BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Investigation into Pricing of Unbundled Network Elements	)))	Docket No. 990649-TP

DIRECT TESTIMONY OF

DAVID G. TUCEK

ON BEHALF OF

VERIZON FLORIDA INC.

SUBJECT: LONG RUN INCREMENTAL COSTS

MAY 18, 2001

DIRECT TESTIMONY OF DAVID G. TUCEK

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is David G. Tucek. My business address is 1000 Verizon Drive, Wentzville, MO 63385.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Verizon Communications (Verizon) as Staff Manager - Economic Issues. In this capacity, I am responsible for supporting Verizon's incremental cost studies for its telephone operating companies. In this proceeding I am representing Verizon Florida Inc., which was formerly known as GTE Florida Incorporated.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. I have a Bachelor of Science Degree in Mathematics and Economics from Southeast Missouri State University and a Master of Arts Degree in Economics from the University of Missouri. I also have a Master of Business Administration from St. Louis University. I began my career in the telecommunications industry as a Senior Cost Analyst with Contel Service Corporation in 1979. I became an employee of GTE in 1991, at the time of the merger between the two companies. During the course of my career, I have held various positions dealing with cost analysis and modeling, rate design, tariff development, carrier billing, and demand analysis. I assumed my present position in August of 1996.

Q. HAVE YOU TESTIFIED BEFORE THIS OR ANY OTHER REGULATORY COMMISSION?

A. Yes. I have presented testimony on behalf of the Company before this Commission and before state public utility commissions in Alabama, Arkansas, Hawaii, Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, Nebraska, New Mexico, North Carolina, Ohio, Pennsylvania, Texas, Virginia and Washington.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe and sponsor Verizon's long-run, forward-looking cost study. This study is based on a Florida-specific version of Verizon's Integrated Cost Model (ICM-FL). ICM-FL is a long-run incremental cost model that estimates the long-run, forward-looking costs of provisioning unbundled network elements (UNEs) out of Verizon's Florida network. My testimony also addresses the appropriate assumptions and inputs to be used in the model (Issue 7), with the exceptions of depreciation lives and the cost of capital, which are addressed in the testimony of Verizon witnesses Sovereign and Jacobson, respectively.

Q. WHAT STUDIES AND EXHIBITS ARE YOU SPONSORING?

A. In addition to Verizon's long-run, forward-looking cost study, which has been filed concurrently with my testimony, I am sponsoring the following two exhibits:

(1) Exhibit DGT-1, "Main Components of ICM-FL's Modeled Network";

(2) Exhibit DGT-2. "ICM-FL's Modeling Process".

Included with the Company's cost study filing is a compact disc (CD) containing ICM-FL and all of the files and input data needed to replicate the study results. Copies of this CD are available to parties for review upon execution of an appropriate protective agreement. A second CD, with the confidential information redacted, has also been provided as part of the Company's cost study filing.

Q. HOW DOES ICM-FL DIFFER FROM EARLIER VERSIONS OF VERIZON'S INTEGRATED COST MODEL (ICM)?

A. ICM-FL represents a move towards even more state- and company-specific estimates of the long-run costs of provisioning telecommunications services in Verizon's Florida network. ICM-FL differs from earlier versions of ICM in two major areas. The first difference is found in ICM-FL's modeling of local loop costs. Earlier versions of ICM modeled the number of Digital Loop Carrier (DLC) locations and their attendant fiber feeder routes in order to meet a user-specified restriction on copper loop length. Specifically, the length of the copper portion of an end-user's loop was restricted to either 12 or 18 kilofeet. In ICM-FL, this option is disabled and the modeled DLC locations are based on the existing network in Verizon's Florida serving area. The modeled DLC locations are inputs to the modeling process rather than outputs of it.

The second difference between ICM-FL and earlier versions of ICM is found in the inputs provided to ICM's Transport Module. Previously, end-office assignments to SONET rings were specified with minimal regard for actual assignments found in the existing network. While the assignments continue to be specified outside of the model, in ICM-FL they are now based on Verizon Florida's network configuration. In particular, not every hub office on a ring is an access tandem. In Florida's existing network, and in ICM-FL's modeled network, some SONET rings are used to transport traffic between offices without passing through the Tampa access tandem. Generally, a large office on these collector rings serves as the hub.

These two changes move ICM-FL's modeled network substantially closer to the network that actually exists in Verizon's Florida operations. Nevertheless, ICM-FL shares many things in common with earlier versions of the model. In particular, the material and placement costs continue to be company- and state-specific. Likewise, the network modeled by ICM-FL continues to be based on the existing wire center locations and on the host/remote relationships found in Florida. Finally, ICM-FL continues to reflect Verizon's engineering standards, and the technologies Verizon is using now and going forward.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized into three major sections. First, I explain why the Commission should choose ICM-FL to estimate the long-run, forward-looking costs of Verizon's Florida network.

