Exhibit No. ___ (HAS-1T)
Docket No. UT-023003

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Review of Unbundled Loop and Switching Rates; the Deaveraged Zone Rate Structure; and Unbundled Network Elements, Transport, and Termination	))))))	DOCKET NO. UT-023003

DIRECT TESTIMONY OF DR. HOWARD SHELANSKI ON BEHALF OF VERIZON NORTHWEST INC.

ECONOMIC FOUNDATIONS

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I. INTRODUCTION

A. Statement of Qualifications

Q. WHAT IS YOUR CURRENT POSITION AND YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. My current position is Professor of Law at the University of California at Berkeley, where I am also co-director of the Berkeley Center for Law and Technology. I received my B.A. from Haverford College in 1986, my J.D. from the University of California at Berkeley in 1992, and my Ph.D. in economics from the University of California at Berkeley in 1993. I have been a member of the Berkeley faculty since 1997. In 1998-2000 I was on leave from my faculty position to serve as a Senior Economist to the President's Council of Economic Advisers (1998-99) and then as Chief Economist of the Federal Communications Commission (1999-2000). I rejoined the Berkeley faculty on a full time basis in July 2000. I formerly practiced law in Washington, D.C. with the firm of Kellogg, Huber, Hansen, Todd and Evans and served as a law clerk to Justice Antonin Scalia of the U.S. Supreme Court.

I teach and conduct research in the areas of telecommunications regulation, antitrust, and applied microeconomics. My recent publications include articles in the *Journal of Law, Economics and Organization*, the *Yale Journal on Regulation*, the *University of Chicao Law Review*, the *Journal of Law and Economics*, the *University of Chicago Legal Forum,* and the *Columbia Law Review*. I am co-author of the recently published legal textbook Telecommunications Law and Policy (Carolina Academic Press, 2001).

B. Purpose of Testimony

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony first discusses applicable economic principles for determining the forward-looking costs of providing unbundled network elements (UNEs), and then evaluates Verizon Northwest Inc.'s (Verizon NW) cost studies and their compliance with the FCC's TELRIC rules.

C. Principal Conclusions

Q. PLEASE SUMMARIZE YOUR TESTIMONY AND THE PRINCIPAL CONCLUSIONS OF YOUR ANALYSIS.

A. Based on generally accepted economic principles and on my review of Verizon NW's methodology for calculating UNE costs in Washington, I have reached the following conclusions:

(i) Verizon NW's model for calculating network element costs in Washington (VzCost) is based on efficient, forward-looking economic principles that account for the incremental costs of using network elements and complies with the FCC's TELRIC requirements.

(ii) Verizon NW's cost model is conservative and, to the likely benefit of new entrants into the local exchange market, assumes more advanced network technology than Verizon NW will in fact have in place in the foreseeable future. This strong, forward-looking assumption understates the costs Verizon NW will in fact incur to provide network elements.

(iii) Verizon NW's cost model neither considers the sunk costs of existing network facilities nor leads to recovery of the embedded costs of Verizon NW's actual network.

(iv) Verizon NW's model is long-run.

(v) The depreciation costs and cost of capital in Verizon NW's cost study conservatively reflect competitive and regulatory risks that Verizon NW faces in providing UNEs.

II. CORRECT ECONOMIC PRINCIPLES FOR A UNE COST STUDY

Q. HOW SHOULD THE FORWARD-LOOKING COSTS OF PROVIDING NETWORK ELEMENTS BE ESTIMATED?

A. Costs should be estimated such that the prices based on them create efficient incentives for both new entrants and incumbents. Network element prices will be economically efficient if they encourage competitors to make correct decisions about when to use incumbent networks versus when to look elsewhere for inputs or to build their own facilities. If prices for UNEs are too low, they will deter efficient construction of new facilities and induce inefficiently high usage of incumbent networks by encouraging competitive local exchange carriers ("CLECs") to rely on UNEs even in cases where they could more efficiently and effectively use their own or alternative facilities and technologies. Prices that are too low will also negatively distort the network investment decisions of the incumbent firms constrained to charge such prices, as well as fail to compensate the incumbent for its true costs of providing UNEs. If, on the other hand, UNE prices are too high, they may deter market entry or encourage wasteful

investment in new plant by sending incorrect cost signals to new entrants. Properly determined forward-looking costs for UNEs should thus, in principle, reflect the costs that Verizon NW, acting efficiently over time, expects to incur going forward. In that way, if a competitor can provide the same function more efficiently using its own facilities, then it will have the appropriate incentives to do so.

