BEFORE THE

STATE OF NEW HAMPSHIRE

PUBLIC UTILITIES COMMISSION

Kearsarge Telephone Company,	**)**	
Wilton Telephone Company,	**)**	**Case No. DT 07-027**
Hollis Telephone Company and	**)**	
Merrimack County Telephone Company	**)**	
Petition for an Alternate Form of Regulation	**)**	

DIRECT TESTIMONY
of
Ben Johnson, Ph.D.

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Introduction

Q. Would you please state your name and address?

A. Ben Johnson, 3854-2 Killearn Court, Tallahassee, Florida.

Q. What is your present occupation?

A. I am a Consulting Economist and President of Ben Johnson Associates, Inc.®, a consulting firm specializing in public utility regulation.

Q. Have you prepared an appendix that describes your qualifications in regulatory and utility economics?

A. Yes. Appendix A, attached to my testimony, will serve this purpose.

Q. What is your purpose in making your appearance at this hearing?

A. Our firm has been retained by the New Hampshire Legal Assistance (NHLA) to evaluate the petitions for alternative form of regulation filed by Kearsarge Telephone Company (KTC), Wilton Telephone Company (WTC), Hollis Telephone Company (HTC) and Merrimack County Telephone Company (MTC), all of which are wholly-owned subsidiaries of TDS Telecommunications Corporation. (collectively "TDS"). Although I have been asked to evaluate these petitions from a broad public policy perspective, I have also been asked to place particular emphasis on the potential impact of the petitions on low income consumers and the longstanding policy goal of universal service.

Following this introduction, my testimony has six major sections. In the first section, I briefly sketch the background of this proceeding. In the second section, I outline how regulated telecommunications markets have evolved and the current status of those markets. In this section I also discuss competition, alternative forms of regulation, and

changes in public policy that increasingly aim at relying on competition, rather than traditional rate base regulation, to protect customers from monopoly power and to advance the public interest.

In the third section, I briefly discuss the potential impact of the TDS petitions, focusing on some of the key regulatory and pricing changes that would likely result if the petitions are approved. In this section, I also highlight some of the arguments that TDS advances in support of those changes, as reflected in its petitions and supporting testimony.

In the fourth section I discuss the concepts of effective competition, barriers to entry and market power. As well, I point out extensive deregulation is only appropriate where competition is deeply entrenched and truly effective, and it is not appropriate where competition is merely emerging or remains weak.

In the fifth section I discuss geographic and product markets as they relate to this proceeding. Among other issues, I compare and contrast wireline services with alternatives such as wireless, VoIP and cable service, and I discuss key differences between the market for basic local exchange service and the market for other services, including the market for bundled packages of local, long distance and other telecommunications services. I also discuss various empirical evidence which can be helpful in determining which of the Company's services, if any, are subject to competition.

Finally, in the sixth section, I summarize my conclusions and recommendations for Commission action in this matter.

Background

Q. Let's turn to the first section of your testimony. Would you please summarize the history of the instant docket?

A. On March 1, 2007, MTC, KTC, WTC and HTC filed petitions with the Commission for an alternative form of regulation pursuant to RSA 374:3-b. The petitions and proposed price cap plans filed by each company are essentially identical. On April 10, 2007, the Commission consolidated the review of these petitions and scheduled a prehearing conference and technical session for May 4, 2007. After the prehearing conference and technical session, various parties recommended that the Commission first consider written analysis and argument on the statutory interpretation of RSA 374:3-b. The Commission approved the proposed briefing schedule on May 29, 2007. Initial and reply briefs were filed on June 8, 2007 and June 20, 2007, respectively.

Q. Can you now discuss the provisions of RSA 374:3-b?

A. RSA 374:3-b was originally enacted by the N.H. Legislature in 2005, and amended in 2006. RSA 374:3-b authorizes small independent

local exchange carriers (small ILECs) subject to rate of return regulation to request commission approval of an alternative form of regulation. [RSA 374:3-b(II)] The statute only applies to carriers that serve less than 25,000 access lines. [RSA 374:3-b(I)] The statute contemplates a fact finding process, in which the Commission determines whether or not certain statutory criteria have been met. At the culmination of that fact finding process, the Commission must determine whether or not each of the following conditions are met:

Competitive wireline, wireless, or broadband service is available to a majority of the retail customers in each of the exchanges served by such small incumbent local exchange carrier

The plan provides for maximum basic local service rates at levels that do not exceed the comparable rates at charged by the largest incumbent local exchange carrier operating in the state and that do not increase by more than 10 percent in each of the 4 years after a plan is approved with the exception that the plan may provide for additional rate adjustments, with public utilities commission review and approval, to reflect changes in federal, state, or local government taxes, mandates, rules, regulations, or statutes

- The plan promotes the offering of innovative telecommunications services in the state
- The plan meets intercarrier service obligations under other

applicable laws

The plan preserves universal access to affordable basic telephone service

- The plan provides that, if the small incumbent local exchange carrier operating under the plan fails to meet any of the conditions set out in the section, the public utilities commission may require the small incumbent local exchange carrier to propose modifications to the alternative regulation plan or rate of return regulation. [RSA 374:3-b(III)]

If the Commission finds that these criteria have been met, it must approve the petition for alternative regulation.

Q. Has the Commission approved any petitions filed pursuant to RSA 374:3-b?

A. No. The TDS petitions are the first to be filed pursuant to this provision. The Commission has not promulgated any rules regarding RSA 374:3-b, and neither the Commission nor the New Hampshire courts have interpreted this statute. Hence, this is very much a case of first impression.

Evolution of Telecommunications markets

Q. Please turn to the next section of your testimony. To place the TDS petitions into context, can you please briefly describe the origins of public utility regulation?

A. Yes. Historically, utility regulation reflects the well-founded perception that certain types of goods and services cannot be efficiently provided under competitive conditions. It generally has proven uneconomic, for example, to have competing water, sewer, electric, or gas distribution systems within a single community. During the late 19th and early 20th centuries, where two or three of these utilities tried to compete, normal competition did not seem to be sustainable.

Economists came to describe these types of markets as "natural monopolies." If competing companies do survive in a natural monopoly, they tend to incur excessive costs and needless duplication of facilities. Typically, regardless of how many firms initially attempt to enter a market, conditions evolve toward a single strong company dominating the market, and that firm enjoys unmatchable low costs, allowing it to drive all others from the field, or pushing them into obscurity – surviving firms serve limited niches, or they are relegated to permanent "also ran" status.

Q. What concerned early regulators about natural monopolies?

A. By the late 1800's and early 1900's, legislators and regulators became

concerned that the surviving firms in the public utility industries were raising prices to excessive levels and enjoying substantial monopoly profits at consumers' expense, or that they would do so in the future. As the realization grew that normal competitive forces could not be relied upon to protect customers from monopoly power, regulatory agencies were created in state after state, and began to exercise jurisdiction over the electric and telephone industries in an effort to advance the public interest.