Second, I present an overview of ICM-FL. In the final section of my testimony, I summarize the major assumptions and inputs underlying ICM-FL.

MODELING VERIZON'S LONG-RUN, FORWARD-LOOKING COSTS

Q. WHY SHOULD THE COMMISSION CHOOSE ICM-FL TO ESTIMATE THE FORWARD-LOOKING COSTS OF VERIZON'S FLORIDA NETWORK?

A. There is one main reason. ICM-FL provides estimates of the forward-looking costs of provisioning telecommunications services out of the Company's own network in Florida, as opposed to the costs produced by a proxy model based on assumptions and input values that are not company-specific. ICM-FL estimates the forward-looking costs of provisioning telecommunications services out of the Company's own network by reflecting Verizon's engineering practices and operating characteristics, and by relying on the Company's Florida costs for material and labor. Additionally, ICM-FL possesses several characteristics that will facilitate the Commission's determination of Verizon's forward-looking costs in Florida.

Q. WHY IS IT IMPORTANT THAT A COST MODEL REFLECT VERIZON'S ENGINEERING PRACTICES AND OPERATING CHARACTERISTICS, AND BE BASED ON VERIZON'S COSTS FOR MATERIAL AND LABOR?

A. Unless a cost model reflects Verizon's engineering practices and operating characteristics, it cannot produce realistic estimates of Verizon's forward-looking costs. As I explain below, ICM-FL reflects a long run forward-looking loop network designed according to the Company's engineering practices and guidelines, along with switches using Verizon's forward-looking technology and engineered to the service characteristics of Verizon's system. In particular, the switching costs produced by ICM-FL are based on the host/remote relationships and technology mix found in Verizon's network, and on the switch prices that Verizon is able to obtain today and for the foreseeable future. In addition, costs are based on input prices for material and labor that Verizon, as an efficient buyer with a national presence, is able to obtain. The material costs input to ICM-FL are based on Verizon's actual contracts with vendors, and the labor costs are based on Verizon's experience of what labor activities actually cost in Florida.

Q. WHAT ARE THE FEATURES OF ICM-FL THAT WILL FACILITATE THE COMMISSION'S DETERMINATION OF VERIZON'S FORWARD-LOOKING COSTS IN FLORIDA?

A. ICM-FL provides the advantages of testability, flexibility, complete openness to inspection, and internal integration. ICM-FL allows the user to easily see and vary inputs, and evaluate the impact on intermediate and final output, thereby affording tremendous testing capability. Without this capability, the user is left with gaps in knowledge about a model's operation and performance. ICM-FL is flexible in that it can be used for various purposes, such as the estimation of UNE costs and the determination of costs for retail services. Another dimension of flexibility that ICM-FL offers is that it is capable of easily accommodating a change in the definition of a service. ICM-FL is completely open to inspection, including the model code and all preprocessing functions. This attribute allows a user to understand precisely how the model is operating. Finally, ICM-FL is integrated, combining all components of Verizon's network into one model that operates on a consistent set of inputs.

Q. PLEASE EXPAND ON ICM-FL'S TESTING CAPABILITY.

A. ICM-FL was developed with the premise that the more ways in which a model can be tested, the easier it is for reviewers to gain confidence in its performance. The six primary features that enable the user to test ICM-FL are:

(1) Sensitivity Analysis Capabilities - ICM-FL offers two avenues for the user to conduct sensitivity analyses. First, a menu-driven "Run Time Options" feature allows the user to change model assumptions such as administrative fill, sharing percentages, pole spacing, etc. Second, a table reader function allows the user to view and revise all other model inputs, which include material costs, plant mixes, rate of return, depreciation lives, and others. The ability to change ICM-FL's inputs and assumptions enables the user to easily test the sensitivity of its outputs to specific input changes.

(2) Intermediate Outputs – The ability to change inputs and observe the impact on final output provides the user with a solid tool for evaluating the operation of a cost model. ICM-FL expands dramatically upon this capability by offering the user a large set of intermediate outputs. These outputs are generated and saved to a series of output files that can be viewed via the table viewer. Intermediate outputs are available for items such as size, length, and type of facilities placed at the demand cluster level. (As explained below, a demand cluster is an area within the wire center that is served directly by the switch or by a DLC.) Investment results are available at the wire center level for items such as poles, conduit, aerial copper distribution cable, etc.

(3) Integrated Table Query Function – Much of the intermediate output produced by ICM-FL is offered to the user on a detailed basis. For example, the total amount of 25-pair buried copper distribution plant placed can be viewed at the cluster level. In some instances, the user may wish to view intermediate output on a slightly more aggregated basis. For this purpose, ICM-FL features a database query function as part of its table viewer. The user may define search parameters and query the desired intermediate output table to view a customized level of intermediate output detail.