Q. CAN A LONG-RUN, FORWARD-LOOKING COST STUDY INCORPORATE A CARRIER'S EXISTING FACILITIES AND NETWORK CHARACTERISTICS WHEN THEY ARE EFFICIENT?

A. Yes. A carrier's cost study should be based on the forward-looking costs of an efficient mix of technologies. By "efficient" I mean the mix of facilities and other network characteristics that will, over time, allow the firm to minimize the costs of network elements that can perform at required levels of reliability and functionality. And factors such as the incentives created by federal price caps and pressure from competition have given incumbents every incentive to be efficient in making decisions such as when to replace existing facilities with new technologies and vary other network characteristics. Although the goal of a long-run, forward-looking analysis is to minimize the degree to which a firm's investment decisions are constrained by previous choices about the size, design, or technology of its network, it generally would not be efficient or realistic for the firm to assume that all inputs change even in a long-run study. A firm's long-run model should allow for the *possibility* that all inputs are variable. But where an

existing facility or network characteristic is efficient to use on a forward-looking basis, it need not, and in the real world probably will not, in fact be varied.

Q. WHY WOULDN'T A CARRIER SIMPLY VARY ALL ITS FACILITIES TO DEPLOY THE MOST EFFICIENT EXISTING TECHNOLOGIES?

A. In the real world, at least three factors give rise to costs that might offset the efficiency of new technology and constrain the speed of network replacement: (1) current network facilities that can still be efficiently used and whose remaining economic value would be lost through premature replacement; (2) anticipated, future technological changes that make it more efficient over the long run to wait to replace some network facilities rather than to replace them with technology that is the best available today, but will be obsolete tomorrow — in essence to skip a generation of technology and to wait for something even better; and (3) risk and uncertainty regarding unanticipated changes in technology and market demand. An economically correct cost study should both recognize any economic value of existing network facilities and manage uncertainty about future technological changes and future demand for existing network functions, as well as for new kinds of network capabilities that might develop. A rational carrier thus will usually invest incrementally in new facilities throughout the life of the network instead of immediately replacing the network with what at that moment appears to be the most efficient technologies.

Q. BUT, IN A COMPETITIVE TELECOMMUNICATIONS MARKET, WILL A CARRIER HAVE TO PRICE ITS SERVICES AS THOUGH IT HAS ONLY THE MOST EFFICIENT TECHNOLOGIES?

A. No. The gradual deployment of new technologies is characteristic not only of the incumbent, but also any rational entrant. An entrant will gradually build out its network and, as technologies evolve over time, its network too will consist of a mix of different technological vintages. No new entrant (or existing competitor) is likely to have the latest technologies deployed ubiquitously throughout its network for exactly the same reasons no incumbent will reach that state: real-world uncertainties about technological development, demand, and other factors, as well as the presence of substantial sunk costs and transaction costs, mean that such instantaneous and ubiquitous replacement would not be the cost-minimizing strategy over the long run. All — incumbents' and entrants' — networks are deployed over time in an uncertain world. Thus, because *all* carriers in a competitive market will have a mix of technologies, the price in that market will reflect that rational, efficient mix, not a network consisting only of the most efficient available technologies.

As an analogy, consider the airline industry. If Boeing were to develop a new, more efficient plane, it is clear that airline tickets would not instantaneously and ubiquitously come down in price to reflect the new technological efficiency, even if the development of the new plane might to some degree constrain the resale value of older planes. Rather, airlines would gradually deploy the newer planes, and prices would begin to reflect the mix of airplane technologies that airlines had deployed. Similarly, if a manufacturer were to develop a new, more efficient switch, it does not follow that the rate for leasing capacity on an older switch that is part of an existing telecommunication network would

instantaneously be reduced to the cost of leasing capacity on a hypothetical network having all such new switches.

Q. IF A STUDY ASSUMES COMPLETE AND IMMEDIATE REPLACEMENT OF A NETWORK WITH TODAY'S MOST EFFICIENT TECHNOLOGIES, SHOULD IT ACCOUNT FOR COUNTERVAILING RISKS AND COSTS?