Q. What goals were policy makers hoping to achieve by regulating these industries?

A. The primary objective of regulation has always been to produce results in the utility sectors of the economy that parallel those obtainable under conditions of effective competition, while also promoting other public policy goals, like the advancement and preservation of universal service. Although economists recognize that full competition remains an unrealized ideal in our economy, the high levels of efficiency and equity achieved under effective competition have long been a primary justification of America's free enterprise or market-directed system.

Q. You mentioned universal service. Can you elaborate on that concept?

A: As this term has traditionally been used in the telephone industry,

universal service is achieved when all households and businesses are connected to the public switched telephone network, regardless of how low their income, or how little they value telephone service. Universal service has long been considered a desirable policy goal, since it facilitates the free flow of communications within society. This benefits everyone—including the people who would otherwise not have a telephone, as well as everyone who needs to communicate with them. While the exact list of services may vary from jurisdiction to jurisdiction, "basic" local services are typically the focal point of regulatory efforts to promote or achieve universal service.

Because of the changes taking place in the telecommunications industry—including increased competition, deregulation, and changing federal policies—many state regulators are finding it more difficult to balance the goal of universal service with other policy objectives. Even so, it should never be forgotten that from the standpoint of value of service—as well as in acknowledgment of the positive externalities involved—society, ratepayers, and telecommunication carriers all benefit when nearly everyone participates on a universal, fully interconnected telephone network.

Q. What mechanisms have been used by regulators to achieve these goals?

A. Consistent with this competitive standard, regulators attempted to set

prices to provide a well-managed utility with the opportunity to cover all of its necessary costs (where costs are defined as including a fair return on the capital employed). Although the utility may recover more or less than its full cost in the short run, its total cost should generally be equated with total revenues over a longer period of time. When rates are controlled in this manner (regardless of whether this is accomplished through traditional rate base regulation or through an alternative system), there will be an equitable and efficient balance between the interests of the utility and its investors on the one hand, and those of its customers on the other hand. Such a balance, which occurs naturally in markets controlled by effective competition, has been the goal for utility rate regulation in most jurisdictions.

To promote universal service, regulators have gone a step further, not only protecting customers from monopoly pricing levels, but also taking specific steps to ensure that basic local exchange service in particular is priced at affordable rates, so that everyone is encouraged to connect to the telephone network, regardless of how low their income may be.

Q. Were legal standards established for preventing monopoly profits and allowing firms to earn a fair rate of return?

A. Yes. The basic mechanism was one of comparability with the results of effective competition – this concept as been used to determine the

fair rate of return and to judge whether customers are being overcharged. This standard has been repeatedly upheld in United States Supreme Court decisions. In the landmark case, Bluefield Water Works & Improvement Co. v. Public Service Commission, 262 U.S. 679, 692-93 (1923), the Supreme Court set forth the criteria for determining a fair rate of return for a utility:

> A public utility is entitled to such rates as will permit it to earn a return... equal to that generally being made... on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economic management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

In Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944), guidelines were established to judge reasonableness of return. The Supreme Court held that:

> it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That

> return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. [Hope, p. 603 (citation omitted)]

The Supreme Court stressed that setting an appropriate rate of return and rates in general do not relate solely to protecting investors' interests. They also involve protecting the rights of consumers.

Q. Are there any problems associated with the traditional rate base form of price regulation?

A. Yes. Although the public interest has been well served by traditional regulation, there are several aspects of rate base regulation that have led observers to question whether it is still appropriate for the telecommunications industry, and to lead policy makers to search for alternatives. Most of this criticism has focused on one or more of the following issues: (1) the lack of strong incentives to operate efficiently and to minimize costs; (2) a potential failure of utilities to increase their productivity as rapidly as possible due to this lack of incentives; (3) the costs of regulation; and (4) the desire to rely partly on competition, rather than relying exclusively on regulation, to advance the public interest, together with a corresponding concern that rate base regulation might not be fully compatible with this trend towards more increased competition.

Q. What alternatives to traditional regulation have been implemented in the United States?

A. Regulators and legislators have tried various forms of alternative regulation in an effort to accommodate the trend towards increased competition, and to improve management incentives for efficiency, while protecting the interests of consumers. Broadly speaking, policy makers have tried price caps, partial deregulation, profit-sharing, price freezes and various combinations of those four techniques.

Q. Has there been a trend towards any particular form of alternative regulation?

A. Yes. Prior to the divestiture of AT&T, all 50 states employed traditional rate base regulation. In the late 1980's, shortly after divestiture, several states adopted price freezes and rate case moratoria. [See Chumrong Ai and David Sappington, The Impact of State Incentive Regulation on the U.S. Telecommunications Industry, Table 1, June 2001, http://bear.cbo.ufl.edu/sappington/papers/txt4.pdf.] Price freezes were sometimes viewed as a transitional form of regulation, to be used while state commissions sorted out the effects of AT&T's divestiture and investigated other forms of alternative regulation.

During the late 1980's and early 1990's, other states were beginning to test profit sharing as an alternative to traditional regulation. Meanwhile, the FCC and regulators in some other

countries started to rely on price cap regulation. Some states began experimenting with price caps around 1990. The initial experience of the carriers was apparently favorable, since they began advocating price cap regulation to various regulatory commissions and legislative bodies. The transition to this new concept was remarkably swift; by 1996, operations of the RBOCs were more heavily regulated by price caps than by rate of return, overturning a tradition that had persisted for nearly a century.

Q. Can you elaborate on what policy makers were attempting to accomplish with price cap regulation?

A. Yes. There are a handful of specific potential advantages to this form of regulation which are typically cited by its proponents. As summarized by one author, price caps are intended to

> (1) sever the regulatory connection between prices and costs, rewarding the firm with whatever cost savings it achieves through improved efficiency, (2) sever the connection between profits and rate base, thereby eliminating the incentive to use excessive amounts of capital, (3) impose price ceilings on monopoly services to restrict the firm's ability to finance predatory undertakings in competitive markets, and (4) impose a smaller administrative burden. [Leland L. Johnson, Price Caps in Telecommunications Regulatory Reform, The RAND Corporation, January, 1989, p. v.]

If price cap regulation works as promised, the firm will have stronger incentives to produce a cost-minimizing input mix, invest in cost-effective innovation, and adjust optimally to changes in input cost conditions. The reasoning is straightforward. Since the firm is allowed to retain any cost reductions it achieves, and its profits will be reduced by any excess costs it incurs, managers of a price cap regulated carrier will have a stronger incentive (at least in theory) to minimize costs and produce as efficiently as possible.