(4) Database Export Function – ICM-FL offers the user the capability to export database files and table viewer query results in a comma-delimited format for use by an analytical software program (e.g., a spreadsheet program) of the user's choice. The user may view and export any ICM-FL database files (e.g., input tables, raw input data, and intermediate output tables) to perform tests on ICM-FL's performance as a whole and/or to evaluate the operation of specific functions within the model. The Export Function makes it possible to extract these outputs into commonly used software programs, such as Microsoft Access or Excel.

(5) Visual Interface Output – ICM-FL offers the user the ability to view a graphical representation of the modeled network designed to serve the demand in a particular wire center. The user can view, by CLLI code, maps depicting items such as the distribution of demand density, DLC placement, feeder network design, and demand clustering results. This function can be used in conjunction with sensitivity analyses to see how the network placement may vary due to input and/or assumption changes.

(6) Numerical Output Integrated With Visual Interface – Accompanying the Visual Interface is an option to see detailed intermediate output results that correspond to the wire center serving area map being viewed on the screen. For example, the user may simply click on a particular demand cluster depicted on

the visual interface to examine details about the type and amount of distribution plant placed by ICM-FL in that particular distribution area (e.g., type of plant, size, length, number of units, etc.).

Q. WHAT DO YOU MEAN WHEN YOU SAY THAT ICM-FL IS FLEXIBLE?

A. ICM-FL produces both TSLRIC and TELRIC estimates, meaning it can be used for the purposes of establishing UNE costs and to assist in retail rate rebalancing. In addition, the Mapping/Report Module of ICM-FL allows the user to define new elements or services by assembling the desired type and number of basic network functions. Thus, ICM-FL can respond to new requirements for element or service costs.

Q. IS ICM-FL OPEN TO INSPECTION?

A. Yes. All of ICM-FL's processes and inputs are well defined and documented. The programming code of ICM-FL is readily available for review. Output from the model, including intermediate output, can be reviewed at nearly any level of detail desired, and all supporting information is available for review. However, for obvious reasons, a company's costs and customer or market information, including vendors' proprietary information, must be maintained as confidential. Consequently, Verizon makes all of this supporting information available once the necessary confidentiality agreements and/or protective orders have been executed. This information will allow thorough review so that interested parties can confirm that the proposed inputs reflects Verizon's source data.

Q. WHAT ADVANTAGE DOES ICM-FL OFFER BY BEING INTEGRATED?

A. ICM-FL is integrated in that it combines all of the components of Verizon's network -- the loop, switching, transport and signaling -- into one model. ICM-FL was developed from its inception in its present modular format. This modular approach provides consistency within the model with respect to inputs, programming logic, and assumptions. This not only makes the model easier to use but, more important, it makes the cost studies internally consistent. Because a common set of inputs and modeling assumptions is used, the results are consistent across the various network components and uses for which ICM-FL is employed, whether this is for a UNE proceeding, or rate rebalancing. ICM-FL can be used to support regulatory proceedings dealing with both retail and wholesale telecommunication services. The advantage is that this enables this Commission to consistently identify costs for Verizon in both UNE proceedings and in rate rebalancing proceedings.

OVERVIEW OF ICM-FL

Q. WHAT IS THE PURPOSE OF ICM-FL?

A. The purpose of ICM-FL is to calculate the total element long-run incremental costs (TELRICs) of individual UNEs and the total service long-run incremental costs (TSLRICs) of retail services provisioned out of Verizon's Florida network. As explained below, ICM-FL does this by designing the network all at once, using currently available, forward-looking technology and the prices for labor, material and equipment that Verizon is actually able to obtain. The network is modeled so that it is capable of serving one hundred percent of current demand, and its components include all the network elements Verizon is required to unbundle (e.g., loops, switches, transport). Exhibit DGT-1 provides a diagram illustrating the main components of the modeled network.

Q. PLEASE DESCRIBE ICM-FL.

A. ICM-FL is comprised of six modules: Loop, Switch, Interoffice Transport, Signaling System 7 (SS7), Expense, and Mapping/Reporting. These six modules design and cost the forward-looking network as if it were built all at once using all new plant and technology. The designed network reflects the economies of scale of all services across Verizon's entire Florida network. As mentioned earlier, ICM-FL can be used for both retail services, such as residence and business services, and for wholesale services such as UNEs and switched and special access.

ICM-FL's overall modeling process is depicted in Exhibit DGT-2. As shown in this diagram, the modeling process begins with commercially available and internal Verizon data that are used by the first five of ICM-FL's modules to model a forward-looking network and develop investments and expenses for the network components. The Mapping/Report Module is then used to combine the network component investments and costs into basic network functions (BNFs), UNEs, and services. All of the modules are consistent, and utilize the same set of inputs. If, for example, inputs related to line counts are changed, then all six modules of ICM-FL will be updated when the model is run.

