (Note, user-adjustable changes in quantities demanded ***per customer*** is different from task 2, which accounted for growth in the number of customers). The end result provides the expected average customer market demand over time for each product, by study year.

Eighth, CLEC customer counts by product on a wire center basis are multiplied by the expected per-customer product quantities, by wire center, to determine total CLEC product quantities. Using a mid-year convention, the quantity of CLEC product demanded for the year is calculated as the average of the end of year demand and prior year's end of year demand. Therefore, the amount reported is actually the mid year balance.

Ninth, BACE calculates the percentage of expected CLEC net adds for each product by year. These percentages are calculated on a product-by-product basis for each customer type. Percentages are derived by applying the disconnect percentages (from the Churn table) to the expected product penetration levels (**Penetration Curves for Products** table) over the ten years. These net addition percentages are applied to the customer count information in the Exchange Demographic table to derive the counts of customer additions.

Tenth, the count of product quantity additions (over the prior year), are appended into table QMaster. These are used to determine the number of customer/product installs in each year.

A diagram summarizing the Q-Process is shown below.



gure 3–BACE Q-Process

The Revenue Process

The Revenue Process (R-Process) takes information from the Price and Quantity Steps and derives the Gross Revenue due to the CLEC.

R-Process Inputs

Table P Master - This table contains the CLEC price information for each product by customer type in each served location (wire center) over the ten years of the study.

Table Q Master - This table contains the CLEC quantity sold information for each product by customer type in each served location (wire center) over the ten years of the study.

Table USF: Interstate Access Support - This table contains the Universal Service Administrative Company's ("USAC") specified amounts for Interstate Access Support ("IAS") payable to telecom providers by UNEZone and state. These are portable funds that the CLEC can claim if they are an Eligible Telecommunications Carrier ("ETC"). These funds are based on the number of lines the CLEC serves per qualifying area.

Table USF: High Cost Loop Support - This table contains the Universal Service Administrative Company's ("USAC") specified amounts for High Cost Loop Support ("HCLoop") payable to telecom providers by wire center within a state. These are

portable funds that the CLEC can claim if they are an Eligible Telecommunications Carrier ("ETC"). These funds are based on the number of lines the CLEC serves.

Table Alternative Units of Measure - This table allows the user to create additional unit of measure records that can then be used to drive unique costs. For example, the user may determine that DS0s drive certain costs but that the DS0 equivalence of services varies. Through the inputs of this table, the user can create these alternative quantity drivers for services.

R-Process Methods

The Revenue process is a three-step process.

First, the CLEC quantity of each product demanded (by customer segment and location) is multiplied by the CLEC price of each product (by customer segment and location) from table P-Master. This information is calculated for each study year and appended into table R-Master as the revenue in each study year.

Second, given the quantity of lines the CLEC has, the universal service funding revenue records are created based on the inputs in the **USF: Interstate Access Support** and **USF: High Cost Loop Support** tables. These tables provide the monthly funding the CLEC receives for providing service to specific types of customers. After the universal service revenue is added, BACE inserts additional quantity records based on the values in the **Alternative Units of Measure** table.

Next, the present value of the revenue is derived. The present value (as described in Chapter 3) is derived on a mid-year basis. In other words, Year 1 revenue is discounted to six months, Year 2 discounted to 18 months, etc, to bring the values back to time zero.

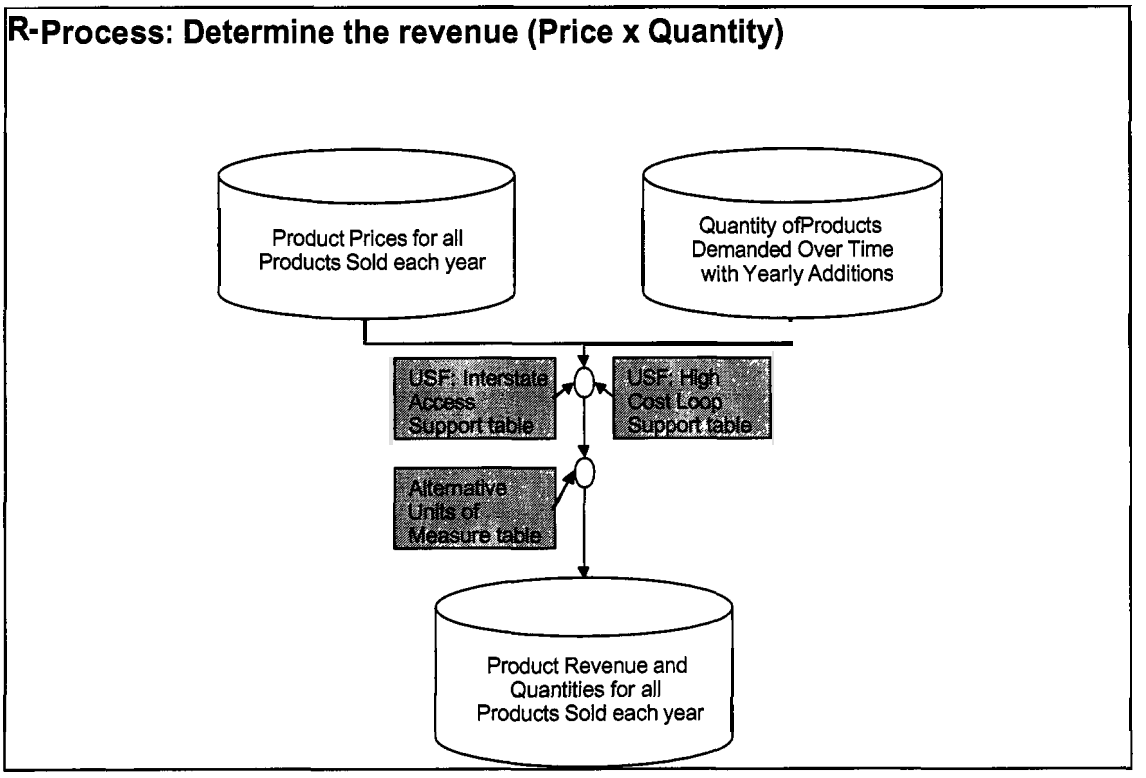
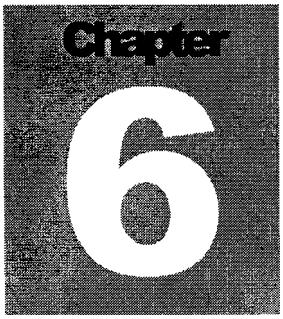


Figure 4–BACE R-Process



Operations and Network Expense Process

The ON Process is BACE's last step and calculates the cost structure of the CLEC. The 'N' Portion calculates investments specific to the network engineering necessary to originate, transport and terminate voice and data over the public switched telephone network (PSTN). The 'O' Portion calculates investments specific to the operations of the company.

ON-Process Input Structure

ON-Process inputs are primarily contained in the Network and Operations cost tables. The entries in these tables largely determine the magnitude of a CLEC's network infrastructure and operations costs and how these costs are incorporated into the BACE analysis. The tables allows the user to include cost records that apply to various CLEC network and operational scenarios. (A cost record represents one row of the Network Cost or Operations Cost Input tables.) From these tables, the ON-Process determines the appropriate cost records to be included in the BACE analyses in accordance with the quantities of products sold obtained from the Q, P and R processes and user entries in other BACE tables.

Put another way, based upon the manner in which the inputs in this table are structured, different costs will be caused based upon some type of driver (like the number of lines in an wire center) or a study parameter the user enters (like the size of the CLEC in the CLEC Study Properties table.)

The entries in the tables can be thought of in several ways.

First, some of the fields act as Filters that assist BACE in determining the appropriate cost records. The Filter variables generally rely on user adjustable inputs in other BACE tables. For example, during the initial steps of processing, BACE ignores network design and cost inputs that are not relevant to the user adjustable inputs entered, like the size of the CLEC in the **CLEC Study Properties** table.

Second, some of the fields in these tables act as Descriptors. Descriptors have no impact on the analysis or results but exist for documentation and information purposes only. The Source/Notes column is an example.

Third, Value Fields are used within calculations and have a direct impact on the final results. For example, the **Amount** field is used directly as the amount of the cost record. Another Value field, **Weight**, is used to factor up or down the **Amount** field.

In the following discussion, keep in mind how the various filter fields are used by BACE with the ultimate goal of finding the correct cost record, then developing the appropriate cost based upon the Value fields.

ON-Process Inputs

The following section will describe the fields for each entry in the Network Cost Table and the Operations Cost Table. As many of the field names are the same, they are treated together in this section.

CLECType

The **CLECType** field works as a filter to ensure that BACE includes only those cost records which meet the user criteria established in the **CLECType** input of the **CLEC Study Properties** table. BACE may use only those cost records that have a **CLECType** equal to ALL or set to the same value as the **CLECType** entered in the **CLEC Study Properties** table.

Possible entries include Large, Medium, Small and ALL. Large, Medium and Small are directly related to the size of the CLEC being analyzed. Cost items with a **CLECType**= ALL are applicable to each size of CLEC.

AcctCat

The Account Category (**AcctCat**) field is another Filter field. Primarily this field helps categorize reported investment.

Possible entries include Capex, COGS, Opex, Sales, Bad Debt, AdValorem and G&A. An entry of Capex indicates that the cost record represents a capital expenditure by the CLEC, for example the purchase of switching equipment. Cost items with **AcctCat** set to Opex represent an operational expense that would most likely not be capitalized in the accounting records of the CLEC. Examples of Opex cost records include the contractual maintenance costs identified for VoiceMail operations that are not captured in the factors applied and the Repair and Maintenance cost records in the **Operations Input Cost** table. Cost items that have the **AcctCat** variable set to COGS (Cost of Goods Sold) represent costs of infrastructure or network services that the CLEC purchases/leases from another carrier. Unbundled Network Elements (UNEs) and wholesale rates are examples of cost items that will have an **AcctCat** set to COGS.