A. Yes. Any model that assumes immediate replacement of installed plant the moment a more efficient technology comes along must allow for very short depreciation lives and correspondingly high costs of capital. Any time a firm will incur sunk costs in a changing and uncertain economic environment, it must build a risk premium into its cost analysis. The greater the sunk investment or the greater the uncertainty of the environment in which that investment is made, the higher the risk premium that figures into the firm's capital costs. Unanticipated technological change is not factored into depreciation and thus causes some sunk costs to be unrecoverable. Similarly, a firm always faces the possibility that demand will not materialize and that the prices it can charge for the goods or services at issue will not cover sunk costs. This is particularly an issue for investment in network elements because the advent of competition has rendered retail demand less certain, while there is no assurance that competitors will continue to demand unbundled network elements for their own retail offerings. Such uncertainty over technology and demand conditions raises the risk of loss and hence requires the firm to add a risk premium to the expected costs of investment.

In a full replacement model, the exposure to such risk and uncertainty is much higher than in an incremental replacement model and requires a correspondingly higher risk premium on the cost side of the investment analysis. A consequence of this is that the anticipated rate of return, and therefore the cost of capital, will have to be higher to induce investment under a complete replacement model than under a model of incremental replacement.

Similarly, the depreciation costs in a model of instantaneous and complete network replacement would be quite high. Indeed, a firm would not invest in new technology unless it thought it could fully recover its costs of that technology before having to replace it. The appropriate depreciation life for an asset that will frequently have to be replaced is the time until the next event that triggers replacement. Where technological change is frequent, depreciation lives under a total replacement model will be short and the rate of depreciation will be high in order for the firm fully to recover its investment during the allowable interval. When assets are not assumed to be replaced each time technology changes, their economic lives can be longer (although they still must fully reflect the relevant competitive and regulatory risks), and period-by-period depreciation costs decline.

Q. HOW DOES RISK RELATE TO THE PURPOSES OF THE FCC'S TELRIC METHODOLOGY?

A. Risk is very important both to the incentives of the incumbent network operator and to the incentives of new entrants. Consider first the incentives of an incumbent making risky investments in its network. If a firm were constrained to

cover its costs without any adjustment for risk and uncertainty, then it simply would not undertake investments whose returns were not assured: the firm would be unable to recover its losses on investment that did not produce net returns, but would recover *only* its costs on the successful investments. If firms cannot factor a risk premium into their costs, and eventually the prices they charge, they will underinvest in replacing and improving their networks. This problem is particularly acute where investment involves sunk costs that cannot be salvaged and redeployed. Accordingly, an incumbent's ability to include a risk premium in its investment analysis is important to the objectives of the FCC's TELRIC rules.

There is a corresponding effect on the incentives of new entrants. If TELRIC bases prices on costs without addition of an appropriate risk premium, then new entrants get to free ride on the investment risks taken by the incumbent. They can decide to use network elements if they decide that to do so is in their interests, or else choose to enter the local exchange market through resale or over their own facilities. Note that this discretionary demand by entrants for network elements is itself a source of uncertainty for incumbents trying to make efficient investment decisions. But, more importantly, if a proper risk factor is not added to the incumbent's costs, a new entrant can get the benefits of an incumbent's investments without bearing the full, risk-adjusted costs of those investments. A local competitor would, of course, have to bear those risk-adjusted costs if it were making its own network investments. The CLEC would therefore have incentive to exercise its free "option" to rely on the

incumbent's investment rather than to build its own facilities. But, because the CLEC is not paying for its share of the ILEC's true investment risks, the CLEC's investment decision is distorted away from facilities-based competition and biased towards using the incumbent's network elements. This would be contrary to TELRIC's goal of providing efficient market entry incentives.

III. VERIZON NW'S COST STUDY COMPLIES WITH THE FCC'S TELRIC METHODOLOGY.

Q. BASED ON YOUR ANALYSIS, DOES VERIZON NW'S COST STUDY COMPLY WITH TELRIC?

A. Yes. Verizon NW's Washington cost study is based on long-run, forward-looking costs and reflects the principles discussed in the last section. It incorporates forward-looking engineering guidelines and models the deployment of the most efficient mix of technologies going forward. The cost study properly accounts for the constraints on the value of current network facilities imposed by new technology and by market competition.

As I discuss below, however, in order to comply with TELRIC, Verizon NW's recurring cost model does make at least one assumption that differs from the efficient, incremental replacement approach discussed in the first part of this testimony. And that assumption causes Verizon NW's model to understate costs. Specifically, Verizon NW bases its recurring cost estimates not on the network configuration that will in fact be in place as new facilities are introduced incrementally, but on the network that would be in place if the forward-looking engineering assumptions had been fully implemented network wide. As I will

explain below, Verizon NW's model thus gives CLECs the benefit of lower output-adjusted operating and maintenance costs than Verizon NW will in fact incur, without incorporating into the model some of the cost of capital and depreciation costs that would make actual full replacement more costly than incremental replacement.