Q. HOW DOES ICM-FL CALCULATE THE TELRIC OF A UNE?

A. The first four ICM-FL modules identify the forward-looking investments associated with the various network elements, and the Expense Module calculates the factors needed to convert these investments into monthly recurring costs. These monthly recurring costs fall into two broad categories, capital costs and operating expenses. The capital costs include: (1) both a return of and a return on the investment; (2) property taxes associated with the investment; and (3) income taxes associated with the return component of capital costs. The operating expenses consist of the costs of maintaining and operating the network, including the costs of general support assets such as motor vehicles and general purpose computers. Also included are the expenses of any marketing, billing and collection activities associated with a given UNE. The Mapping/Report Module calculates the capital costs and operating expenses, using the factors produced by the Expense Module and the investments identified by the other four modules. The Mapping/Report Module also maps the costs of the network components into UNEs, and produces reports showing the recurring costs of each UNE.

For example, the investments associated with an unbundled loop are modeled by the Loop Module and include both (1) the material costs of loop facilities, such as the feeder cable, distribution cable, and drop wire;

and (2) the cost of installing these facilities, such as trenching and labor costs. After the Mapping/Report Module calculates the capital costs and the operating expenses of each network component and maps these recurring costs to UNEs, it reports these costs in seven categories. Here is an illustrative example of one of the ICM-FL's UNE Reports for a two-wire loop:

Network Element	Investment Investment	Deprec & Return	Composite Inc. Tax	Property Tax	Maint. & Support	Marketing	B/C and Directory	TELRIC
2-wire loop	927 68	144 49	37.43	9 70	60 89	6 67	7 16	22 20

Q. PLEASE EXPLAIN THE COSTS SHOWN IN EACH COLUMN.

A. The Investment column shows the total investment associated with the two-wire loop, which includes the material cost of the loop facilities, as well as the cost of installing the facilities. In the above example, the total investment cost of the loop equals $927.68.

The Depreciation and Return column shows the annual capital charge necessary to recover the total loop investment. This charge includes both a return of the total investment (the annual depreciation cost) and a return on the total investment (the rate of return). As illustrated in our example, if the owners of the network receive $144.49 (after taxes and other operating expenses) each year over the estimated life of the loop, they will recover the total long-run investment cost of the loop -- $927.68 – plus a reasonable return. The Depreciation and Return charge will, of course, vary depending on the depreciation lives and cost of capital inputs that are used in the model. Longer depreciation lives or a lower cost of capital will produce a lower annual charge associated with the loop investment, and *vice versa*.

The Composite Income Tax and Property Tax columns reflect the annual state and federal income taxes, and the property taxes, associated with the loop. The composite income tax reflects both state and federal taxes, and its calculation incorporates statutory state and federal income tax rates, depreciation rates, the weighted average cost of capital, capital structure and cost of debt. The formula used to calculate the composite income tax also accounts for differences that may exist between book and tax depreciation methods, and is designed to reflect any tax benefits available under the IRS Modified Accelerated Capital Recovery System (MACRS) that result from such differences. Within ICM-FL, a separate factor input is used to calculate the property taxes associated with the modeled investments. This input factor is calculated by taking the ratio of current annual property tax expense to the current gross taxable plant balance.

The Maintenance and Support column reflects the annual maintenance expenses, such as the costs of maintaining and repairing poles, conduits, and other outside plant required for loops. Additionally, this column reflects the costs associated general support assets unless the user has opted to exclude them. The next two columns show the annual operating expenses associated with marketing activities, billing and collection activities, and directory-related costs, if any. All of these capital costs and operating expenses are calculated using ICM-FL's Expense Module.

The last column shows the monthly TELRIC of the loop, which is simply the sum of all the annual costs divided by 12:

Depreciation and Return	$144.49	
Composite Income Tax	37.43	
Property Tax	9.70	
Maintenance and Support	60.89	
Marketing	6.67	
B&C and Directory	7.16	
Total	$266.34	/ 12 =
	$22.20	

Q. BRIEFLY DESCRIBE THE SIX MODULES OF ICM-FL.

A. ICM-FL's Loop Module estimates the investments needed to construct the loop -- that portion of the local exchange telephone network that extends from the Main Distribution Frame in the wire center to the Network Interface Device at the end user's location. These investments include items such as telephone poles, manholes, copper and fiber optic cables, and conduit. ICM-FL builds the loop from existing wire center locations to customer locations determined through the use of detailed census information, actual line counts, tariffed exchange boundaries, and road length data.

The Switch Module calculates the investment needed to provide the circuit connections for completing telephone calls. The switch module designs a network based on Verizon's existing wire center locations, host/remote relationships, and the digital switch types that Verizon deploys in its network. Costs are based on the current prices Verizon pays for initial switch placements and expansions.

The Interoffice Transport Module designs the facilities needed to carry traffic among Verizon offices and between Verizon's network and the rest of the public switched network. These facilities consist of specialized transmission equipment within wire centers and outside plant facilities that carry communication signals between hosts, remotes, and tandem offices. ICM-FL models the investments associated with these facilities using the most efficient fiber optic equipment and technologies.