ApplyLoadings (Network Cost table only)

The Yes/No flag indicates whether BACE should apply the InPlant and Loadings factors from the **InPlantAndLoadings**able to the cost record. Possible entries include Y or N. Typically, costs that are capital expenditures represent material only and will require the application of InPlant and Loading factors and have **ApplyLoadings**set to "Y".

COLOOrEEL (Network Cost table only)

This field acts to filter a record for inclusion or exclusion in combination with the **AllowCOLO**and **AllowEEL**variables in the **CLEC Study Properties**able. Possible entries include COLO, EEL or ALL. Cost items with **COLOOrEEL**= COLO will be included in the analysis if **AllowCOLO** = Y. Cost items that have **COLOOrEEL**= EEL will be included in the analysis if **AllowEEL**= Y in the **CLEC Study Properties** table. If **COLOOrEEL**= ALL for a cost item identified in the **Network Cost Input** table, the cost record is not impacted by the collocation or EEL network architecture. Thus it will be considered in all cases.

> Note: If both the **AllowCOLO**and **AllowEEL**toggles in the **CLEC Study Properties**table are set to Y, the system will perform an economic test at each wire center the CLEC serves to determine the best economic alternative over the 10 year period.

SpAOrUNETTransport (Network Cost table only)

This field compliments the entry in the **CLEC Study Properties**able allowing the user to select if the CLEC network should use Special Access (SpA) or Unbundled Network Element Dedicated Transport (UNET) for the transport between CLEC collocation sites at BST end offices and their collocation site at the BST access tandem. The **SpAOrUNETTransport**field works as a filter to include or exclude a cost record. Possible entries include SpA, UNET or ALL.

DS1ToDS0Xover (Network Cost table only)

This DS1ToDS0Xover field compliments the entry in the **CLEC Study Properties** table. It allows the user to select if the CLEC network will use a cross over of 4 or 9 DS0s. (A cross over of 4 indicates that the CLEC would choose individual DS0s up to 3 DS0s, but would choose a DS1 rather than 4 DS0s.) Possible entries in the **Network Cost Input**table are 4, 9 and ALL. A cost record with an entry of ALL indicates that the cost is not sensitive to the DS1 to DS0 cross over.

Cost Hierarchy : CostFam, CostArea, CostCntr, CostElem

Cost hierarchy inputs are typically for information only and are Descriptor inputs. They are used in reporting to clarify costs to levels of the CLEC location, product or customer hierarchy. However in limited cases, BACE may use these entries to filter cost records in or out of a set of calculations. For example, a CostElement set to "GettingStartedInvestment" may trigger the application of the **PctBSTCoverageOfLATA**factor. Other than these few isolated cases, the cost

hierarchy entries have no impact on BACE's network or operational costs. Hierarchy entries conceptually have no limitations although the user should enter descriptions that will be helpful when analyzing results. Current entries provide increasingly more detail from the highest level of the hierarchy (CostFam) to the lowest (CostElement).

CostType

The **CostType** field is used to determine how the cost record will be used in the Optimization Routines. The **CostType** value can be either "Direct" or "Indirect". Cost records identified as Direct are costs that are considered directly attributable to the product identified within the product hierarchy for that cost record. Indirect costs are those costs not directly attributable to a product.[11]

Secondary Driver Inputs

Cost driver inputs within BACE indicate to the system how the cost record should be engineered and/or assigned. In some circumstances, costs are initiated and driven by product demand. In others, equipment and associated costs, are initiated and driven by geographic location. For example, the model may place one switch per LATA. In yet other cases, costs are driven as a factor of other capital expenditures or revenues.

In the cases where the cost is driven by product demand, the Secondary Driver Inputs are not required, and "NONE" should be entered. For cost items that are driven by location, the secondary driver inputs allow for the potential to analyze the costs per location based on the primary cost driver inputs and assign the costs to the appropriate product via the Secondary Driver Inputs.

Whenever Product is used as the DriverType, the Driver and QUOM entries must be consistent with the DriverType entered and the product hierarchy identified for the cost record.

SecondDriverType

In cases where the primary cost driver type is not "Product", the **SecondDriverType** must be identified to ensure that the costs are associated with a product or service. Valid entries include Product and NONE.

SecondDriver

In cases when **SecondDriverType** is set to NONE, **SecondDriver** will also be set to NONE. If **SecondDriverType** = Product, the appropriate entry for **SecondDriver** is Quantity.

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[11] Note that certain indirect costs, that correspond to the level of optimization, are used in the optimization routines. For example, when the LATA optimization toggle is turned to yes, the LATA "indirect" switch getting started costs are included in the optimization calculation since they become, in essence, "direct" costs of the geographic area being analyzed.

SecondQUOM

For cases when the **SecondDriverType**= Product and the **SecondDriverType**= Quantity, the **SecondQUOM**must be set to an appropriate **UOM** for the product (or products if a product family is identified) as identified within the Product Hierarchy inputs of the Network Cost table.

The **UOM** must be consistent with the **UOMs** identified within the BACE **Product Hierarchy**table or those developed in the **Alternative Units of Measure**able. Valid entries include GrossAdds, Lines, MOU and Customers.

The following examples illustrate how the primary and secondary drivers interact.

Network Cost Input	Example 1	Example 2	Example 3
CostDriverType	Product	Loc	Loc
CostDriver	Quantity	Cntr	Elem
QUOM	Lines	Lines	Lines
SecondDriverType	NONE	Product	Product
SecondDriver	NONE	Quantity	Quantity
SecondQUOM	NONE	Lines	MOU

Table 5–Primary and Secondary Driver Interaction

Example 1: The primary cost driver is the product identified within the network cost table and thus the secondary driver is not required.

Example 2: The primary driver inputs indicate that the cost item is engineered/placed on a per LATA basis. (Loc-Cntr indicates location is the driver type and Cntr (center) or LATA is the level of geography selected.) Further, the primary inputs indicate that the cost is driven by the number of CLEC lines within the LATA. Therefore the system will select appropriate costs from the network cost table based on calculated dema nd (for the product(s) identified) and the CDMin and CDMax entered for the cost item. The secondary inputs indicate that the costs developed should be assigned to the product identified within the product hierarchy inputs and allocated based on the number of lines for that product.

Example 3: The primary drivers indicate that the cost item is engineered/placed at the wire center level. Further, the primary inputs indicate that the cost is driven by lines at each end office location. Therefore the system will select appropriate costs from the network cost table based on calculated demand (for the product(s) identified) and the **CDMin** and **CDMax** entered for the cost item. The secondary inputs indicate that the

costs developed should be assigned to the product identified within the product hierarchy inputs and allocated based on the Minutes of Use (MOU) for that product.

ScopeCat

The **ScopeCat** field is a Y/N text field that indicates whether the **BSTAsPctOfScopeOfOperations** factor entered in the **CLEC Study Properties** table should be applied to the cost record. The intent of this factor is to account for the larger operational scope of CLECs that serve customers outside of BellSouth's territory.

AffectedByPurchasePower (Network Cost table only)

AffectedByPurchasePower is a Y/N field that indicates whether the **PurchasePower** factor entered in the **CLEC Study Properties** table should be applied to the cost record. The intent of this factor is to accommodate different "size" CLECs having different purchasing power from telecommunications equipment and service providers.

LifeCat (Network Cost table only)

The **LifeCat** field indicates which **InPlant** factor is applied. Valid entries include Telco, Mat, Hardwire, PlugIn and PlugInSpStock that can be representative of Field Reporting Codes (FRCs) or sub-FRCs. The entry in the table must correspond to entries in the **InPlant and Loadings** factor table.

PlantCat

The **PlantCat** is an alphanumeric variable populated with asset specific codes. In the **Network Cost Input** table, the codes indicate the appropriate factors to use for trending costs over time and for retirement of assets. In the **Operations Cost Input** table, the **PlantCat** field identifies the asset category to which the factor in the **Amount** field should be applied. Valid entries for **PlantCat** must match the analogous entries in the cost trends and retirement capex tables. In many cases, FRCs or pseudo-FRCs are used to represent the specific assets. For example, 377C is used to identify central office switching equipment. For non-capital cost entries such as operational costs, the appropriate **PlantCat** entry is "NONE".

Bundle

If a network cost is specific to a bundle, that bundle could be identified using this field. Valid entries include ResBundleA, ResBundleB, ResBundleC, SOHOBundleA, SOHOBundleB and SOHOBundleC. These entries are limited to the bundle names defined in the **Bundles** table.

Product Hierarchy : ProdFam, ProdArea, ProdCntr, ProdElem

If a cost is directly associated with a specific product (e.g., local subscription), or a product family (e.g., local) the user can enter a product in the product hierarchy fields of the Network and Operations cost tables.

BACE will assign the costs generated by that cost record to the service(s) identified. Inputs must be consistent with the hierarchy as entered in the **Product Hierarchy** table.

Customer Hierarchy : CustFam, CustCntr, CustCntr

To the extent that a cost item is directly related to a specific segment of customers within a product (or product group), BACE allows the user to identify the customer segment via the **Customer Hierarchy** fields in the cost tables. An example in the **Operations Cost Input** table is the application of different sales costs for different customer segments, i.e., the user can distinguish between the cost of residential customer acquisition and the cost of large business customer acquisition. An example within the **Network Cost Input** table is the use of a DS1 digital loop (instead of a standard 2W wire loop) to provision PSTN local services to the SME/B customer segment. For this DS1 loop cost record, the product hierarchy would be PSTN/Local/Line/Subscription and the customer hierarchy would be:

CustFam = Bus;

CustArea = SME/B; and,

CustCenter = %.