Because under price cap regulation carrier-specific cost changes do not lead to corresponding changes in prices, management has strong incentives to minimize costs. Whenever management reduces costs, the benefits will immediately and directly flow to stockholders (since revenues and the price cap remain unchanged). The benefit of declining costs is passed through to customers only to the extent that the price cap formula assures this–and only to the extent that cost reductions are generic to the industry, and are therefore reflected in the data that are used in establishing the price cap formula (e.g., to the extent that productivity increases are observed throughout the industry).

Q. Were policy makers abandoning universal service and other public interest goals when they moved to price caps?

A. Absolutely not. The specific goal of price cap regulation is to eliminate, or at least weaken, the linkage between cost and rates, but there is no evidence that policy makers have abandoned their focus on the broad public interest, or that they are no longer concerned about the traditional goals of public utility regulation. For example, in developing and refining its system of price cap regulation, the FCC apparently still viewed the results of effective competition as an appropriate benchmark for price cap regulation. For instance, it explained that competition

> encourages firms to improve their productivity and introduce improved products and services, in order to increase their profits. With prices set by marketplace forces, the more efficient firms will earn above-average profits, while less efficient firms will earn lower profits, or cease operating. Over time, the benefits of competition flow to customers and to society, in the form of prices that reflect costs, maximize social welfare, and efficiently allocate resources. [Price Cap Performance Review for Local Exchange Carriers, First Report and Order, CC Docket No. 94-1, 10 FCC Rcd 8961, 9002 (1995)]

In adopting this new system of regulation, the FCC believed that the results of price caps would correspond to the results of a competitive market more closely than had been possible under

previous regulatory systems. Although the FCC was trying to encourage growth in productivity by permitting incumbent LECs that increase their productivity to earn higher profits, it was not abandoning its traditional focus on preventing monopolists from charging excessive rates or earning supra-normal profits.

Q. Can you now discuss the specific characteristics of price cap systems?

A. Yes. A typical price cap regulatory system has four basic characteristics. First, the regulator establishes an acceptable set of prices, which can be thought of as the starting point, or initial price cap. With certain minor exceptions (where price floors are an issue), the regulated firm can sell its services at essentially any price below or equal to this cap. In most cases, the firm is allowed to retain whatever profits it earns while operating within this pricing constraint. Under some Plans, excess profits are automatically shared with ratepayers pursuant to a specific formula. A price floor may also be set in an effort to prevent anti-competitive pricing behavior.

Second, in a multiproduct industry, the regulator may provide upward pricing flexibility by grouping services and products into distinct categories, sometimes referred to as "baskets." An overall ceiling is established for the prices that can be charged in the aggregate for all of the services or service elements within each

basket. This is typically accomplished by calculating a weighted average of the current or anticipated prices of the various items. The firm is typically allowed to change prices for the individual items (raising some and lowering others) as long as the aggregate index, or weighted average of prices, does not exceed the aggregate price cap index established by the regulator for that particular basket.

Third, the regulator may allow the price cap to be adjusted over time by a predetermined adjustment factor external to the firm. In the most sophisticated systems, the price cap is tied to industry-wide changes in input prices and productivity. The idea is to have prices change over time in a manner that simulates the pattern in competitive markets, where the market-clearing price level will reflect the net effect of input cost inflation, which tends to push costs and prices upward, and technological improvements and productivity increases within the industry, which tend to push costs and prices downward.

Fourth, regulators may periodically review the system in order to verify that it is working as intended and to incorporate improvements. The review may include an evaluation of the basic price cap formula and various other details of the plan (e.g., the organization of services into baskets), as well as other evidence.

Q. Can you clarify how a price cap formula differs from traditional cost-of-service regulation?

A. Yes. Perhaps the most significant difference is that price cap regulation generally focuses on industry-wide data, while traditional regulation focuses on carrier-specific data. However, the full impact of this difference is not felt initially. When a price cap system is initially instituted, it typically resembles traditional regulation, since the price cap is usually based upon the existing tariffs, which were derived from carrier-specific data. In some states, rates have been reduced below the existing level at the time a price cap plan is adopted, but I am not aware of any cases in which the starting rates were based upon national averages or other industry-wide data. Over time, the two systems will tend to diverge, since the price cap method of regulation normally focuses on industry-wide factors, while traditional regulation focuses on company-specific data (in a rate case).

The general formula for price cap regulation can be written as:

RateNew = RateOld times [1 + (I – X)],

where I = some measure of economy-wide inflation, and

X = a factor which reflects differences between costs experienced by this type of firm and those occurring in the economy generally.

By including a factor for inflation, the firm is allowed to increase its prices to keep pace with inflation. This makes sense, to the extent that a firm's costs can be expected to increase as a result of inflation. However, since costs do not increase by exactly the same amount throughout the economy, due, for example, to industry-specific differences in productivity growth, the formula typically includes a factor (usually referred to as the "X" factor) which attempts to track industry-specific differences.

To the extent that the price cap formula does not adequately take into account industry-specific or carrier-specific circumstances, this discrepancy will translate into higher or lower than normal profits. For instance, if the firm benefits from circumstances that are more favorable than the nationwide norm, its profits will increase. Whether this increase in profits is an advantage or disadvantage of the price cap system depends on one's perspective, as well as the reasons underlying the discrepancy between the carrier-specific and nationwide data.

TDS Petitions

Q. Let's turn to the next section of your testimony. Can you start by summarizing the key provisions of the Alternative Regulation Plans filed by TDS?

A. The Alternative Regulation Plans (Plans) filed by TDS group services into 3 baskets: Basic Retail Services; Non-Basic Retail Services; and, Wholesale Services. Basic Retail Services are not defined in the Plans. However, TDS witness Timothy Ulrich explains that these services are "residential and business single-party line voice services that include the additional features that comprise 'basic service' as defined in Puc 412.01. [Ulrich Direct, p. 6] Puc 412.01(b) provides:

> An ILEC shall, directly or indirectly, make available to its customers all of the following as part of basic service:
> 1.Safe and reliable single-party voice service;
> 2.The ability to receive all non-collect calls, at telephone lines capable of receiving calls, without additional charge;
> 3.The ability to complete calls to any other telephone line, which is capable of receiving calls, in the state;
> 4.The opportunity to presubscribe to interLATA toll carriers;
> 5.The opportunity to presubscribe to intraLATA toll carriers;
> 6.Dialing parity;
> 7.Number portability;
> 8.Enhanced 911, pursuant to the requirements of the department of safety bureau of emergency communications or its successor agency;
> 9.Access to statewide directory assistance;

10.Telecommunications Relay Service (TRS), pursuant to Puc 412.02 below;
11.A white pages directory listing;
12.A non-electronic telephone directory;
13.A caller identification blocking option, on per-call basis;
14.A caller identification line blocking option that: a. Is available to all customers without recurring charge;
b. Is provided upon customer request without charge to customers who have elected non-published telephone numbers;
c. Is available without a non -recurring charge to customers who certify that Caller ID threatens their health or safety; and
d. Is available without a non-recurring charge when requested with installation of basic service;
15. A blocking option for pay-per-call calls, such as blocking all 900 or all 976 calls;
16. The ability to report service problems to the customer's basic service provider on a 24 hour basis, 7 days a week; and
17. Automatic Number Identification (ANI) to other carriers which accurately identifies the telephone number of the calling party.