The SS7 Module calculates the investments needed for a stand-alone signaling network. This signaling network, via connections at end office and tandem switches, governs the operation of the switched telephone network by setting up calls and ensuring efficient utilization of facilities.

The output of the four modules described above represents the investment needed to build a modern, efficient telephone network. The Expense Module determines the factors and ratios used to calculate the costs of operating this network. Nonrecurring costs of establishing or terminating service and common costs are <u>not</u> included in the development of expenses. In addition, the Expense Module calculates the capital cost ratios (depreciation, return on investment, and taxes) associated with the network investments.

The Mapping/Report Module applies the factors and ratios developed in the Expense Module to the investments generated by the other four modules. This module also aggregates the costs of Basic Network Functions (BNFs – e.g., network access channels, line terminations, call setup and minutes of use) to TSLRICs of services and TELRICs of unbundled network elements and develops detailed output reports. BNF reports are also generated, which include a cost for every network function. Output reports can be aggregated at the wire center level, groups of wire centers, or at statewide weighted average totals.

Each of the six modules of ICM-FL is described more fully in the *ICM-FL Model Methodology* contained on the ICM-FL CD.

Q. CAN ICM-FL CALCULATE COSTS ON A DEAVERAGED BASIS?

A. Yes, ICM-FL calculates and reports costs at the wire center level which can be extracted to an external analysis tool, such as a spreadsheet program, and combined into any combination the user believes is correct. ICM-FL also aggregates and reports the wire center costs as a statewide average. These reports are in the same format illustrated above.

UNDERLYING ASSUMPTIONS AND INPUTS

Q. WHAT ARE THE MAJOR ASSUMPTIONS UNDERLYING ICM-FL?

A. The major assumptions underlying ICM-FL are that:

(1) the network is modeled as if it is built all at once, using all new plant and technology;

(2) customer locations below the wire center level can be approximated by the amount of road feet in a relatively small area;

(3) the study is based on forward-looking capital costs;

(4) the study reflects structure mix and sharing parameters based on Verizon's actual operating experience;

(5) the costs are based on the input prices for material, equipment and labor that Verizon expects to pay;

(6) the study sizes cable based on Verizon's engineering guidelines;

(7) the costs exclude common costs and the nonrecurring costs of initiating and terminating service.

Q. DOES THE ASSUMPTION THAT THE NETWORK IS BUILT ALL AT ONCE WITH ALL NEW PLANT AND TECHNOLOGY REFLECT VERIZON'S EXISTING NETWORK OR HOW NETWORKS ARE BUILT IN THE REAL WORLD?

A. No. Obviously, Verizon's network and any real-world network evolve through time and reflect a mix of technologies, some of which are no longer forward-looking. Neither Verizon nor any other business immediately replaces its plant or technology whenever a new product or technology enters the market. For example, American Airlines does not retire its fleet and replace it whenever a new plane is introduced. Likewise, accounting firms do not throw away all their desktop computers every six months just because a more efficient computer becomes available. Additionally, ICM-FL builds the network to serve one hundred percent of the market; this implies that no other company will install facilities, which is contrary to fact. Verizon believes that the results of such a model have meaning, but that they only serve as a lower bound on the forward-looking incremental costs of provisioning UNEs to new entrants.

Q. WHY SHOULD THE RESULTS OF A COST MODEL THAT ASSUMES THE NETWORK IS BUILT ALL AT ONCE USING ALL NEW PLANT AND TECHNOLOGY BE VIEWED AS A LOWER BOUND OF THE FORWARD-LOOKING INCREMENTAL COSTS OF PROVISIONING UNES?

A. There are a number of reasons. First, such a model assumes economies of scope and scale that do not exist in the real world. For example, suppose that along a particular route, ICM-FL places a 400-pair cable. In the real network, the required capacity may be provisioned with a 300-pair cable, followed by a 100-pair cable, because of the way that demand is realized through time. Comparing the modeled network with the real-world network leads to several other examples:

(1) in the modeled network, pole lines are assumed to run down only one side of the street, whereas in the real network clearance considerations may require poles on both sides;

(2) in the modeled network, one pedestal may be provisioned for every four drops, when in the real network some pedestals will serve fewer drops simply because there isn't always an even number of customer locations on a street;

(3) in the modeled network, distribution plant may be built only to serve existing customers, whereas in the real network plant is built to serve both vacant and planned structures.

Second, the assumptions underlying many long-run economic cost models do not reflect the constraints that an incumbent LEC will face over the next few years. In particular, long-run economic cost models do not account for the costs of transitioning the existing network to the network contemplated by the model. For example, in Verizon's network, many end users are served by integrated pair-gain devices, via a trunk-side connection to the switch, because this is the most economical way of providing service to these end users. If such an end user decides to leave Verizon in favor of a CLEC, and if the CLEC only orders an unbundled loop in order to provide service to that end user, then Verizon must terminate that end user's loop at the mainframe in order to hand it off to the CLEC. A cost model that assumes all new plant and technology does not capture these transition costs.