Note that the % sign is a wildcard entry indicating that all possible entries will be considered. Valid entries must be consistent with the **Customer Hierarchy** table.

Location Hierarchy : LocElem, LocArea, LocCntr, LocElem

In many circumstances costs are specific to a location. For example, UNE prices are specific to a state. In some circumstances, although the rate may be the same in all states, the probability of the rate being applied may be different in each state and thus the location hierarchy could be used to distinguish the cost records from one state to the next. Thus BACE provides the opportunity for the user to identify network costs that are location specific. Valid entries for the hierarchy must be consistent with the **Location Hierarchy** table.

NtwkCat (Network Cost table only)

The **NtwkCat** field indicates whether the CLEC has purchased the cost item ("owned") or secured the service or infrastructure from BellSouth or another company. Valid entries include:

- Owned – indicates that the cost item represent equipment that the CLEC has purchased;
- UNE – indicates that the cost item is an Unbundled Network Element (UNE)

- Wholesale – indicates the cost item represents a wholesale rate contracted by the CLEC;
- SPA – indicates the cost item is part of the Special Access rate elements;
- UNET – indicates the cost item is part of the Unbundled Dedicated Transport rate elements purchased by the CLEC from BellSouth;
- EEL – indicates a UNE EEL rate obtained by the CLEC; and,
- Access - indicates all Switched Access cost elements.

Generally, the **NtwkCat** entry should be consistent with the **AcctCat** entry for each cost item.

DemandYearForBuild

The **DemandYearForBuild** field captures the telecommunications engineering/planning horizon differences for different network components. Therefore, the costs related to those components must be treated differently. The "lumpiness" of the capacity of telecommunications network equipment often requires that telecom networks are initially designed based on the expected demand for a time period greater than one year. To capture this effect, BACE includes the **DemandYearForBuild** variable to identify how many years of demand should be considered when the CLEC incurs a cost.

For example, the frames required for multiplexer equipment may be designed to handle anticipated demand for a 3-year period. In this case the **DemandYearForBuild** variable would be set equal to 3 for the multiplexer frame and common plug-in equipment costs. However, multiplexer "line cards" are not purchased 3 years in advance and thus the **DemandYearForBuild** entry for this cost record would be set to 1 indicating that the cards are purchased each year based on demand requirements. (Note: because the model uses annual increments, the user must enter integer values 1 or above for all cost records)

RateZone

RateZone is included in the **Operations and Network Cost Input** tables to identify the rate center zones related to cost records. In the **Network Cost Input** table, the **RateZone** field is entered for Special Access rates. The rate center zones that apply to each wire center are identified during the Q process and thus the appropriate special access rates will be applied for each wire center. Valid entries must be consistent with entries in the **Zone Definitions** table and may include 1N, 1R, 2N, 2R, 3N, 3R and "%".

UNEZone (Network Cost table only)

The **UNEZone** field identifies the UNE zones related to certain UNE rates such as UNE loops and UNE EELs. The UNE zones that apply to each wire center are

identified during the Q process and thus the appropriate UNE rates will be applied for the demand in each wire center. Valid entries must be consistent with entries in the **Zone Definitions** table and the Zones within a state. Values may include: Zone1, Zone2, Zone3, Zone4.

DSLAddressable

The **DSLAddressable** Y/N toggle indicates if the cost item represents a portion of the CLEC network that can support DSL service. As part of the Q process, the Exchange Demographic file has a toggle to indicate that the customer segment is addressable (can be served) by copper cable within the design characteristics of DSL. BACE allows the user to indicate that if a residential or SOHO customer is DSLAddressable, the CLEC may provide service over specific facilities. For example, if the customer is DSLAddressable the CLEC may want the ability to provide DSL service and therefore will use an Unbundled Non-Designed Copper Loop (UNDCL) to serve the customer. In this example, the user would set the cost records related to UNDCL to have a **DSLAddressable** entry = Y. The UNE cost records related to SL1 and SL2 loops would have a **DSLAddressable** entry = N since the user is indicating that these types of loops will not be used to support DSL service.

Cost Driver Inputs

Cost driver inputs indicate how the cost item should be engineered and/or assigned. In many cases, costs are initiated and driven by product demand. In other cases, equipment and the associated costs, are initiated and driven by location, e.g., one piece of equipment per LATA. In yet other cases, costs are driven as a factor of other expenditures or revenue.

CostDriverType

The **CostDriverType** identifies the hierarchy that is the primary driver for the initial and (perhaps) ongoing use of the cost record. In cases where product demand is the driver for the cost item, **CostDriverType** = Product. For cost items that are engineered per LATA or per end office, the **CostDriverType** = Loc, indicating that the location hierarchy will be the primary basis for placing the equipment. Valid entries include Product and Loc.

CostDriver

The **CostDriver** provides additional detail about how the cost is incurred by the CLEC. For a cost driven by product demand, the **CostDriver** = Quantity. If the cost record value is a factor that is applied to product revenue, the **CostDriver** = Revenue. In this case, the system will apply the factor (in the amount field) to the revenue associated with the product identified in the product hierarchy fields for that cost record. Similarly, if the cost record **Amount** is a factor that is intended to be applied to the capital expenditures of specific asset categories (e.g., Maintenance factor), then the **CostDriver** would be set to Capex and BACE applies the factor to the capital expenditures for the **PlantCat**

identified for the cost record. The **CostDriver** entry must be consistent with the **CostDriverType** entry for the same cost record. Valid entries may include: Quantity, Revenue, Cost and Capex (for a **CostDriverType**= Product); and Cntr and Elem (for a **CostDriverType**= Loc).

QUOM

For a **CostDriverType**= Product and **CostDriver**= Quantity, the **QUOM (Quantity Unit of Measure)** variable indicates the units in which the demand is to be measured. In all cases, the **QUOM** is used to determine the appropriate units for the **CDMin** and **CDMax** variables. In cases in which the **SecondaryDriver** inputs are set to NONE, the **QUOM** also determines the units for the capacity of each cost record. Valid entries must be consistent with the UOMs identified within the BACE **Product Hierarchy** table or in the **Alternative Units of Measur** table and may include: GrossAdds, Lines, MOU, Customers and "%".

The following examples illustrate the interaction of the primary and secondary drivers.

Network Cost Input	Example 1	Example 2	Example 3
CostDriverType	Product	Loc	Loc
CostDriver	Quantity	Cntr	Elem
QUOM	Lines	Lines	Lines
SecondDriverType	NONE	Product	Product
SecondDriver	NONE	Quantity	Quantity
SecondQUOM	NONE	Lines	MOU

Table 6–Primary and Secondary QUOM interactions

Example 1: The primary cost driver is the product identified within the network cost table and thus the secondary driver is not required.

Example 2: The primary driver inputs indicate that the cost item is engineered/placed on a per LATA basis. (Loc/Cntr indicates location is the driver type and Cntr (center) or LATA is the level of geography selected.) Further, the primary inputs indicate that the cost is driven by lines within the LATA. Therefore the system will select appropriate costs from the network cost table based on calculated demand (for the product(s) identified) and the **CDMin** and **CDMax** entered for the cost item. The secondary inputs indicate that the costs developed should be assigned to the product identified within the product hierarchy inputs and allocated based on the number of lines for that product.

Example 3: The primary drivers indicate that the cost item is engineered/placed at the wire center level, i.e., at the BellSouth end office level. Further, the primary inputs indicate

that the cost is driven by lines at each end office location. Therefore the system will select appropriate costs from the network cost table based on calculated demand (for the product(s) identified) and the **CDMin** and **CDMax** entered for the cost item. The secondary inputs indicate that the costs developed should be assigned to the product identified within the product hierarchy inputs and allocated based on the Minutes of Use (MOU) for that product.

CDMin and CDMax

In some circumstances, the appropriate choice of telecommunications equipment is driven by the level of demand. Different sized equipment with different costs, may be appropriate under different conditions. The **CDMin** and **CDMax** variables, in the units of the **QUOM**, are used to accomplish this task. For example, anticipated demand in a rural area may establish that a 5000 line switch is appropriate while a 45,000 line switch may be appropriate for a densely populated urban center. BACE addresses this need by allowing the user to enter multiple switching cost records that represent the same cost components (e.g., cost per line) but distinguish the costs by the size of the switching requirement thus ensuring the cost is only accounted for once. For example, switching investments could be established for switches:

- with less than or equal to 10,000 lines;
- more than 10,000 up to and including 25,000 lines; and,
- greater than 25,000 lines.

BACE compares the demand established in the Q process to the values for **CDMin** and **CDMax** Making this comparison allows BACE to determine which cost record is appropriate for each situation.

Frequency

The **Frequency** field identifies how often a cost should be applied. In addition to the traditional recurring and non-recurring costs, specialized frequency variables were developed to ensure that costs are applied only when required. Valid entries and their treatment in BACE are in the table below.

Frequency Entry	BACE Treatment (example)
StartUp	One time investment for the firm incurred at the beginning of the study period (OSS investment).
Recurring	Treated as monthly, i.e., Amount is multiplied by 12 to obtain annual cost – e.g., monthly UNE loop rates. (Annualization only applies to non-capex

Frequency Entry	BACE Treatment (example)
	AcctCat cost records)
NonRecurring	Cost which is incurred once per unit (e.g., sales acquisition costs, where the unit is a customer)
NonRecurringNetwork	Cost which is incurred once per unit. In this instance, the unit is a network component that is not expected to change in volume with a change in customer demand. The cost record is applied to the incremental new demand each year for the component.
NonRecurringChurn	Amount is multiplied by user entered churn rates to account for the fact that the cost is caused by customer churn (e.g., non-recurring UNE loop disconnect rates)
Annual	Occurs only once per year (G&A capex)
Usage	Not used

Table 7–Frequency Values

Capacity

This variable identifies the engineering capacity, measured in the **QUOM (or SecondQUOM)** units, relative to the **Amount** entered for each cost record. The impacts of utilization and concentration ratios are accounted for in the **Capacity** of each cost. Further, the **Capacity** is identified in equivalent usable units for each cost record. For example, if a DSLAM has a physical limitation of 200 line terminations and a maximum effective utilization of 80%, **Capacity** = 200 * 0.8 = 160 (with the **QUOM** = Lines).