Non-Basic Retail Services are defined in the Plans as "all intrastate retail telecommunications services other than Basic Retail Service". [Plans, §4.2] Wholesale Services are also not defined by the Plans. However, Mr. Ulrich explains: "Wholesale services are those services that are provisioned to other telecommunications carriers for interconnection of networks (e.g., switched access, reciprocal compensation, special access)". [Ulrich Direct, pp. 6-7]

Q. How do the Plans regulate the prices of services in the three baskets?

A. With regard to Basic Retail Service rates, the Plans provide:

> The Company may increase or decrease its rates for Basic Retail Service at any time as long as the rates do not exceed the rates for Basic Retail Service for comparable customers in comparable rate groups charged by the largest incumbent local exchange carrier in the state of New Hampshire and subject to the annual percentage limitation set forth in Section 4.1.1 ("Rate Cap"). [Plans, §4.1]

Section 4.1.1 of the Plans provides:

> The maximum level of the Company's rates for Basic Retail Service in each exchange shall not increase by more than ten (10) percent annually ("Annual Percentage Rate Cap") in each of the four (4) years after the effective date of the Plan.

The pricing provisions for Non-Basic Retail Services are as follows:

> All rates and charges for all Non-Basic Retail Services, and all new services introduced by the Company will be set and will increase or decrease in response to market conditions. [Plans, §4.2.1]
>
> Pricing for these services is at the discretion of the Company; provided, however, that if the Company itself offers intraLATA toll services (which it does not as of the effective date of the Plan), such intraLATA toll services shall be priced at levels which are not less than the price of the lowest form of access that competitors would purchase to compete for customers with comparable volumes of

> usage, plus the incremental cost of related overhead. [Plans, §4.2.2]

Finally, under the Plans Wholesale Services would be priced as follows:

> For the duration of the Plan, the Company's intrastate access rates will be capped at the level that existed on the effective date of the Plan. However, the Company may file cost studies supporting increasing these rates above the existing levels, which will become effective upon approval by the Commission. [Plans, §4.3.1]
>
> The Company may reduce intrastate access rates below their existing levels upon a one day notice to the Commission. [Plans, §4.3.3]

Q. What are the implications of TDS' proposed service baskets, and the pricing provisions applicable to the services within the baskets?

A. If the proposed Plans are approved, TDS will have nearly complete freedom to price most of its services in whatever manner best maximizes its profits. To the extent TDS continues to enjoy a substantial amount of monopoly power, these provisions ensure that that TDS will be able to increase its prices and profits toward monopoly levels.

This increased freedom is particularly obvious with respect to in the Non-Basic Retail Services basket, where TDS will be given almost

total freedom to set prices however it wishes, without any pricing constraints and without the necessity of Commission approval. This unrestrained pricing freedom will apply to the vast majority of TDS's services; only basic local and wholesale services are excluded from this basket. Furthermore, under the proposed Plans, all new services (including bundling and repackaging of existing services) would be placed in the Non-Basic Retail Services basket, ensuring that TDS will gain an increasing degree of pricing freedom in future years.

Q. What about services in the Basic Retail basket? Will TDS also enjoy an increased degree of freedom to increase prices for basic local services?

A. Yes. In fact, the pricing provisions are similar for this basket, except that – in an apparent effort to comply with RSA 374:3-b – the basic local service rates would be capped at the analogous level charged by the largest ILEC in the state, and rate increases would be limited to no more than 10% per year during the first four years the plan is in effect. Verizon is the largest ILEC in New Hampshire. The table below lists Verizon's residential and business basic exchange service rates for its 5 rate groups.

Verizon Local Exchange Rates

Rate Group	Residential	Business
A	11.09	27.68
B	12.08	31.69
C	13.23	35.87
D	14.39	40.25
E	15.67	44.61

As shown, Verizon's residential basic local exchange rates range from $11.09 in Rate Group A to $15.67 in Rate Group E. Similarly, Verizon's business local exchange rates range from $27.68 in Rate Group A to $44.61 in Rate Group E.

The following table lists the analogous residential and business local exchange rates for TDS' 4 operating companies. KTC charges a different rate in each of its exchanges. For purposes of the table below, I have listed the KTC's lowest and highest local exchange rates.

TDS Local Exchange Rates

Company	Residential	Business
MTC	11.20	19.38
WTC	6.72	15.32
HTC	14.59	22.87
KTC (low)	9.37	18.45
KTC (high)	14.39	30.27

RSA 374:3-b requires that the Plans provide for "maximum basic local service rates at levels that do not exceed the comparable rates charged by the largest incumbent local exchange carrier operating in the state ..."

While it is not self-evident which of Verizon's local exchange rates are "comparable" to the rates charged by MTC, WTC, HTC and KTC, many of the TDS rates are lower than Verizon's rates, and thus it

is likely that this provision alone is not sufficient to prevent TDS from substantially increasing its prices and profits. In the "Competitive Analyses" prepared for MTC and WTC, TDS compared these subsidiaries' rates to the rates charged by Verizon in Rate Group D. In the Competitive Analysis prepared for HTC, TDS compared the HTC rates to the rates charged by Verizon in Rate Group E. Finally, in the Competitive Analysis prepared for KTC, TDS compared its rates to the average of the rates charged by Verizon in Rate Groups D and E.[1] Assuming these rates are "comparable" for the sake of discussion, I have calculated the potential increases to TDS' local exchange ratepayers by comparing the current TDS rates with these Verizon rates. The results of this comparison are presented in the table below.

Company	TDS Residential	Verizon Residential	Percent Increase	TDS Business	Verizon Business	Percent Increase
MTC	11.20	14.39	28%	19.38	40.25	108%
WTC	6.72	14.39	114%	15.32	40.25	163%
HTC	14.59	15.67	7%	22.87	44.61	95%
KTC (low)	9.37	15.03	60%	18.45	42.43	130%
KTC (high)	14.39	15.03	4%	30.27	42.43	40%

1 In response to OCA DR 2-11, TDS compares its local exchange rates to to Verizon's local exchange rate on an exchange by exchange basis. Those comparisons are generally consistent with the comparisons provided in TDS' "Competitive Analyses". TDS notes that the rate caps provided in response to OCA DR 2-11 are "illustrative only", further underlining the uncertainty regarding which specific Verizon rates should serve as a rate cap in each exchange.