A. Verizon NW's Cost Study Is Forward-Looking.

Q. PLEASE EXPLAIN HOW VERIZON NW'S MODEL IS FORWARD-LOOKING.

A. Verizon NW's model of recurring costs is based on the technology mix that Verizon NW would deploy in its network in accordance with its forward-looking engineering guidelines. That model does not measure the costs that exist today or in the foreseeable future, but the costs that *would hypothetically* exist if the best-available technology mix had been fully implemented network-wide.

Loops and cable plant: For example, consider the loop plant assumptions in Verizon NW's model. The existing loop plant in Verizon NW's Washington network consists overwhelmingly of copper. The forward-looking plant configuration, however, is premised on Verizon NW's analysis that a mix of 54% copper and 46% fiber would be the most cost-efficient one for loops based on today's best technology.[1/] Thus, the model assumes that the mix of copper and fiber throughout the *entire* network will be that which Verizon NW has estimated would yield the most cost-efficient mix. This measure is quite stringent: it does not account for all current network costs, or even all the costs that Verizon NW

1/ *See* Verizon NW Recurring Cost Panel Testimony at Part IV.E.1.

actually expects to incur. Instead, it measures the costs that Verizon NW would incur if this forward-looking mix were fully implemented through the entire network.

Verizon NW's model thus goes beyond incremental replacement and upgrades to the existing network. Instead, it assumes full deployment of the best available loop technology. The model thus likely generates forward-looking operating and maintenance costs that, when adjusted for changes in quality and quantity of services, are lower than those that will actually exist. Importantly, Verizon NW's model does not incorporate costs that might offset the lower O&M costs that result from full replacement, such as the high depreciation rates of full replacement or the costly risk factor that such wholesale replacement might turn out to be unwise in light of changing technology and market demand. Verizon NW's cost estimates are thus likely to be lower than the true network costs will be, to the benefit of competitors who pay UNE prices based on those costs.

Switching: Verizon NW's cost model for switching is similarly forward-looking. I understand from the Verizon NW Recurring Cost Panel testimony that the inputs to the company's switching model incorporate the mix of switching technologies Verizon NW expects to need in the future, such as the latest available processors and line-side peripherals. For example, the peripheral technology inputs into the model include a forward-looking mix of digital GR-303 and analog interfaces. Verizon NW's switching model thus does not use the mix of switch peripherals currently deployed in the network. It instead looks ahead and measures costs based on the mix of switching equipment it expects to

deploy in the future. And, as in the cable plant calculations, Verizon NW assumes that the forward-looking mix of switching facilities will be deployed throughout the network at the end of the planning period. For example, the company's switching model includes 37% GR-303 digital interfaces in the network as a whole because that is a very aggressive engineering assumption about the replacement rate of deployment.

Verizon NW's switching cost model also assumes an appropriate price discount from vendors for the new switching technology to be purchased going forward based on the mix of new and growth additions Verizon NW expects to purchase going forward. Although some CLECs have suggested that the cost of switching should be set as though a carrier deployed all new switches at the current price that switch manufacturers charge the incumbent for new switches, which in some cases may be discounted by more than 95% off the list price, this makes no sense. As an initial matter, if switching really were essentially costless as this approach assumes, then there clearly would be no reason to require the unbundling of switching in the first place. Moreover, this approach ignores the reality that manufacturers expect the incumbent to purchase few new switches, and offer such high discounts on new switches because they expect to make their money on the much larger percentage of growth additions they expect the incumbents to buy, for which they demand higher prices. If carriers suddenly bought only new switches or a higher proportion of new switches, no rational manufacturer could or would offer extremely high discounts on new switches, or they would not come close to recovering their costs. Put another way, current

prices for new switches are essentially due to the fact that there is little or no demand for new switches, and the prices offered to incumbents for new switches are designed to lock those carriers into the manufacturer's products for the small number of new switches that the manufacturer expects the incumbent to buy. If one posits a world in which carriers use primarily new switches to deploy switching capacity, then one also has to ask what the price would be under such demand conditions, and the current discounts unquestionably do not reflect that price. Instead, the average price the incumbent pays today (and will pay going forward) for the types of switch capacity it actually does and will buy is the best measure of the forward-looking cost of switching capacity because it reflects the revenues that a switch manufacturer will expect to recover over the range of the switch purchases it expects incumbents to make.