Because such a model assumes economies of scope and scale that will not be realized, and because many real-world constraints are ignored, the model results will underestimate the long-run, forward-looking costs of provisioning UNEs. Hence, the long-run costs produced by such a model are a lower bound.

Q. PLEASE EXPLAIN HOW ICM-FL MODELS CUSTOMER LOCATIONS USING ROAD FEET DATA.

A. The basic unit of analysis in the Loop Module is the Demand Unit, which is a grid that is 1/200th by 1/200th of a degree in size. For Tampa, this equates to 1,823 feet by 1,617 feet, or about 0.11 square miles. Utilizing line count estimates by census block from PNR Associates, Stopwatch Maps assigns customer lines to each Demand Unit on the basis of each grid's share of road feet in the wire center. The Demand Units are assigned to each wire center based on Verizon's tariffed exchange boundaries and the resulting totals for each wire center are trued up to Verizon's actual line counts by wire center. The road feet measure in ICM-FL is taken from the US Census Bureau's TIGER files, and corresponds to the types of roads along which residential or business development would normally occur, and from which customers would have access to their premises. The measure excludes interstate highways, limited access roads, bridges, tunnels, access ramps, alleys, driveways and motorcycle trails. The sum of the lines assigned to the individual Demand Units in a wire center equals the total actual line count for the wire center. ICM-FL uses this same road feet measure to constrain the structure length placed within a wire center.

Q. HOW DOES ICM-FL REFLECT THE FORWARD-LOOKING TECHNOLOGY MIX THAT VERIZON EXPECTS TO EMPLOY IN ITS NETWORK?

A. ICM-FL assumes that the existing wire center locations and host/remote relationships remain unchanged. ICM-FL models switching costs based on the switches that it purchases from its three primary vendors – Lucent's 5ESS, Nortel's DMS-10 and DMS-100, and AGCS's GTD-5. Besides assuming the host/remote relationships are unchanged, ICM-FL models the host and remotes in a consistent fashion – that is, if the host is a DMS-100, then any remote switches are DMS-100 remote units. Additionally, the DLCs used by ICM-FL reflect the line sizes and vendor choices actually used by Verizon in making additions to its real-world network. ICM-FL's transport network is based on existing tandem locations, with offices clustered together on SONET rings based on their distance from the tandems. In instances where only two nodes are involved, such as a host/remote link or tandem serving a single Verizon switch, ICM-FL models a point-to-point connection. The SS7 network modeled by ICM-FL is based on the actual locations of the Service Control Points and Signal Transfer Points within Verizon's nationwide SS7 network.

Q. WHY IS IT APPROPRIATE FOR VERIZON'S COST STUDIES TO BE BASED ON FORWARD-LOOKING CAPITAL COSTS?

A. Capital costs are the costs associated with the capital used by the firm. These costs include both a *return on* and a *return of* the invested capital. The *return on* component of capital costs is called the cost of capital or the cost of money. The providers of Verizon's capital do so on the basis of their required expected, or *ex ante*, rate of return. This required rate of return is largely determined by the risk associated with investing in a local telecommunications carrier. This risk has increased because of several factors: the prospect of increased competition and the attendant loss of market share; the uncertainty surrounding the prices to be charged for resale services and for unbundled network elements; the magnitude of implementation costs and the question of how or whether they will be recovered; the loss of geographical diversification of regulatory risk due to the simultaneity of arbitration proceedings among the states; and the possibility that prudently made historical investments will not be recoverable. Unless Verizon's TELRIC estimates are based on a risk-adjusted, forward-looking cost of capital, they will not reflect the costs Verizon expects to incur. Verizon has used a cost of capital of 12.78 percent in estimating its TELRICs. The development of Verizon's risk-adjusted, forward-looking cost of capital is fully explained in the testimony of Verizon witness Jacobson.

The *return of* component of capital costs is called depreciation. This component reflects the using up of the service potential of an asset. It accounts for the change in the market value of an asset due not only to its utilization in providing a service, but to other factors as well. For example, the loss in the market value of a machine may be due to wear and tear resulting from the provision of the service or element, or it may simply be due to obsolescence resulting from changing demand conditions or technology. While obsolescence may not physically destroy an asset, it nonetheless reduces its economic or market value. Depreciation lives that account for such a loss in the value of an asset are called economic lives. Use of longer lives, or lower rates, will understate the true economic cost of the service under study. Therefore, economic depreciation more accurately reflects the cost of providing an unbundled network element. Because Verizon's TELRIC estimates are based on the economic lives of the underlying assets, they reflect the costs Verizon expects to incur. Verizon witness Sovereign explains the economic lives used in Verizon's TELRIC studies in his testimony.