Weight

This variable is generally used to identify the probability of a cost occurring. The **Weight** variable is used as a multiplier against the **Amount** and indicates how many units of the cost are required per the **Capacity** specified. For example, if a cost record has an **Amount** = $5, **Capacity** = 100, **QUOM** = lines and a **Weight** = 2, BACE will place $10 of cost (**Amount** * **Weight**) for each 100 lines of demand identified by the Q process.

MileageBased (Network Cost table only)

This Y/N toggle indicates if the **Amount** entered for the cost record is a per-mile rate and thus must be multiplied by mileage. Mileage is provided in the Exchange Information file as air miles from each BellSouth end office to the BellSouth access tandem[12].

Amount

Amount is the amount associated with each cost record. In the majority of cases the **Amount** is expressed in dollars. For example, the monthly rate associated with UNE loops is entered. However, BACE does not require that **Amount** be expressed in dollars. Since some costs are developed as a factor of product revenue or a percentage of switching investment, **Amount** can also be a factor. In these instances, the **CostDriverTypeCostDriver** and **QUOM** must be set appropriately.

Vintage (Network Cost table only)

The **Vintage** variable indicates the year in which the **Amount** was developed. This input provides the basis for each cost item that is trended over time using the asset specific factor in the **Cost Trends** table. For example, switching investments (identified with **PlantCat** = 377C) have a **Vintage** of 1998. BACE brings the switch investment from 1998 to the **Year1** date identified in the **CLEC Study Properties** table using the 377C cost trends factors. These Year1 investments are then used for Year1 cost calculations.

Source/Notes

The source/notes field is used for informational purposes only. It has no effect on calculated results.

Operations and Network Process Methods

The Operations and Network ON-Process is split into three major phases. First is the cost preparation phase during which all of the costs are filtered and arranged in preparation for aligning the costs with the results of the price, quantity and revenue processes. The second phase develops appropriate network and operational costs using the cost records prepared in the first phase. The third phase of the ON process incorporates a series of optimization routines to assist in reflecting efficient CLEC operations.

Cost Preparation Phase

The first task is to identify all of the possible investment items that can be driven by BACE. This requires resolving all of the wildcard logic that exists in the **Network and Operations Cost Input** tables.

[12] Air mileage is appropriate in this case since air miles are used to rate Special Access, EELs transport and UNE Dedicated Transport.

Next, since BACE's network and operations cost tables may have inputs for various alternative network and operational scenarios, BACE has several user inputs that act as filters on the network and operations cost input tables. In other words, the user, via these user adjustable inputs, determines how BACE constructs the CLEC network. These inputs are found in the **CLEC Study Properties** Table. Relevant inputs include: **AllowColo, AllowEELs, CLECType, SpAOrUNETTransport, DS1ToDS0XOver.**

For example, if the **AllowEEL** toggle is set to N, then all cost records in the **Network Cost Input** table with the Colo/EEL input set to EEL are eliminated. (A cost record is reference to one row of the **Network Cost Input** or **Operations Cost Input** table.) Similarly, when the **AllowColo** toggle is set to N, the cost records with Colo/EEL set to Colo are removed.

The next task is for BACE to apply the scope and purchase power factors. Within the **CLEC Study Properties** table, the user enters these two factors. The **BSTAsPctOfScopeOfOperations** factor accounts for the relative size of the CLECs national scope of operations as compared to the BellSouth operating territory within the state being analyzed. The second factor reflects the CLEC's ability to secure pricing discounts for network equipment (**PurchasePower**) vis-à-vis the purchasing power of BellSouth. For all network and operations cost records that have ScopeCat = "Y", BACE will apply the **BSTAsPctOfScopeOfOperations** factor entered by the user to the values in the **Amount**, **CDMin**, **CDMax** and **Capacity** fields. For all **Network Cost Input** table records with the variable **AffectedByPurchasePower** = "Y", the **Amount** field value will be multiplied by the **PurchasePower** factor.

Following the application of scope factors, all non-capital recurring costs entered into the operations and network cost tables are converted from monthly to annual. Since BACE works with annual quantities, these records must be multiplied by 12. Thus, records with **AcctCat** not equal to "Capex", that have **Frequency** set to recurring and have a cost driver of quantity, the value in the **Amount** field is multiplied by 12.

In most cases, telecommunications network equipment requires an initial outlay to the equipment vendor as well as other outlays to install the equipment, to ensure that the equipment is properly connected to other equipment, and to provide a safe and efficient environment for the equipment to operate. To capture these investments BACE uses a series of factors that are entered by the user in the **InPlantAndLoadings** table. Applying **InPlant** factors is the next processing task.

InPlant factors account for the cost of installing network equipment. Since the effort required to install equipment varies by type of equipment, these factors are specific to an asset account class (**PlantCat**) and can further be classified at the sub-account level (**LifeCat**). For each capital network component identified in the network cost table, the investment amount is multiplied by the **InPlant** factor whose **PlantCat** and **LifeCat** match those of the cost record. The result is an InPlant investment that captures the costs related to the material investment, any vendor engineering and installation required, and installation investments of the CLEC.

In addition to the **InPlant** investment, the CLEC must make investments to ensure that the equipment is properly connected within the network and that the equipment has the proper power to function. These investments are captured by the Support Equipment Loading and Power Loading, respectively, applied to the **InPlant** investment. For each capital network component identified in the network cost table, the **InPlant** investment is multiplied by the Power and Support factor with a matching **PlantCat** (there is no **LifeCat** detail for power and support). The Support and Power factor is applied directly to the **InPlant** investment to create an investment that captures material investment, vendor engineering and installation, the CLECs engineering and installation costs and support and power equipment costs.

Finally, for equipment that is purchased by the CLEC and housed within CLEC-owned buildings (i.e., not in collocation space), the CLEC must capture the investment related to outlays for land, building, pole, conduit, trenching, and Right-to-Use (RTU) fees. For all capital cost records in the network cost table that have **ApplyLoadings**= "Y" , BACE will search for loading factors (in the **InPlantAndLoading** table) that have **PlantCat** and **LifeCat** variables that matches the **PlantCat** and **LifeCat** of the cost record. For each cost record, all appropriate loadings are applied to the InPlant investment (including the power and support loading). However, since the investments being created from these loadings are not in the same asset class as the original equipment, the resulting investment loadings are entered as a new cost record in the cost table and associated with the **LoadingPlantCat** as entered in the **InPlantAndLoadings** table. The **PlantCat** of each network cost record is used in later calculations including the determination of appropriate retirement and reinvestment in replacement assets.

Next, BACE identifies how the vendor prices and investment values will change over the 10-year study. These factors are a user input into the **Cost Trends** table.

Trending is performed in two steps. In the first step, the capex (i.e., capital investments) are brought from their vintage year (as entered in the **Network Cost Input** table) to the first year of the study (as entered in the **CLEC Study Properties** table). Based on these inputs, and matching on the **PlantCat** to ensure the cost trend for the appropriate **PlantCat** is assigned, BACE identifies the appropriate cost trend changes and applies them to the prior period investment value resulting in an investment value that is consistent with the first year of the study. The second step calculates the investment in years 2 though 10 by applying the nine subsequent cost trend factors to the cost record, again matching on the **PlantCat**. The result is that each capital investment item has an amount for each of the ten years that will be applied within the calculations. Note that since the operational costs are entered for each of the ten years of the study, the cost trend factors are not applied to the operational costs in the **Operations Cost Input** table.

Within this same step, BACE applies the **Weight** input (entered in the **Network Cost Input** table) to each of the cost records. The **Weight** input generally reflects how often the cost record occurs and thus is applied to the value in the **Amount** field for each year.

Next the implications of customer churn are considered. The rate of customer churn has an impact on how often some costs will occur. These costs, generally UNE disconnect

fees, have **Frequency** set to "NonRecurringChurn". For each of these cost records, BACE matches the customer segment of the cost with the churn rate appropriate for that customer segment as entered in the **Churn** table, and applies the churn rate to the value in the **Amount** field of the cost record.

Next, to accommodate the fact that a CLEC, by installing certain equipment in a LATA, may be able to serve customers via UNEs from carriers other than BellSouth within that same LATA, BACE includes a variable accounting for the percentage of these UNE-available customers within each LATA that are served by BellSouth. This allows BACE to apportion some of the fixed costs within a LATA to both the BellSouth operating area and the other ILECs within the LATA. The **BSTCoverageOfLATA** table provides the percentage of lines that are served over BellSouth facilities within each LATA of each state. Since the capacity of some equipment placed in each LATA can serve customers other than those on BellSouth facilities, the investment for these items (e.g., the switch Getting Started Investment) is multiplied by **PctBSTCoverageOfLATA** entry appropriate for the state and LATA where the equipment is placed.

Network Requirement and Cost Development Phase

With the appropriate cost records identified, BACE develops the foundation for determining costs incurred by the CLEC by calculating the underlying service and equipment requirements. Results from the QProcess that identify demand (where appropriate) for each of the various levels of the product, customer and location hierarchies provide the basis for establishing an appropriately sized CLEC network architecture.

For network equipment purchased by the CLEC, determining the appropriate equipment and number of units to install relies on network engineering rules and equipment capacities. Practically, CLEC engineers would likely examine demand forecasts for a period of time (the time frame is dependent on the type of equipment), work with vendors to identify the equipment appropriate to meet the demand and purchase equipment sufficient to accommodate the expected demand, any administration requirements, spares and perhaps growth. The identification of the number of capital cost units to install within BACE is similar to this process.