As shown, if these Verizon's rates serve as price caps, MTC would be allowed to increase its residential and business local exchange rates by up to 28% and 108%, respectively. Similarly, WTC would be allowed to increase its residential and business local exchange rates by up to 114% and 163%, respectively. HTC would be allowed to increase its residential and business local exchange rates by up to 7% and 75%, respectively. Finally, depending on the exchange, KTC might be allowed to increase its residential and business local exchange rates by as much as 60% and 130%, respectively.

Q. Does it seem possible that the Legislature intended to authorize such large rate increases?

A. It seems unlikely that the Legislature intended for rural residential rates to increase by as much as 114%, or for rural business rates to increase as much as 163%. Were they allowed, these drastic rate increases would have a particularly severe impact on low income consumers, many of whom may feel compelled to drop their telephone service.

It seems more likely the Legislature expected that the Commission would only approve increased pricing freedom in exchanges where meaningful competitive alternatives exist, so that the regulatory protections would only be eliminated where competition was strong enough to preclude extreme price increases.

The legislature did not mandate deregulation by a date certain. Instead, it delegated fact finding responsibility to the Commission, specifying that an alternative regulatory plan only be adopted after specific findings of fact were made, and only if the approved plan would protect universal service. On balance, it appears the Legislature intended the Commission to consider the effects of potential rate increases, particularly with regard to customers who can least afford such increases, before deciding whether or not to approve the proposed plans.

In this regard, I consider it quite significant that the legislature did not simply deregulate small rural carriers or authorize rate increases on a mandatory basis. Instead, it established a complex statutory framework involving fact finding by the Commission, followed by approval of a specific plan of alternative regulation. A proposed alternative regulation plan is only to be approved if the Commission finds that universal access to affordable basic telephone service will be preserved, and that competitive wireline, wireless, or broadband service are available to a majority of the retail customers in each of the exchanges served by the small incumbent local exchange carrier. Both factual circumstances must be present.

In understanding these statutory provisions, it is reasonable to assume that the Legislature was not intending for the Commission to deregulate monopolists. To the contrary, it is more reasonable to

assume the Commission was only expected to approve an alternative form of regulation if universal access to affordable basic telephone service will be protected and only in situations where substantial price increases would not be sustainable, due to the presence of competitive alternatives.

As well, it should be noted that, while the statute provides for certain specific price caps, there is no indication that these are the only limitations contemplated. Other, more restrictive provisions could also be included in the approved alternative regulatory plan, to help protect universal access to affordable phone service.

Q. What is the basis for TDS' claim that it should be afforded nearly unlimited pricing flexibility?

A. The underlying rationale behind all of these changes appears to be the trend towards competition. The TDS Petitions state: "Approval of the Plan will better enable [TDS] to meet the competitive demands of the marketplace while continuing to provide universal basic telephone service at affordable rates". [Petitions, ¶15] TDS witness Ulrich states:

> The telecommunications environment is evolving rapidly and the Companies now face competition as never before. Given the extent of competition that the Companies are facing, we believe it is necessary

> to move to a form of regulation that will provide them with the flexibility to compete... [Ulrich Direct, p. 3]

Yet, if TDS were truly concerned about the trend toward increased competition, it is somewhat puzzling that it would submit a plan in which it would not only be allowed to lower rates in response to competitive pressures, but also to drastically increase rates. If the underlying rationale is increased competition, there is certainly no need to provide TDS with this the freedom to drastically increase rates for services where it retains a monopoly.

Needless to say, competitive pressure–when it actually exists–is almost always in the downward direction. I have trouble visualizing a situation where a firm would be forced to increase its prices in order to respond to competition. In competitive markets firms typically increase their prices in response to cost increases, while they decrease rates in response to competitive pressures.

If approved, the plan will provide TDS with an opportunity to increase rates that are currently below the monopoly profit-maximizing level. This would provide TDS with an opportunity to more fully exploit its market power, and to generate profits that come close to the levels it could potentially achieve as a completely unregulated monopolist.

Effective Competition and Market Power

Q. Can you explain the importance of the concept of "competition" to this proceeding?

A. The Commission is being called upon to decide whether it would be appropriate to significantly relax the regulation of TDS' retail services. A more relaxed form of regulation or a greater degree of deregulation makes sense once competition is real enough, and meaningful enough, to be effective as a substitute for regulation.

Ideally, there would be a relatively large number of firms competing in the same market, no one firm would dominate the market, and prices are controlled by the competitive market, rather than being under the control of a single firm, like TDS – either acting on its own, or in tacit cooperation with one or two other firms. Once such conditions prevail, customers can receive most of the benefits ascribed to purely competitive markets, and the regulatory controls that have traditionally been imposed in a monopoly environment are no longer needed, even if the market falls short of pure competition.

The concepts of market power and competition are closely related. For the public interest to be advanced by deregulation, competition must be strong enough to drastically curtail or eliminate market power. The mere removal of legal barriers to entry, or the mere existence of more than one provider in a market is not sufficient

to confirm that competition exists, or that the public interest will continue to be protected when regulatory constraints are removed.

Effective competition benefits consumers, not only because they will not be forced to pay unreasonably high prices to a monopolist, but also because they will be offered more options, will be free to choose amongst a wider variety of products and services, and will be able to change providers if they become dissatisfied with their current supplier. Furthermore, effective competition forces all firms in the industry to adapt their products and services to the demands of consumers, drives prices downward toward the actual cost of service, and promotes productive efficiency, to the benefit of society as a whole. Thus, effective competition not only prevents the exercise of market power, but it also advances the public interest generally.

Where competition is effective, it can advance the public interest by increasing consumer choices, promoting technological and service innovations, and (potentially, but not necessarily) lowering prices below the level that would be allowed under regulation. However, it is important to remember that the simple act of opening a market to new entrants by no means ensures that effective competition will instantly emerge. In an industry like telecommunications, where market power has existed for a century or more, quasi-monopoly conditions are likely to linger even if other firms are allowed to enter the market. Even if all entry barriers have

been removed, there is likely to be an unstable and hazardous period of transition, indeterminate in duration, in which the market resembles a pure monopoly more than it resembles purely competitive conditions.

Q. You've mentioned pure competition several times. Can you explain this concept in greater detail?

A. Yes. I don't believe the statutory framework applicable to this proceeding requires a finding of pure competition by the Commission – to the contrary, this is a hypothetical concept which is rarely, if ever, encountered in actual practice. Nevertheless, this is a useful construct, which helps shed light on the underlying meaning of the word "competitive" as this term is used by economists. In the purest form of competition, absolutely no market power exists.