Q. WHY IS IT APPROPRIATE FOR VERIZON'S COST STUDIES TO REFLECT STRUCTURE MIX AND SHARING PARAMETERS BASED ON VERIZON'S ACTUAL OPERATING ENVIRONMENT?

A. Unless these parameters are based on Verizon's actual operating environment, then the resulting cost estimates will not reflect the forward-looking costs Verizon expects to incur. With respect to structure sharing in particular, parties in other proceedings have attempted to justify levels of sharing that substantially exceed actual experience based on the conclusory statement that opportunities for sharing will be greater in the future. Such proposals conveniently overlook the fact that Verizon's network is in place today. They assume that Verizon (or other utilities) would have the foresight to install poles and conduit systems that were large enough to accommodate these greatly expanded levels of sharing. With respect to buried cable, these parties apparently believe that Verizon will dig up its existing cable in order to immediately rebury it in a shared trench. Even if one takes the position that it is the costs of some hypothetical new entrant that is going to rebuild the entire network that should be modeled, greatly increased levels of sharing still cannot be supported. Even under this hypothesis, the required coincidence of wants in space and time among the sharing utilities must be assumed, as well. However, there is no hypothetical new entrant that will completely rebuild the electric power and cable TV networks in Verizon's serving areas. Like Verizon, their networks are already in place along with sharing arrangements that made sense at the time. Indeed, in FPSC Order No. PSC-99-0068-FOF-TP, the Commission found the LECs' sharing percentages to be reasonable surrogates for an efficient level of sharing and also rejected sharing inputs that relied on the assumption that power and cable companies would rebuild their networks. (Order at pp. 125-126).

Q. WHY IS IT APPROPRIATE FOR VERIZON'S COST STUDIES TO BE BASED ON THE INPUT PRICES FOR MATERIAL, EQUIPMENT AND LABOR THAT VERIZON EXPECTS TO PAY?

A. It is appropriate because, unless the input prices correspond to what Verizon expects to pay, there is no reasonable expectation that the resulting cost estimates will reflect the costs Verizon expects to incur in provisioning telecommunication services and UNEs. In particular, the labor costs must reflect the wage rates Verizon pays in Florida, and any sales taxes or shipping costs included in the costs of material and equipment must reflect whatever Verizon pays. Also, the discount factor used to estimate switching costs must reflect a blend of that realized for modernization purchases and for growth purchases.

Q. WHAT IS THE SOURCE OF ICM-FL'S INPUTS FOR MATERIAL, EQUIPMENT AND LABOR?

A. The material prices used in ICM-FL reflect Verizon's current experience. Verizon purchases materials and equipment on a nationwide basis to capture the economies of scale associated with buying in quantity. The material prices for switches are based on Verizon's contracts with switch vendors, and include loadings for vendor and Verizon engineering and installation costs, supply expense, and costs of acceptance testing. Additionally, loading factors are applied to the material costs to reflect the cost of power and test equipment. The material prices are used as inputs to SCIS (Switching Cost Information System), which is used to produce the required investments for ports, call origination and termination, usage and switch features. SCIS is a product of Telcordia Technologies and is used to assign the costs of switch components on the basis of how the component is engineered. ICM-FL uses the output from SCIS to determine the costs of the Nortel and Lucent switches. Another program, CostMod, is used to determine the costs of the GTD-5. Both of these programs base the costs on the usage characteristics of each switch in Verizon's Florida network. The inputs for the switching module on the ICM-FL CD in the FLSWINVW.DB table.

Material prices for such items as poles, manholes, fiber and copper cables, drop wires, NIDs, DLCs, terminals and pedestals are taken from GTE Advanced Material System (GTEAMS). GTEAMS is an information management system used by Verizon in the normal course of business to perform planning, inventory accounting, and material purchasing management functions. The inputs for material costs in ICM-FL include loadings for freight, sales tax, engineering, minor materials and supply expense. Placement costs for these items are based on vendor contracts specific to the state of Florida. The material and placement cost inputs can be found on the ICM-FL CD in the FLMATL.DB and FLLABR.DB tables, respectively.

Q. HOW DOES ICM-FL SIZE CABLE CONSISTENT WITH VERIZON'S ENGINEERING GUIDELINES?

A. ICM-FL sizes feeder and distribution plant based on the ratio of installed to working lines. For feeder, this ratio is based on the ratio of forecasted lines at the midpoint of a four-year planning horizon to the current number of lines in the network, and reflects the engineering practice of designing feeder plant with the expectation that it will require reinforcement. Unlike feeder plant, distribution plant is not designed with the expectation that it will require reinforcement, and it is instead built to serve ultimate demand. For distribution, the ratio of installed to working lines is based on an assumption of 2.37 lines per lot. Within the ICM-FL documentation, these ratios are also referred to as the engineering factors for feeder and distribution, respectively. The ratios are user-adjustable inputs and the details of their calculation are found on ICM-FL CD. These values are input under the Outside Plant tab of ICM-FL's Runtime Options user interface.