The **Network Cost Input** table has entries identifying capital investments related to the various types of telecommunications equipment the CLEC will purchase. Each cost record has an associated Product hierarchy, **DemandYearForBuild**, **CDMin**, **CDMax** and **Capacity** that is relative to the investment **Amount** Note: The **Capacity** entry should reflect the point of relief for the equipment component investment, not the ultimate physical/logical capacity.

For each of the capital cost records, BACE develops the demand requirements in each year based on the product, customer and location hierarchies specified in the **Network Cost Input** table (based upon output of the Quantity process). The value of the **DemandYearForBuild** input determines how many years of demand are used to determine the initial unit number of each capital cost record that is required. For example, if **DemandYearForBuild** is equal to 5 then BACE will use the first five years

worth of demand. Once the appropriate demand value is determined, BACE identifies the appropriate cost record to use by comparing the demand to the **CDMin** and **CDMax** of the cost record. If the demand does not fall between the **CDMin** and **CDMax** values, the cost record is not used. If the demand does fall within the **CDMin** and **CDMax** values entered, the demand is divided by the capacity of the cost record and rounded up to the next integer to determine the number of cost items that the CLEC requires

For each subsequent year, the annual number of capital cost records is determined by dividing the annual demand by **Capacity** and rounding up to the next integer. In any year in which the number of units of the cost item increases from one year to the next, additional capacity is required, and this will trigger additional investment for that cost record in that year.

For capital cost records that have a **Frequency** of "StartUp" or "Annual", development of unit quantities is more straightforward. Cost records with **Frequency** set to "StartUp" are placed at the beginning of Year 1 of the study (e.g., Operations Support Systems). Cost records with **Frequency** set to "Annual" are placed once each year regardless of capacity (e.g., G&A capital expenditures).

Next, BACE develops the number of units required for non-capital cost records. The development of number of network components purchased by the CLEC as wholesale services, such as reselling of long distance service or the purchase of Unbundled Network Element Loops (UNE-L) from other carriers is similar to that described above for capital cost records. CLEC engineers likely examine demand forecasts and determine the amount of number of non-capital cost items to be purchased. However, the rate structure of the carriers selling wholesale services is different including recurring and non-recurring fees, as well as rates that only apply under special circumstances. BACE logic accounts for these unique characteristics of non-capital costs.

For non-capital cost records that have a **Frequency** of Recurring or NonRecurring, BACE uses the demand requirements in each year (from the Q Process) based on the product, customer and location hierarchies and the **UNEZone** and **RateCenter** entries in the **Network and Operations Cost Inputs** tables. The units of demand are based on the entry for **QUOM** and/or the **SecondQUOM** for each cost record. The value of the **DemandYearForBuild** input determines how many years of demand are used to for the initial unit quantity for each non-capital cost record. Once the appropriate demand value is determined, BACE identifies the appropriate cost record to use by comparing the demand to the **CDMin** and **CDMax** of the cost record. If the demand does not fall between the **CDMin** and **CDMax** values, the cost record is not used (e.g., if the demand is below the minimum for a DS3, then a DS3 will not be deployed and the DS3 cost record is not used). If the demand does fall within the **CDMin** and **CDMax** values entered, the demand is divided by the **Capacity** corresponding to the cost record and the result is rounded up to the next integer to determine the unit quantity of the component required. In BACE non-recurring cost records are generally those that are reflected due to either: 1) initial levels of demand; 2) churn; or 3) demand changes that are inherently incremental on a yearly basis (i.e., net adds for the year period).

For each subsequent year, the annual number of non-capital cost items is determined by dividing the annual demand by capacity and rounding up to the next integer. The main difference between capital and non-capital cost records is that COGS costs are incurred for all demand each year; there is no development of the incremental capacity from year to year when the **Frequency** is set to Recurring.

However, there are a few non-recurring costs associated with capacity and activities that might recur. These cost records have **Frequency** set to "NonRecurringNetwork" and those items that are often purchased in bulk capacity, may need incremental additions over time and thus may have non-recurring costs that are re-incurred infrequently. Examples of these are preparation of collocation space and Special Access transport capacity. The CLEC incurs these costs with each purchase of capacity. In any year in which the unit quantity increases from one year to the next, additional capacity is required and this will trigger additional investment for that cost record in that year.

Next BACE determines the replacement capital expenses based upon the retirement of plant. Based on the user entered asset class specific values in the Retirement Input table, Gompertz-Makem[13] survival curves are used to estimate the likelihood of retirement in each year. These likelihoods are then used as the estimated value of percentage of retirement in each year. Using these values, BACE determines the amount of each capital asset that must be retired and thus replaced in the network by year. The resulting cost records have an **AcctCat** of "RetireCapex".

Finally, with the costs of each network component and/or service developed for each year of the 10-year period based on demand, BACE develops the net present value for each cost record as shown in Chapter 2. By setting the **CLEC Study Properties** value of **IncludeTerminalValue** to "Y" the model will include the net book value of the assets into the NPV value. This NPV addition is based on a 10-year discount value (i.e., at the end of the 10th year, not midyear of the 10th year).

Network Optimization Phase

With the NPV of each cost record identified, BACE has the ability to identify economically efficient ways for the CLEC to optimize its operations. As noted in Chapter 3, BACE provides for six types of optimization processes, five of which are user adjustable. The optimization processes search for specific activities that yield a negative net present value, and then eliminate that activity. The six activities that can be optimized are: 1) the use of EELs and/or full end-office collocation; 2) the provision of DSL within the wire center (not user adjustable); 3) keep or eliminate CLEC service in total for a wire center; 4) keep or eliminate CLEC service in total for Mass Market customers in a market; 5) keep or eliminate CLEC service in total for a Market; and, 6 keep or eliminate CLEC service in total for a LATA. These are discussed below.

[13] BACE recognizes that plant retires over time and needs to be replaced. BACE uses a probabilistic approach to retirements based upon the Gompertz-Makem retirement curves. These Gompertz-Makem curves are a standard approach used in the telecom industry to understand the retirement patterns of telecommunication assets. From the use of Gompertz-Makem, BACE derives the probability of retirement, by type of asset, in each year. This probability is used to estimate the expected value of plant replacement in year.

Based on the wholesale services offered by BellSouth, the CLEC has multiple options for how it establishes its wire center network architecture. To serve customers connected to a BellSouth end office the CLEC can use EELs and collocate at a distant wire center, or collocate at the end office as well as a distant wire center (e.g., BellSouth Access tandem). The **CLEC Study Properties** table has toggles for the user to identify whether then CLEC will:

a) establish collocation space at each end office (**AllowColo** = "Y" and **AllowEELS** ="N");

b) use EELs and not collocate at any end offices (**AllowColo** = "N" and **AllowEELS** ="Y"); or,

c) allow BACE to determine the most economic approach (**AllowColo** = "Y" and **AllowEELS**="Y").

If the user has set the toggles for always EELs or always collocation, then this step is not required. However, when the user wants to have the CLEC establish the most economic approach to the network architecture, BACE develops costs for both architectures based on the direct cost of each. In addition, since the CLEC cannot offer DSL service to customers served via EELs, the selection analysis must include the impact of DSL service. Thus, the direct cost of the EEL architecture for each wire center is then compared to the direct cost of the collocation architecture plus the profit of DSL service for that wire center (including if the DSL margin is negative for that wire center). The best economic alternative is selected for implementation.

Following up the network architecture task, BACE examines DSL-related direct costs and revenues for each wire center to determine if the wire center provides a positive contribution, i.e., positive NPV, over the 10-year study time frame. If DSL services have a negative NPV for any specific wire center, BACE assumes that the CLEC would not offer DSL in that wire center and thus the DSL costs and revenues are removed from the overall analysis. It is important to note that only the DSL related cost and revenues are removed. The CLEC is assumed to continue to offer other services to the customers of that wire center. The DSL optimization is not a user-adjustable option; i.e., DSL optimization always occurs.

The **CLEC Study Properties** table includes an input to **FilterNegativeMarginCLLIs**. If this toggle is set to "Y", BACE examines the direct costs (and wire center specific indirect costs) and revenues for each to determine if the wire center provides a positive contribution to the overall operation of the CLEC, i.e., positive NPV, over the 10-year study time frame. If serving customers within any wire center has a negative NPV, BACE assumes that the CLEC would not offer services in that wire center and thus the costs and revenues for that wire center are removed from the overall analysis.

The **CLEC Study Properties** table includes an input to **FilterNegativeMarginMassMarketInMarkets**. If this toggle is set to "Y", BACE examines the aggregate direct costs and revenues for Mass Market customers for the

positive contribution-wire centers (if the **FilterNegativeMarginCLLIs** is set to Y, all wire centers otherwise) within each market to determine if the customers provide a positive contribution to the CLEC, i.e., positive Mass Market NPV within each market, over the 10-year study time frame. If serving Mass Market customers within any Market has a negative NPV, BACE assumes that the CLEC would not offer services to these customers and thus the costs and revenues are removed from the overall analysis. If the **FilterNegativeMarginMassMarketInMarkets** toggle is set to N, all remaining Mass Market customers remain in the analysis.

If Mass Market customers are removed, BACE re-examines whether COLO or EELs should be used within each wire center. This re-analysis is driven by the fact that the reduction in the customer base within a wire center may change the economics of EELs and/or COLO.