Economic theory defines a purely competitive market in very specific terms. First, numerous firms must participate, each acting independently and none controlling a share of the market large enough to significantly influence its prices. Second, the goods or services produced must be homogeneous (e.g., no product differentiation). Third, there must be no substantial barriers to entry or exit.

There are few real-world markets that conform to this strict theoretical definition of pure competition. Nevertheless, its

characteristics provide a good benchmark for measuring the actual level of competition that is present in a particular situation and in judging how appropriate it is to view specific products or services as being appropriately described as "competitive" with the offerings of TDS.

Unquestionably, purchasing a ticket and flying from Manchester to Miami does provide an "alternative" to picking up the phone and placing a long distance call to Miami. Both options can achieve – to some degree – the same basic goal of communicating with someone in Miami. However, there are vast differences between these alternatives, and thus most people would readily agree that plane tickets and long distance phone calls are not appropriately described as "competitive" with each other, even if they are willing to concede these are alternative services that can potentially be used for the same purpose.

In judging whether or not a specific set of products or services can appropriately be classified as "competitive" in the context of RSA 374:3-b, it is useful to start with some consideration of the concept of pure competition. This provides a useful conceptual benchmark, which can help the Commission evaluate the extent to which two distinct services can properly the classified as "competitive" with each other in any given factual situation. As well, this benchmark will help the Commission evaluate the implications of a finding that wireless or

other services should be treated as "competitive" with the services offered by TDS. In particular, this way of viewing the issues in this proceeding will facilitate reaching a sound conclusion whether or not competition is intense enough to fully replace regulation, or to protect the public interest if the TDS petitions are approved.

While pure competition is relatively rare, effective competition is widespread in the United States economy. Effective competition is present when a market is free of substantial barriers to entry and exit and when no firm or consortium of firms has enough market power to set or strongly influence market prices. This implies that there are multiple firms operating in the market, selling essentially the same product for prices that are determined by market forces. Each such firm is largely unable to set its own prices; rather, it must take as a given the level of prices determined in the market place. (If the firm attempts to charge significantly more than this market-determined price level, it knows it could lose most of its customers, and thus it feels constrained to set prices in the same vicinity as other providers.)

I am not suggesting that effective competition is the same thing as pure competition, nor am I suggesting that in order to justify approval of an alternative regulatory plan, a service must be subject to pure competition. In the case of pure competition, the supplying firm takes prices as totally given – it can't sustain even the tiniest difference in prices without losing all of its customers – but this

condition is neither necessary nor achievable in the telephone industry. The classic example of pure competition is the market for wheat, where a farmer has absolutely no say in deciding what prices he will charge. Clearly, competition can be effective while falling short of this extreme case. For instance, the firm may have limited freedom to set prices within a narrow range, but if it attempts to charge substantially more than the normal (market-determined) rate, it will lose so much sales volume that it will not find this pricing strategy profitable.

If competition were strong enough to force TDS to charge the going market rate for its services in a particular market–and it is unable to significantly influence or increase that going market rate–then regulation is no longer needed to protect the public interest. Stated another way, if competitive pressures are strong enough to effectively regulate TDS' prices, it makes sense to let the market take over the job of protecting the public from monopoly pricing abuses.

Similarly, with regard to product homogeneity, an industry can be effectively competitive, even though each firm distinguishes its products in various ways. The key question is whether there are enough customers who are sufficiently indifferent to brand-specific differences that they willingly switch back and forth between brands. If every customer is totally committed to a single provider, and the product differences are so important that one brand is almost never

substituted for another, then it would be fair to conclude that these services are not truly "competitive" alternatives, and thus the situation comes close to fitting the definition of pure monopoly, despite the presence of multiple suppliers offering somewhat similar products.

Q. You have been distinguishing between services offered by other suppliers and "competitive" services that effectively diminish the incumbent carrier's market power. Can you elaborate on this distinction?

A. Yes. It is sometimes argued or assumed that once legal barriers to entry have been removed and the market contains at least one or two other providers of similar services, the market can be described as "competitive" or that these somewhat similar services can properly be viewed as "competitive" with each other. However, the mere presence or absence of multiple firms or the mere existence of multiple products that perform somewhat similar functions does not determine whether these products are all being provided in the same market, or whether those services can be characterized as "competing" with each other in a meaningful sense. The mere existence of multiple providers, or multiple product alternatives, is not sufficient to provide the public with the benefits of true competition.

In markets where effective competition exists, the market is free of substantial barriers to entry and exit, and no firm or tacitly co-operating consortium of firms retains enough market power to set or strongly influence market prices. In essence, both buyers and sellers must view prices largely as a given, rather than something they can determine on their own volition, based upon their preferences, strategic decisions, or profit goals. While the decisions of participants in the market may collectively influence the level of prices observed in the market, individual market participants behave as if prices are almost entirely unaffected by their own individual decisions.

If either buyers or sellers recognize that they can control or greatly influence the level of prices that prevail in the market, effective competition does not prevail. The greater the degree of control that can be exercised, the less competitive forces will prevail and the greater the degree of market power that is present. Four conditions are considered sufficient to assure that sellers will behave as "price takers," or effectively compete with each other. If any one of these conditions is largely or entirely absent, the prospects for effective competition are diminished or eliminated.

Q. How can the Commission determine whether alternative services are effectively competitive with the services offered by TDS, and thus monopoly power is no longer a major concern?

A. As I indicated earlier, this is a case of first impression for the Commission, and the courts have not specified how the statutory provisions in question should properly be interpreted. However, speaking from my perspective as an economist, if any one of the economic conditions just discussed is largely or entirely absent, a finding that alternatives are "competitive" would be correspondingly less appropriate or less likely to be valid. Market dominance and the ability to exercise market power – not the mere presence of alternative suppliers of other services that serve a somewhat similar purpose – are the key issues to be considered. Unless those key issues are considered, there will be no assurance that the alternatives are sufficiently relevant and competitive to substantially reduce or eliminate the core rationale for regulation – the presence of monopoly power.

Thus, a logical first step is to evaluate the extent to which competitive entry has occurred into the specific geographic and product markets served by TDS, and the extent to which these entrants have been successful in gaining a significant share of the those specific markets. In judging whether two services are correctly viewed as "competitive" with each other, it is helpful to consider

whether the providers of those alternatives have been able to wrest a significant share of the market away from the incumbent. If TDS continues to enjoy an overwhelmingly large market share relative to the new entrants, the new firms are not capable of exerting strong enough competitive pressures to effectively regulate TDS' prices. Unless and until the incumbent's market power is greatly eroded, the type of regulatory oversight historically provided by this Commission would continue to provide valuable protection for consumers and the public interest generally.