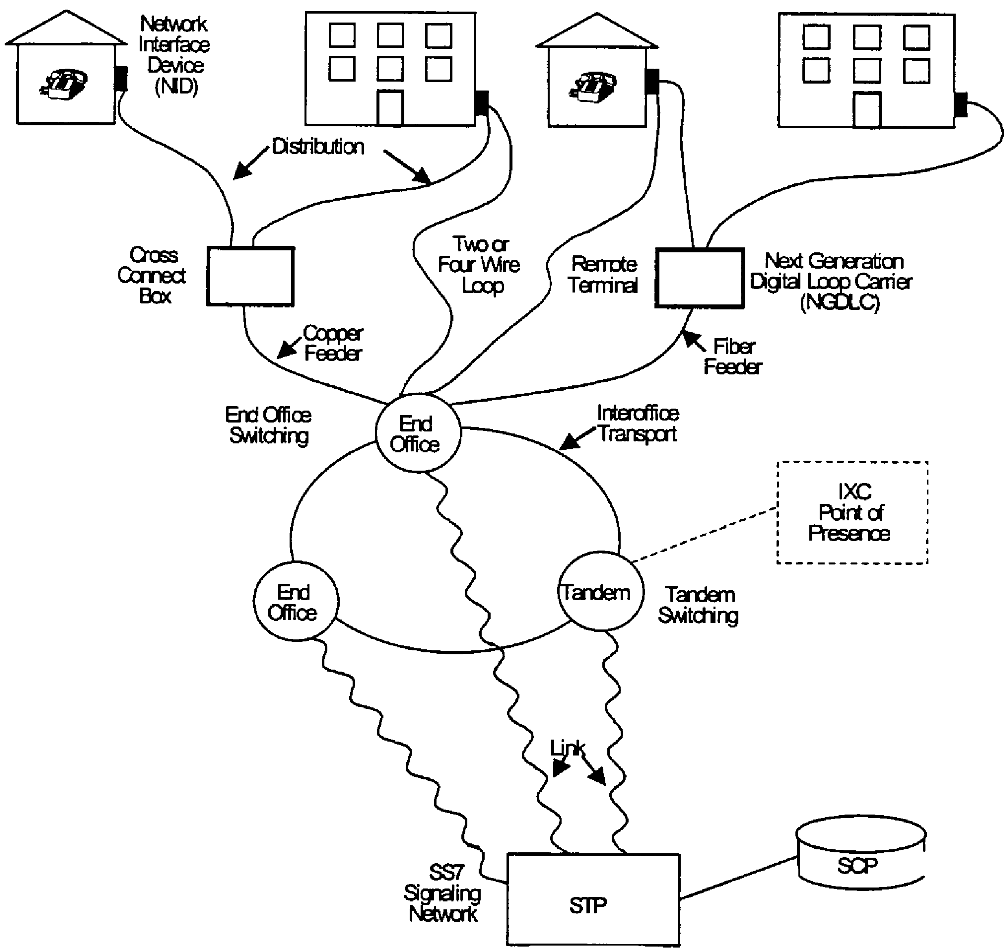
Q. WHY IS IT APPROPRIATE FOR VERIZON'S TELRIC ESTIMATES TO EXCLUDE COMMON COSTS AND THE NONRECURRING COSTS OF ESTABLISHING AND TERMINATING SERVICE?

A. TELRICs, by definition, represent the costs that can be directly assigned to an individual element. By comparison, common costs are those costs that are necessary for the provisioning of elements and for the operation of the company as a whole, but that cannot be directly assigned to specific elements. The development of Verizon's common costs is an integral part of the development of the operating expenses modeled by ICM-FL. ICM-FL's operating expenses are based on a combination of Activity Based Cost (ABC) factors and expense to investment factors (E/I). Activity Based Costs are developed from the study of work activities related to specific BNFs, UNEs or services. The E/I factors are developed by mapping ARMIS data at the work center/FCC account level detail into cost pools. One of these cost pools, the common cost pool, identifies costs that cannot be directly attributed to specific elements or groups of elements. In addition, billing and collection costs not reflected elsewhere, and line-of-business administrative and information management costs, are identified as common costs. The costs so identified are excluded from the operating expenses modeled by ICM-FL. Similarly, expenses associated with nonrecurring activities are not included in ICM-FL's modeled operating expenses. The development of Verizon's nonrecurring costs is explained in the testimony of Verizon witness Larry Richter.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

MAIN COMPONENTS OF ICM's MODELED NETWORK



Docket No. 990649-TP
Direct Testimony of D. G. Tucek
Direct Exhibit DGT-2
FPSC Exhibit No. _____

ICM's MODELING PROCESS