The **CLEC Study Properties** table includes an input to **FilterNegativeMarginMarkets** If this toggle is set to "Y", BACE examines the aggregate direct costs (and wire center-specific indirect costs) and revenues for all remaining customers in the market (post user specified testing resulting from the use of **FilterNegativeMarginCLLIs** and **FilterNegativeMarginMassMarketInMarkets**) to determine if the customers provide a positive contribution to the CLEC, i.e., positive NPV within each market, over the 10-year study time frame. If serving customers within any Market has a negative NPV, BACE assumes that the CLEC would not offer services to these customers and thus the costs and revenues are removed from the overall analysis. If the **FilterNegativeMarginMarkets** toggle is set to N, all remaining Market customers remain in the analysis.

The **CLEC Study Properties** table includes a user input to **FilterNegativeMarginLATAs** If this toggle is set to "Y", BACE examines the aggregate direct costs (and LATA-specific indirect costs, e.g., switch getting started costs) and revenues for the positive contribution wire centers (if the **FilterNegativeMarginCLLIs** is set to Y, all wire centers otherwise) within each LATA to determine if the LATA overall provides a positive contribution to the CLEC, i.e., positive LATA NPV, over the 10-year study time frame. If serving customers within any LATA has a negative NPV, BACE assumes that the CLEC would not offer services in that LATA and thus the costs and revenues are removed from the overall analysis.

Final Cost Phase

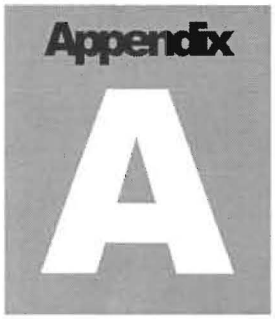
The final step in BACE processing is the calculation of the income tax liability. First, the user indicates how the tax liability is treated specifically for those years in which a tax income (i.e., income calculated for tax purposes) loss is incurred (a negative tax liability). The user controls the treatment of a loss by setting the **CLEC Study Properties** value of **TaxTreatmentForLoss** to either CarryForward or CurrentYearCredit. If the user selects CarryForward, any tax income loss is carried to succeeding years. The net of the CarryForward loss and the current year's tax income is then used to determine whether a loss exists. This process continues through all ten years. If the user selects CurrentYearCredit the tax loss is actually shown as a contra-expense in that year. This

selection implies that the CLEC has other "profitable" business entities, and that the modeled operations loss will be used to offset some portion of the total CLEC tax liability created from accounting profits in its other operations.

Once the user selects the Tax-treatment method, BACE calculates an estimated net income statement for tax calculation purposes. This includes an estimate of the yearly book depreciation (which is based on the plant lives entered in the **Retirement Input** table). In addition, an estimate of the yearly interest expense is made using the sum of the capex in the current period and from succeeding periods multiplied by the debt percentage (1-**EquityPct**) and a debt rate calculated in the model from the user's inputs in the **CLEC Study Properties** for **EquityPct, EquityRate, PreTaxCostOfCapital.**

From the net income statement, the model calculates the estimated annual taxes based upon an effective tax rate that is based on the user inputs in the **CLEC Study Properties** for **StateTaxRate** and **FedTaxRate.** The effective tax rate accounts for the fact that state taxes impact the federal tax liabilities.

Finally, once the estimated taxes are calculated, a tax to NPV ratio is developed so that the taxes can be apportioned down to the reporting levels in BACE. This apportionment is only performed to allow the user to analyze impairment using any of the various data dimensions in the model.



Appendix A-Input/Rule Dictionary

Because BACE is a relational model, the following appendices provide detailed information on the tables, fields and rules used in the model.

FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
AccessChargeType	AccessChargeType	Alphanumeric	Input	Designates which access charge adjustments to apply to various	**IntraLATA, InterLATA, International, 800Services, CC**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				customers		
AccessToLocalMOUFactor	AccessToLocalMOUFactor	Decimal	Input	A factor which converts access minutes to local minutes of use		Found in the CLEC Properties Table
AcctCat	Account Category	Alphanumeric	Input	Classifies / organizes computed costs into groups on selected output reports	*Capex, COGS, Opex*	
AffectedByPurchasePower	AffectedByPurchasePower	Flag	Input	Indicates whether the Purchasing Power factor applies to a network cost item	**Y or N**	Purchase Power factor is an input in the CLEC Study Properties table
AllowColo	AllowColo	Flag	Input	A yes indicates that the CLEC establishes collocation space at each end office	**Y or N**	If AllowEELs is also set to "Y", BACE performs and economic test and uses the most efficient mechanism at each end office. Found in the CLEC Study

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
						Properties Table
AllowEELs	AllowEELs	Flag	Input	A yes indicates that the CLEC does not collocate at any end offices	**Y or N**	If AllowColo is also set to "Y", BACE performs and economic test and uses the most efficient mechanism at each end office. Found in the CLEC Study Properties Table
Amount	Amount	Decimal	Input	States the value of an item. May also have a suffix (e.g., 1, 2..10) to indicate how amount varies across years of 1 through 10 of study.	$00.00 or xx.yy% (percentage entered as 0.xxyy)	
Anchor	Anchor	Flag	Input	Specifies whether a particular customer and product combination is an anchor (i.e.,	**True or False**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				prerequisite) offering for a CLEC		
ApplyLoadings	ApplyLoadings	Flag	Input	Indicates whether Loading factors apply to a network cost item	**Y or N**	
BookingConvention	BookingConvention		Input	Fixed to mid-year		Found in the CLEC Study Properties Table
BSTAsPctScopeOfOperations	BSTAsPctScopeOfOperations		Input	This variable helps account for the operational scope of the CLEC compared to BST.	**0 to 100**	Found in the CLEC Study Properties Table
Bundle	Bundle	Alphanumeric	Input	Defines product packages sold to various types of customers	*ResBundleA, SOHOBundleC*	
C	c	Decimal	Input	Parameter in the Gompertz-Makem survival curve. Used to determine retirement capex		
Capacity	Capacity	Decimal	Input	Specifies the usable capacity (measured in UOM) associated with a network or	**0 - 99,999,999,999**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				operations cost item (relative to the amount)		
CapexPlantCat	Capex Plant Category	Alphanumeric	Input	Identifies the field reporting code that a loading should be applied to	*257C, 77C, 852C*	
CDMax	CDMax	Integer	Input	Establishes the highest cost driver quantity to which the driver applies. This allows for the model to graduate up (or down) the unit cost of specific cost drivers relative to the quantity of driver.	**0 - 99,999,999,999**	Must be greater than CDMin
CDMin	CDMin	Integer	Input	Establishes the lowest cost driver quantity to which the driver applies. This allows for the model to graduate up (or down) the unit cost of specific cost drivers relative to the quantity of driver.	**0 - 99,999,999,999**	Must be less than CDMax

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
CEA	Component Economic Area			A geographic entity developed by the Bureau of Economic Analysis to categorize geographic areas with similar purchasing patterns.		
CLECProvides	CLECProvides	Flag	Input	Indicates which customer types and locations a modeled CLEC serves	**True or False**	
CLECProvidesInUNEZone1	CLECProvidesInUNEZone1				**True or False**	
CLECProvidesInUNEZone2	CLECProvidesInUNEZone2				**True or False**	
CLECProvidesInUNEZone3	CLECProvidesInUNEZone3				**True or False**	
CLECProvidesInUNEZone4	CLECProvidesInUNEZone4				**True or False**	
CLECType	CLECType	Alphanumeric	Input	In CLEC Properties table determines what type of CLEC will be analyzed; In Network Cost Input table, determines which cost records	**Small, Medium, Large, or ALL** (ALL is only valid in the Network Cost Input table).	Found in the CLEC Study Properties Table and Network Cost Table

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				are used.		
ColoOrEEL	ColoOrEEL	Flag	Input	Indicates if the cost element applies for the collocation and/or EEL network architecture or to all configurations	**Colo, EEL or ALL**	
CostArea	CostArea	Alphanumeric	Input	Indicates the categories of the second highest level of the cost hierarchy	*Access, Switch, COLO, Features*	
CostCntr	CostCntr	Alphanumeric	Input	Indicates the categories of the third highest level of the cost hierarchy	*Loop, Cageless, LocalSwitching*	
CostDriver	CostDriver	Alphanumeric	Input	States the primary quantity measure that causes a direct cost item	*Qty, Revenue & Capex for CostDriverType=Prod*	
CostDriverType	CostDriverType	Alphanumeric	Input	Indicates the primary cost object dimension that applies to a direct cost item	**Product, Loc**	
CostElem	Cost Element	Alphanumeric	Input	Indicates the categories of the	*DSX3Panel, DSLModem, TrunkMOU*	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				lowest level of the cost hierarchy		
CostElem	CostElem	Alphanumeric	Input	Indicates the categories of the lowest level of the cost hierarchy	*DSX3Panel, DSLModem, TrunkMOU*	
CostFam	CostFam	Alphanumeric	Input	Indicates the categories of the highest level of the cost hierarchy	*NetworkCapacity, OperationsMaintenance*	
CostType	CostType	Alphanumeric	Input	Determines whether a cost item is assigned via the primary or secondary cost driver depending on how the cost behaves with respect to the cost object	**DIRECT, INDIRECT**	Impacts results of the optimization routines that include direct costs to the product and/or location as appropriate
CurCompZone	CurCompZone	Alphanumeric	Input	Currently not used		
CustArea	Customer Area	Alphanumeric	Input	Indicates the categories of the second highest level of the customer hierarchy	**SOHO, QUINTILE, SME/A, SME/B, SME/C**	
CustCntr	Customer Center (Spend Band)	Alphanumeric	Input	Indicates the categories of the third highest level	**QUINTILE1- QUINTILE5 (for Res) and TOP, MIDDLE, BOTTOM (for**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				of the customer hierarchy	**Bus)**	
CustElem	CustElem	Alphanumeric	Input	Indicates the categories of the lowest level of the customer hierarchy (not used presently)		
CustFam	Customer Family (Res or Bus)	Alphanumeric	Input	Indicates the categories of the highest level of the customer hierarchy	**RES, BUS**	
DemandChangePct(1..10)	DemandChangePct1(1..10)	Decimal	Input	Represents the percent change in an attribute each year, entered as a decimal. Suffix (1..10) indicates the corresponding year of the value.		
DemandYearForBuild	DemandYearForBuild	Integer	Input	Identifies the number of years that should be considered for initial provisioning of the network cost item	**1-10**	
DepreciationPct(1..10)	Yearly Depreciation	Decimal	Input	Represents the depreciation rate in		