Over the past several decades, policy makers at both the state and federal level have taken steps to move telecommunications markets towards effective competition; however, that does not necessarily indicate that the transition to effective competition has yet been achieved in any particular case, or that the time is ripe to remove regulatory protections for consumers in every instance, merely because of the existence of a nationwide trend toward greater competition.

Market share data can provide an indication of the extent to which barriers to entry remain significant. Even if legal barriers to entry have been eliminated, and even if economic and technical barriers to entry have been reduced, this does not mean that all barriers to entry have been completely eliminated.

Q. Can you briefly elaborate on the barriers to entry and their relevance to this case?

A. Because of high barriers to entry, new entrants have found it very difficult, or impossible, to compete with incumbent local exchange carriers by offering essentially the same products and services using the same technology. Firms that have attempted this form of entry have often been forced to take drastic measures (e.g., incurring very high sales costs, or offering substantially more attractive prices than those of the incumbent) in order to make customers aware of their presence in the market and to overcome customer inertia or customers' perception that the incumbent is the "safest" and most reliable choice.

Due to barriers to entry, competitive local exchange carriers (CLECs) have often encountered great difficulty increasing their market share–unless they are willing (or forced) to operate with very low, or negative, profit margins. In evaluating the extent to which barriers to entry have diminished, the telling evidence is the extent to which the new firms have gained market share, in conjunction with evidence concerning the extent to which these firms have been able to generate profits and positive cash flows during the growth process. (Rapid growth in market share isn't much of an indicator of effective competition or the absence of barriers to entry if it is followed by bankruptcy).

Even if a new carrier has experienced phenomenal growth, increasing market share from zero to 2% of the market in a few short years, this information alone does not necessarily indicate that entry barriers are minimal or non-existent, nor does it mean the new entrant will soon grow large enough to challenge the incumbent firm's dominant position in the market.

In some cases, a very costly level of marketing and sales effort has been required in order to achieve the observed level of growth. A new entrant might be incurring ruinously high marketing and sales costs in order to maintain a rapid rate of growth, and thus its entry efforts may not be profitable or sustainable over the long haul. In judging the extent to which barriers to entry have declined, market share of the competitors must be carefully evaluated, along with information concerning whether these firms are financially successful and viable.

Q. Have any traditional wireline CLECs been able to gain market share in TDS' service areas?

A. Apparently not. When asked in discovery to identify the total number of customers using a CLEC for local exchange service, TDS replied: "There are no CLECs providing service in the Petitioners' territory at this time". [TDS response to Patnode DR 1-6]

Q. Can you explain why CLECs aren't competing TDS' service areas?

A. First, as Rural ILECs, each of the companies are exempt from the requirements to provide resale and unbundled network elements established by the 1996 Telecom Act. Therefore, if a CLEC wants to compete with TDS, it must overcome the barriers to entry faced by facilities-based carriers. In the case of pure facilities-based carriers, the most prominent barriers to entry are the enormous costs of installing new facilities and the fact that these costs are largely irrevocable. In many cases, once dollars have been sunk into network facilities, a carrier cannot readily move its investment to another market if it encounters difficulty attracting customers, or its initial business plan does not prove to be financially viable. In contrast, investments in manufacturing facilities are often fungible, so that upon exiting a particular market, the firm can often redeploy its capital in another market by reconfiguring its factory to produce an entirely different product.

For this reason, as well as the existence of an entrenched ILEC with a ubiquitous system and relatively deep pockets, knowledgeable firms are frequently unwilling to undertake the enormous cost of building a competing network. The high cost of installing new facilities is compounded by the fact that new carriers face considerable uncertainty about how quickly they will be able to obtain

customers, whether they will be able to obtain a substantial share of the market, and whether they will ever achieve adequate economies of scale. Hence, the adventuresome firms that have attempted pure facilities-based entry have typically started off by installing facilities that are limited in scope and largely confined to serving customers in a concentrated geographic area. In the case of TDS, even this limited market entry has not occurred.

Q. What about the rural nature of TDS' service territories. Does that make it even more difficult for competitors to enter?

A. Yes. There can be extreme differences between the operating and engineering characteristics of urban areas like those in downtown Boston or Manchester, and the characteristics of more rural areas, like those served by TDS in New Hampshire. In turn, these differences can translate into substantial differences in the costs and difficulties involved in serving customers in different areas. There can be dramatic percentage differences in the cost per line of serving customers in urban and rural areas – rural areas are much more costly to serve, because of the limited potential for exploiting economies of scale.

Similarly, the mix of high revenue customers and low revenue customers may differ in various parts of the state. Hence, CLECs may confront entirely different conditions in considering the potential for

competing in urban versus rural areas. For instance, revenues from some services (e.g., custom calling) may be lower in some small towns relative to some urban areas, due to differences in demand characteristics and/or income levels. As well, marketing and sales costs can sometimes be higher in small towns and rural areas. For instance, marketing options may be relatively limited, and entrants may be forced to expend precious advertising dollars on television and media coverage areas that are far wider than the intended target market.

As a result of the underlying characteristics and mix of customers in rural areas, it is not surprising there are no CLECs operating in TDS' service territories. In general, one would expect to see lower barriers to entry and more intense competitive pressures in downtown urban areas, with higher barriers to entry and weaker competitive activity in smaller towns and rural areas. Similarly, it is reasonable to anticipate that competitive carriers will focus, at least initially, on concentrations of customers that use large volumes of telecommunications services.

Market Definitions

Q. You've mentioned both product markets and geographic markets. Is the relevant geographic market defined by RSA 374:3-b?

A. Yes. RSA 374:3-b appears to contemplate an exchange-specific determination concerning the presence of "competitive" alternatives. Specifically, in order to approve an alternative regulation plan, RSA 374:3-b(I) requires that "[c]ompetitive wireline, wireless, or broadband service is available to a majority of the retail customers in each of the exchanges served by such small incumbent local exchange carrier".

By conducting the Commission's analysis on an exchange by exchange basis, it is possible to reach more meaningful conclusions than if the analysis were conducted for a much larger geographic market, such as the entire service territory of each TDS subsidiary. Although the TDS service territories are generally rural, such large areas can potentially encompass a range of heterogeneous conditions. While each of the TDS companies are rural carriers, competitive entry could occur in one area without necessarily occurring in another area.

Q. Can you elaborate on the dangers of conducting a competitive analysis on large geographic areas?

A. If the geogrpahic market is defined as large area, such as an entire service territory or the entire state, vast geographic areas will be

treated as if they were a single unified market, leading to conclusions concerning competition that might be valid for some customers (e.g., residents living in upscale neighborhoods and businesses located in downtown business districts) that are clearly not valid for other customers in that area (e.g., customers located in lower income residential communities and outlying rural areas). If a more appropriate market definition is adopted, the Commission might conclude that effective competition exists in some areas, while high barriers to entry and quasi-monopoly conditions exist in other areas.