Q. IN THE FIRST PART OF YOUR TESTIMONY YOU SAID THAT AN EFFICIENT FIRM GENERALLY REPLACES ITS NETWORK INCREMENTALLY OVER TIME. DOES THE FACT THAT VERIZON NW'S COST MODEL ASSUMES COMPLETE DEPLOYMENT OF NEW NETWORK TECHNOLOGY MEAN THAT IT IS GENERATING INEFFICIENT, HIGHER COSTS?

A. No. Verizon NW's model does not incorporate the potential inefficiencies of full replacement. In particular, Verizon NW's depreciation allowances, costs of capital, and risk factors are correctly forward-looking and are lower than those that would be necessary to model the true costs of total network replacement. At the same time, assuming that current plant will be replaced completely likely reduces some of the costs estimated by the model. For example, operating and

maintenance costs of an element are presumably lower, on an output-adjusted basis, with the more advanced new technology. In the real world, however, those cost savings would be offset by unexpectedly weak demand for the new network elements, by technological change that requires the new plant itself to be replaced sooner than expected, or, most obviously, when the purchase price of the new equipment is factored in to the replacement analysis. Verizon NW does not fully account for these risks and the resulting costs.

Q. HOW, SPECIFICALLY, DOES VERIZON NW'S MODEL AVOID THE INEFFICIENCIES OF A FULL REPLACEMENT-COST MODEL WHILE AT THE SAME TIME ASSUMING TODAY'S BEST AVAILABLE TECHNOLOGY IS FULLY DEPLOYED?

A. Recall from the discussion in the first part of this testimony that several factors are likely to make full network replacement in the face of technological change more costly than incremental replacement of facilities. In particular, wasted value of existing plant, higher risk factors for unanticipated demand and technology conditions, and faster depreciation schedules would all likely drive up the costs of full replacement relative to those of incremental replacement. Verizon NW's model does not, however, incorporate those higher cost factors.

Consider, for example, Verizon NW's depreciation analysis. The company's model does not assume that a network element will be replaced each time there is a technological improvement in the element. Instead, Verizon NW's cost model bases depreciation on the full period over which a network element is expected to produce economic benefits. By assuming that equipment will be

used for its full economic life — that is, as long as the net present value ("NPV") of its expected costs are lower than the NPV of the costs of new equipment — Verizon NW's cost study avoids the economic waste or high depreciation allowances of a full replacement model.

Thus, Verizon NW assumes full deployment of currently available, efficient network technology, but in a way that captures the efficiencies without factoring in some likely costs of wholesale network replacement. As such, the model potentially understates the forward-looking costs Verizon NW will incur to operate its network. In this regard, Verizon NW's model, partly in the interests of ensuring compliance with the FCC's TELRIC rules, deviates somewhat from the efficient, incremental replacement model counseled by economic principles. That deviation is in a direction that favors competitive entrants into the local exchange market.

Q. IS VERIZON NW'S APPROACH COMPATIBLE WITH LONG-RUN COST ESTIMATION?

A. Yes. There is no magic number for the length of a long-run cost study that properly balances static efficiency concerns with uncertainty about the future. The more dynamic and uncertain the technological and market environment, the shorter the rational future forecast and investment plan is likely to be. Telecommunications as a whole is a rapidly changing industry with a constant and unpredictable stream of infrastructure innovations and new service applications. Technological and demand conditions are highly uncertain and become entirely speculative even a few years into the future. Just a few years

ago, the current importance of packet switching and data transport were unforeseen. Innovations like IDLC were uncertain. Meanwhile, confident expectations of competition for voice traffic from cable systems and of limitless demand for broadband services have been cast into doubt by actual market developments.

Commitment of investment capital far into the future would have greatly handicapped the ability of firms to respond to these unexpected changes and to re-orient their engineering plans in light of changed circumstances. It moreover would have proven to be a waste of resources. There is no reason to think the technological and market variability in telecommunications is diminishing, and, in light of developments like the above that illustrate the substantial risks and uncertainty of long time horizons, Verizon NW reasonably looks to current investment plans as a basis to determine long-run costs.

B. Verizon NW's Capital Cost and Depreciation Assumptions for the Model Correspond with Efficient, Forward-Looking Operation of the Network.