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				a given year, entered as a decimal. Suffix (1..10) indicates the corresponding year of the value.		
Descrip	Descrip	Alphanumeric	Input	Provides a brief guideline / instruction to assist the user when setting model parameters		
DisconnectPct(1..10)	DisconnectPct1	Decimal	Input	The Percentage of customers disconnected each year (expressed as a decimal). Suffix (1..10) indicates the corresponding year of the value.		
DMA	TV Market Area	Alphanumeric	Input	Defines the Designated Market Area associated with each LocElem (DMA® is a trademark of Nielsen Media Research, Inc.)	*ATLANTA, AUGUSTA, NEW ORLEANS, LOUISVILLE*	
DS1ToDS0XOver	DS1 To DS0 Xover	Integer	Input	In CLEC Study	**4, 9 (ALL** is applied to the	Found in the

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				Properties table identifies the crossover between DS1 and DS0; In Network Cost table determines if a cost element is included dependent upon the value of the DS1 to DS0 crossover input in the CLEC Study Properties table	network cost items for which this toggle is not relevant)	CLEC Study Properties Table
DSLAddressable	DSLAddressable	Flag	Input	Indicates whether a cost item can be associated with delivery of DSL service for a particular customer segment	**Y, N, or %**	
EndingYear	EndingYear	Integer	Input	Indicates the model year through which a particular product or bundle would be offered	**1-10**	
EnterpriseServiceOffered	Is Enterprise Service Offered	Flag	Input	Indicates whether Enterprise Service is offered in a	**Y or N**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				particular LocElem		
EquityPct	EquityPct	Decimal	Input	The percentage of total capital that is equity-entered in decimal format.	*0.5*	Found in the CLEC Properties Table
EquityRate	EquityRate	Decimal		The cost of equity entered in decimal format	*.1125*	Found in the CLEC Properties Table
FirstYear	FirstYear	Integer	Input	Designates the beginning year for each cost trend series (TPI) associated with each PlantCat (FRC)	*1988*	
FedTaxRate	FedTaxRate	Decimal	Input	The effective Federal Tax Rate entered in decimal form	*.35*	Found in the CLEC Properties Table
FilterNegativeMarginCLLIs	FilterNegativeMarginCLLIs	Flag	Input	Enables an optimization in BACE which removes wire centers which have a negative NPV.	**Y or N**	Found in the CLEC Properties Table
FilterNegativeMarginLATAs	FilterNegativeMarginLATAs	Flag	Input	Enables an optimization in BACE which	**Y or N**	Found in the CLEC Study Properties

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				removes LATAs which have a negative NPV.		Table
FilterNegativeMarginMassMarketInMarkets	FilterNegativeMarginMassMarketInMarkets	Flag	Input	Enables an optimization to remove Mass Market customers from Markets in which the Mass Market Customers have a negative NPV.	**Y or N**	Found in the CLEC Study Properties Table
FilterNegativeMarginMarkets	FilterNegativeMarginMarkets	Flag	Input	Enables an optimization to remove markets that have a negative NPV.	**Y or N**	Found in the CLEC Study Properties Table
Freq	Frequency	Alphanumeric	Input	Designates how often a particular cost item repeats (recurring indicates monthly)		
Frequency	Frequency	Alphanumeric	Input	Designates how often a particular cost item repeats (recurring indicates monthly)	**Recurring, NonRecurring, NonRecurringNetwork, NonRecurringChurn, StartUp, Usage and Annual**	
g	g	Decimal	Input	Parameter in the		

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				Gompertz-Makem survival curve. Used to determine retirement capex		
GeoZone	Geographic Zone					
H	H	Integer	Input	Indicates the horizontal coordinate associated with each LocElem		
IDLCPct	IDLCPct	Decimal	Input	States the rate of integrated digital loop carrier that exists in a particular LocElem	**0-1**	
IncludedInDiscount	Is Product Price Impacted by Bundle Discount	Flag	Input	Indicates whether a product within a bundle participates in the discounting scheme	**Y or N**	
IncludedInPrice	Is Product Included in Bundle Price	Flag	Input	Indicates whether a product within a bundle is included in the bundle price	**Y or N**	
IncludeTerminalValue	IncludeTerminalValue	Flag	Input	Setting this value to Y will include the net book value of the assets in the NPV calculation.	**Y or N**	Found in the CLEC Study Properties Table

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
InitialOfferingYear	InitialOfferingYear	Integer	Input	Indicates the beginning model year in which a product or bundle is offered to customers	**1-10**	
IsOffered	IsOffered	Flag	Input	Indicates whether a product is offered by a CLEC sometime during the model period	**True or False**	
Lat	Lat	Decimal	Input	Designates the degrees latitude for each LocElem		
Life	Life	Integer	Input	Specifies the economic life in years for each PlantCat (FRC)		
LifeCat	Life Category	Alphanumeric	Input	Classifies plant assets (relative to sub-FRC) for the purpose of applying appropriate in-plant factors	**Telco, Mat, Hardwire, PlugIn, PlugInSpStock, NONE**	Value entered in Network Cost table is matched to the LifeCat variable in the InPlant and Loadings table
LoadingPlantCat	Loading Plant Category	Alphanumeric	Input	Indicates a support related PlantCat (FRC) that is	*5C, 852C, 10C*	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				associated with a primary PlantCat		
LocArea	State	Alphanumeric	Input	Indicates the categories of the second highest level of the location hierarchy	**AL, FL, GA, KY, MS, LA, NC, SC, TN**	
LocCntr	LATA	Alphanumeric	Input	Indicates the categories of the third highest level of the location hierarchy	*422, 46017, 250*	
LocElem	WireCenter	Alphanumeric	Input	Indicates the categories of the lowest level of the location hierarchy	*BCMTNCCE, KGMTNCMA, GNVLSCBE*	
LocFam	Operating Area	Alphanumeric	Input	Indicates the categories of the highest level of the location hierarchy	**BellSouth**	
Lon	Lon	Decimal	Input	Designates the degrees longitude for each LocElem		
MCSA	Micropolitan Statistical Area	Alphanumeric	Input	Notes the MCSA category associated with a particular LocElem	*Columbia- TN Micropolitan Statistical Area*	
MassMarketServiceOffer	Is MassMarket Service	Flag	Input	Indicates whether	**Y or N**	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
ed	Offered			Mass Market Service is offered in a particular LocElem		
Mileage	Mileage	Decimal	Input	Specifies the mileage between the BST end office and the main BST Access tandem within the same LATA.		
MileageBased	MileageBased	Flag	Input	Indicates whether a network cost item amount is stated on a per mile basis	**Y or N**	System calculates mileage to multiply against amount
MMA	MMA	Alphanumeric	Input	Indicates the mass marketing area associated with each LocElem	*DAYTONA BEACH*	
MSA	MSA	Alphanumeric	Input	Indicates the metropolitan statistical area associated with each LocElem	*Baton Rouge*	
NewQUOM	NewQUOM	Alphanumeric	Input	Identifies the new quantity of measure after applying a ratio to		

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				the original QUOM		
Notes	Notes	Alphanumeric	Input	Provides a general text area for additional explanations of cost items / entries		
NtwkCat	NtwkCat	Alphanumeric	Input	Specifies the broad report category of network resources to which a particular cost item belongs	*Access, UNE, Owned, EEL, SPA, UNET, Wholesale*	
PctBSTCoverageOfLATA	PctBSTCoverageOfLATA	Decimal	Input	Specifies what portion of each modeled LATA is currently being served by the ILEC area being studied (BST)	**0-1**	Found in CLEC Study Properties Table
PctChange(1..31)	PctChange(1..31)			States the annual rate of increase / decrease in the asset value of each PlantCat	**0-1**	
PctDiscount	PctDiscount	Percentage	Input	States the discount at which the CLEC will offer the product versus the baseline ILEC	**0-1**	As with other similar inputs, the impact of this factor does not carry

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				price		forward with each period. Each period's PctDiscount must be entered as a stand-alone input.
PctGrowth(1..10)	Percent Growth 1	Percentage		Defines the annual growth rate of customers in the state being analyzed	**0-1**	As with other similar inputs, the impact of this factor does not carry forward with each period. Each period's PenPct must be entered as a stand-alone input.
PenAffectedByDSLAddressability	PenAffectedByDSLAddressability	Flag	Input	Indicates whether the ILEC's ability to provide DSL access would affect the market penetration of a CLEC's product bundle	**Y or N**	
PenPct(1..10)	PenPct1			Provides the rate of market	**0-1**	As with other similar inputs,

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FieldName	Alias	Format	Type	Explanation	Valid Entries and/or *Examples*	Interactions
				penetration for a particular customer and product combination during each model year		the impact of this factor does not carry forward with each period. Each period's PenPct must be entered as a stand-alone input.
PenTiedToAnchor	PenTiedToAnchor	Flag	Input	Indicates whether the penetration rate for a particular customer and product combination is based upon a related anchor product	**True or False**	
PlantCat	PlantCat	Alphanumeric	Input	Classifies plant assets (by FRC) for the purpose of computing loadings, in-plant values, cost trends, and depreciation	*UNE, 377C, 357C*	
PreTaxCostOfCapital	PreTaxCostOfCapital	Decimal	Input	The Pre Tax Cost of Capital (WACC)	*.1125*	Found In CLEC Study Properties

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
						Table
Price	Price	Decimal	Input	States the baseline / starting price for a product or bundle		
PriceChangePct(1..10)	PriceChangePct1			Specifies the rate of change in the price of CLEC products and bundles for each model year		
PriceErosionZone	PriceErosionZone	Alphanumeric	Input	Not used at this time		
ProdArea	ProdArea	Alphanumeric	Input	Indicates the categories of the second highest level of the product hierarchy	*Local, LD, Internet*	
ProdCntr	ProdCntr	Alphanumeric	Input	Indicates the categories of the third highest level of the product hierarchy	*Line, Usage, NonDSL*	
ProdElem	ProdElem	Alphanumeric	Input	Indicates the categories of the lowest level of the product hierarchy	*IntraLATA, CC, International*	
ProdFam	ProdFam	Alphanumeric	Input	Indicates the categories of the	*PSTN, NonSwitched*	

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				highest level of the product hierarchy		
Property	Property	Alphanumeric	Input	Provides the name of each model parameter subject to user configuration		
PurchasePower	PurchasePower	Percentage	Input	This variable (expressed as a percentage) represents the CLEC's purchasing power relative to BellSouth. It should be expressed in terms of the CLECs PurchasePower as a percentage of BellSouth's Purchasing Power.)		Found In CLEC Study Properties Table
Qty	Qty	Integer	Input	Indicates how many units of a product are included in the definition of a product bundle, only if the QtyIsLimited value		

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				is set to Y.		
QtyIsLimited	QtyIsLimited	Flag	Input	Determines whether the quantity of a product included in a bundle is limited	**Y or N**	
QUOM	QUOM	Alphanumeric	Input	Specifies the type of quantity measure that applies to each of the direct cost items	*GrossAdds, Lines, Customers*	
RateCenterZone	RateCenterZone	Alphanumeric	Input	Identifies the ILEC tariff schedule for SpA rates that applies to products in particular locations	**3N, 2N, 1N, 3R, 2R, 1R**	
Ratio	Multiplier to convert QUOM to NewQUOM	Decimal	Input	Conversion value to convert QUOM to NewQUOM		
S	S	Decimal	Input	Parameter in the Gompertz-Makem survival curve. Used to determine retirement capex		
ScopeCat	ScopeCat	Flag	Input	Indicates whether a cost item is subject to	**Y or N**	For cost items with ScopeCat = Y, the

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FieldName	Alias	Format	Type	Explanation	Valid Entries and/or *Examples*	Interactions
				constraints based on the type of CLEC		BSTAsPctOfScopeOfOperations factor from the CLEC Properties table is applied to the amount
SecondDriver	SecondDriver	Alphanumeric	Input	States the secondary quantity measure used to allocate an indirect cost item	**Quantity or NONE**	
SecondDriverType	SecondDriverType	Alphanumeric	Input	Indicates the secondary cost object dimension used to allocate an indirect cost item	**Product or NONE**	
SecondQUOM	SecondQUOM	Alphanumeric	Input	Specifies the type of quantity measure that applies to each of the indirect cost items	*Lines, MOU, GrossAdds*	
Source	Source	Alphanumeric	Input	Provides an open field for documentation of data sources		
SpAOrUNETEOTransport	Use SpA or UNET For EO Transport	Alphanumeric	Input	Allows the user to identify the CLEC's	**SPA, UNET or ALL**	

APPENDIX A

FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				end office transport medium associated with each network cost item		
StateTaxRate	StateTaxRate	Decimal	Input	The effective state tax rate net of the Federal benefit. Entered as a decimal.		Found In CLEC Study Properties Table
SurvivalCurve	Shape of Survival	Alphanumeric	Input	States the type of retirement curve that applies to a particular plant category (FRC)	**CG&S, SquareLife**	
TaxTreatementForLoss	TaxTreatmentForLoss	Flag	Input	Determines how the taxes on net income losses are handled. Losses can be carried over to the succeeding year or kept as a current year credit.	**CarryForward, CurrentYearCredit**	Found In CLEC Study Properties Table
TerminalValueMultiplier	TerminalValueMultiplier	Decimal	Input	If the IncludeTerminalValue="Y", the TerminalValueMultiplier will be multiplied by the		Found In CLEC Study Properties Table

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FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				present value of the net book value of the assets that is added into the NPV.		
UNEZone	UNEZone	Alphanumeric	Input	Identifies the UNE tariff schedule that applies to particular network cost items	**Zone1, Zone2, Zone3, Zone4**	
UOM	UOM	Alphanumeric	Input	States the unit of measure applicable to each of the products	*Customers, Lines, MOU*	
UseSPAorUNET	UseSPAorUNET	Toggle	Input	Allows the user to select if the CLEC network should use Special Access (SpA) or Unbundled Network Element Dedicated Transport for their transport facilities.	**SPA or UNET**	
V	V	Integer	Input	Indicates the vertical coordinate associated with each LocElem		
Value	Value	Decimal	Input	Contains the		

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FieldName	Alias	Format	Type	Explanation	Valid Entries and/or *Examples*	Interactions
				parameter value input by the user for a particular CLEC profile		
Vintage	Vintage	Integer	Input	Designates the actual year in which network equipment is acquired		
Weight	Weight	Decimal	Input	Indicates any increase or decrease that applies to a cost item for particular customer segments, locations, or products, e.g., probability of occurrence for a cost element		Model logic applies the weight against the amount
Year1	Year1	Integer	Input	Indicates the first year of the ten year period to be analyzed. The entry can be no more than 20 years beyond the FirstYear date in the cost trends		Found In the CLEC Study Properties Table

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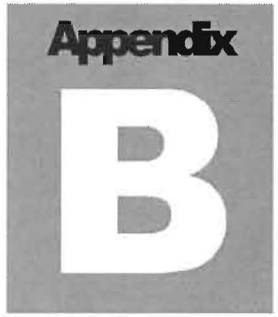
FieldName	Alias	Format	Type	Explanation	**Valid Entries** and/or *Examples*	Interactions
				table.		
ZoneName	ZoneName	Alphanumeric	Input	Indicates what Zone grouping is being referenced	*UNEZone*	
ZoneType	ZoneType	Alphanumeric	Input	Indicates which Zone value is being referenced		



Appendix B-Table Dictionary

Table Name	Description
Alternative Units of Measure	Provides multipliers to convert existing QUOM values into alternative units of measure for use in the cost development
Baseline Bundle Price	Contains the initial prices for product bundles based upon customer segment
Bundle Price Curves	Allows for an adjustment to the bundle price in each model year based on the customer segment and the price erosion category
Bundles	Defines each bundle in terms of which and how many products are included, and how each one fits into the bundle discounting
Churn	Provides the gross disconnect rate in each model year by customer-product grouping. Used to factor recurring

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Table Name	Description
	sales quantities and to drive some network operations costs
CLEC Baseline Price Discount	Provides for adjustments to each of the initial product prices based upon the CLEC's competitive zone
CLEC Profile Bundles	Specifies which bundles the CLEC offers along with when and in which UNE zones
CLEC Profile Products	Specifies which products the CLEC offers along with when and in which UNE zones
CLEC Study Properties	Contains the user provided parameters for the model scenario (ref. separate Properties sheet)
Cost Input Network	Specifies the starting amount of each network cost item, its capacity, what drives it and by what quantity measure, in which location-customer-product-UNEZone cases it applies, the likelihood of it being used/needed, whether related costs also apply, how
Cost Input Operations	Specifies the amount for each model year of each operations cost item, its capacity, what drives it and by what quantity measure, in which location-customer-product-UNEZone cases it applies, the likelihood of it being used/needed, whether related costs al
Cost Trends	Provides the percent change in cost for each of the plant categories (FRCs) during each study year
Customer Hierarchy	Indicates the structure of the customer dimension of the model and which types of customers are included in the CLEC customer base
Demand Curves	Specifies a percent change in the initial year quantity for specific customer-product-UNEZone combinations during each model year
Exchange Information	Specifies the geographic location, market characteristics, and various demographic designations for each location element (wire center) along with whether residential and business customers are to be included in the modeling process
InPlant And Loadings	This table provides the inputs to turn the material prices of the capital inputs in the Cost Input Network table into fully capitalized costs that could include: engineering, power, land, building, supplies, and other items.
Location Hierarchy	Indicates the structure of the location dimension of the model and whether the CLEC would serve each location element.

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Table Name	Description
Market Growth	Defines the growth in the of the market each year during the 10 year study.
Penetration Curves for Bundles	This table allows the user to determine the proportion of CLEC product sales that occur via bundles, by year, by customer segment and customer-spend category, over the ten-year study horizon. For example, a penetration rate of .5 indicates that 50% of the sales by the CLEC for that product are made via bundles.
Penetration Curves for Products	This table describes the anticipated CLEC market share for each product by customer type over the ten-year study horizon. This table relies upon user adjustable inputs, and also allows the user to tie product penetration to DSL Addressability.
Product Hierarchy	Indicates the structure of the product dimension of the model and how to measure the quantity of each product
Product Price Curves	Specifies the percent change in initial price that applies to specific customer-product combinations during each model year
Retirement Inputs	This table provides the inputs required to determine the levels of replacement capital due to the retirement of plant. The inputs are used in the Gompertz-Makem retirement rate estimation approach, described later in this testimony.
Tax Depreciation Schedule	Specifies the percent of the gross value that is depreciated (for taxes) during each model year depending upon the tax life of the asset
USF - Interstate Access Support	Indicates the USAC specified amounts for Interstate Access Support (IAS) providers by UNEZone and state
USF - High Cost Loop Support	Indicates the USAC specified amounts for High Cost Loop Support by wire center within a state.
Zone Definitions	Indicates the allowable values for each zone type (e.g., UNE zone and rate center zone)