Q. PLEASE EXPLAIN WHY VERIZON NW'S CAPITAL COST AND DEPRECIATION ASSUMPTIONS FOR THE MODEL ARE BASED ON CORRECT ECONOMIC PRINCIPLES.

A. The costs of operating the network on a forward-looking basis, with its mix of installed and new plant, include costs of capital and the costs of operating and maintaining the network elements. Capital costs of new plant can be thought of as the risk-adjusted return on investment that must be paid to induce investment in new facilities rather than in some alternative venture. The cost of capital of

existing network plant can similarly be thought of as the costs Verizon NW incurs by operating the network instead of selling it and placing the funds in an alternative investment.

As explained in the testimony of Dr. James Vander Weide, a forward-looking model should estimate the cost of capital for Verizon NW based on the investors' expectations of returns given the risks of investing in a company that provides UNEs in that company's competitive and regulatory environment. That can occur only if the cost of capital fully reflects the actual competitive and regulatory risks resulting from the provision of UNEs. The premise of TELRIC is that the forward-looking costs of incumbent carriers should be treated as being constrained by competition. Such competition is the basis for assuming forward-looking deployment of best-available technology in the cost models for network elements. Capital costs should similarly account for the investors' expectations of returns given the risks of investing in a company that operates in a competitive environment. Dr. Vander Weide's capital cost estimates for Verizon NW's operations in Washington are thus appropriately based on the market-based capital structure of a firm operating in competitive conditions, projected market interest rates, and the estimated risks posed by competition.

In addition, as Dr. Vander Weide explains, to the extent that the regulatory regime itself imposes additional risks, as the UNE regime does, the cost of capital must compensate for those risks as well. For example, CLECs are free to terminate their use of a particular element or of UNEs generally at any time, and instead move to alternative facilities or technologies. In fact, the risk is especially

pronounced with UNEs, which are intended to be a transitional device to facilitate the move to alternative facilities or technologies; once that move is made and the end user customer's traffic is on those alternative facilities or technologies, the incumbent in many cases will not recover the remaining value of its facilities that previously served that customer. In this sense, the risks of providing UNEs are equivalent to the risks of providing short-term, cancelable operating leases, such as a short-term car rental. Such leases involve significantly more risk than a typical long-term lease because the lessor bears the risk that its asset may sit idle or that rates may go down. That is particularly true where the assets in question are long-lived and the investment is sunk, as in telecommunications. Operating lease payments typically account for the value of the option to cancel the lease: the daily cost to rent a car from Hertz is much higher than the cost per day of a long-term car lease. The cost of capital used in setting UNE rates should similarly include the value of the CLECs' option to cancel leases and walk away from a UNE's costs.

As Mr. Sovereign explains in his testimony, depreciation rates should similarly reflect the effects of operating the network in an environment with the competitive and regulatory risks that the incumbent faces. In particular, the greater the competitive pressure to deploy new technology and to recover only the economic value of those new facilities, the faster may be the depreciation rate necessary to recover the costs of new technology going forward. If the company anticipates having again to replace technology in the future, it will set depreciation allowances to fully recover the remaining economic value of

installed technology before replacement becomes economically necessary. TELRIC requires firms to account for technological advances in estimating their costs and, correspondingly, to reduce the prices they charge for access to network elements as technology reduces the incremental costs of those elements. When technology changes, the firm must either replace installed plant that proves more costly than the new technology or else reduce the economic value of installed plant to reflect the existence of the new technology. To be forward-looking, depreciation should be set to recover the revised economic value of the element over the time period that the element is expected to continue to have economic value. As Mr. Sovereign discusses, GAAP depreciation lives are based on the expected future period during which an element will produce economic benefits, and as such are forward-looking and in keeping with TELRIC.

C. Verizon NW's Cost Model Complies with TELRIC Principles.

Q. IS VERIZON NW'S COST MODEL CONSISTENT WITH TELRIC?

A. Yes. TELRIC requires that incumbents' costs be modeled as those of an efficient firm facing market competition. Verizon NW's cost model does so. It is strongly forward-looking and long-run because it assumes that the efficient, forward-looking mix of technologies has not only been deployed incrementally, but that it has in fact been fully deployed throughout the network. In this regard Verizon NW's model actually understates the costs the company expects to incur in the future. The reason for the understatement is that the technology on which

Verizon NW bases its costs will not, in fact, be deployed network-wide to the extent the cost study assumes it to be.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.