Further, barriers to entry can vary widely in different geographic locations. It is sometimes argued that CLECs first make decisions about whether or not to operate in a relatively large geographic area, such as a particular state, and therefore large geographic areas are appropriate for defining telecommunications markets.

By this logic, if it could be shown that CLECs make their initial entry decisions on the basis of broad multi-state regions, it would be plausible to define the "Northeastern United States" as a single market, and competitive conditions in Boston would be relevant in resolving the issues in a proceeding like this one.

While the entire Northeastern United States may constitute a relevant telecommunications market for some purposes, it is not relevant for purposes of this proceeding. One reason is that *initial* CLEC entry decisions are not the end of the line when it comes to CLEC entry. Entry actually entails a series of decisions that a CLEC will make over time regarding operating regions, geographic markets, entry method, switch installation, targeted customers, and others.

Barriers to entry influence all of these decisions, but to varying degrees.

Ignoring subtle distinctions between individual exchange areas may appear to simplify the issues, but this would actually make it more difficult for the Commission to avoid inadvertently reaching results that are inappropriate, illogical, or misleading.

Q. Can competitive conditions also vary for different products and services offered by TDS?

A. Yes. Just as competitive conditions can vary geographically (e.g from one exchange to the next), they can also vary across different groups of services. The extent to which competitive services exist may vary depending upon whether the Commission is focusing on basic local exchange service, toll services, bundled services, or various enhanced services. The extent and degree to which services offered by wireless and cable television carriers are competitive with the services of TDS will vary, depending on the specific service in question.

For instance, basic local exchange service should be analyzed as a separate product market, distinct from long distance service and enhanced services like caller ID and call waiting. Each of these products has distinct characteristics, including the degree to which they face competitive pressures.

It is not uncommon for various combinations of products or services to be bundled together as a marketing approach, or to

provide customers with enhanced convenience. While this practice can complicate or confuse the analysis, it generally does not change the underlying nature of the market, or the appropriate definitions to apply in a context like this. Thus, for example, if rental car companies start bundling gasoline with their car rentals, this doesn't make it legitimate to combine the revenues of Exxon with those of Hertz in examining whether these firms enjoy a dominant position in either the gasoline market or the rental car market. Nor would it be appropriate to throw in the revenues of the airlines, in order to shift attention to the so-called "transportation services" market. The same reasoning applies to this proceeding, and the question of whether or not wireless and cable television services are "competitive" with basic local exchange service and other services provided by TDS. Even if the Commission were to find that the long distance services provided by wireless carriers are "competitive" with the long distance services offered over the TDS wireline networks, that wouldn't necessarily indicate that the basic local exchange services offered by TDS are competitive with these wireless services.

Q. Will there be a problem if all types of different telecommunications services are lumped together as if they were all provided in one large megamarket?

A. Yes. If important differences in products are ignored, it becomes

easier to focus on anecdotal evidence of competitive pressures in particular product segments or niches. In turn, TDS may urge the Commission to generalize from these anecdotes in order to reach sweeping conclusions that wouldn't withstand scrutiny if each service were examined separately.

Without appropriately distinguishing different products and services, TDS could paint a picture of rapidly emerging competition which has a degree of plausibility in one market segment but would be completely indefensible if the Commission were to focus instead on a different service or market segment (e.g., single line residential basic local exchange service may be very different from DSL service). A failure to distinguish different product markets can be confusing, and can potentially result in erroneous conclusions. A more reasonable approach would analyze the facts with respect to individual services and geographic markets, thereby allowing the Commission to reach appropriate conclusions concerning specific portions of TDS' operations on a case-by-case basis.

Competitive Alternatives

Q. Let's turn to your discussion of competitive services. Does RSA 374:3-b specifically address the potential existence of competitive alternatives to TDS' services?

A. Yes. As I mentioned above, RSA 374:3-b(I) requires the Commission to first make a factual finding that "[c]ompetitive wireline, wireless, or broadband service is available to a majority of the retail customers in each of the exchanges served by such small incumbent local exchange carrier". [Emphasis added] It appears the legislature realized there are several ways that competition might emerge in rural parts of the state, and it directs the Commission to specifically focus on whether wireline, wireless or broadband services are available and competitive with the services offered by the rural carrier in question.

Q. From your testimony up to this point, it appears that you consider the word "competitive" in RSA 374:3-b(I) to be significant. Can you please elaborate on your view of this word, from your perspective as an economist?

A. Yes. Clearly, that word was included for a reason. Otherwise, the legislature would have simply required the Commission to check whether wireline, wireless, or broadband service is available to a majority of the retail customers in each exchange. Instead, rather than merely requiring availability, the legislature also required these services to be "competitive". RSA 374:3-b does not include a definition of "competitive", but this is a term of art that is well understood in the context of the economic literature.

Q. Are you aware of any similar legislation in other states, in which the term "competitive" is clarified or defined?

A. Yes. Because of my prior work, I am aware of a state law that was recently passed in Virginia which allows the State Corporation Commission of Virgina to provide an alternative form of regulation, or deregulate, services that are subject to competition. Specifically, Va. Code § 56-235.5(E) provides as follows:

> The Commission shall have the authority, after notice to all affected parties and an opportunity for hearing, to determine whether any telephone service of a telephone company is subject to competition and to provide, either by rule or case-by-case determination, for deregulation, detariffing, or modified regulation determined by the Commission to be in the public interest for such competitive services.

Va. Code § 56-235.5(F) provides as follows:

> The Commission may determine telephone services of any telephone company to be competitive when it finds competition or the potential for competition in the market place is or can be an effective regulator of the price of those services. [Emphasis added]
>
> ...
>
> In determining whether competition effectively regulates the prices of services, the Commission shall consider: (i) the ease of market entry, (ii) the presence of other providers reasonably meeting the needs of consumers, and (iii) other factors the

Commission considers relevant.

Although the New Hampshire and Virgina statutes are worded differently, there are also striking similarities. Both statutes envision a process in which the respective state Commission is asked to evaluate the extent of competition as a necessary step toward relaxing existing regulatory controls over an ILEC's rates. The Virgina statute is an interesting example because it explicitly states the reason why the presence or absence of competitive services is of importance: because competition can potentially serve as a substitute for traditional regulation, effectively protecting customers from excessively high prices.

Q. Would it be reasonable for this Commission to interpret the term "competitive" in a similar manner, ensuring that wireless or broadband services are not classified as competitive unless they are competitive enough to actually serve as an effective regulator of the prices charged by TDS?

A. Yes. The legislature has required that alternatives to TDS' services must be "competitive" but it has not specifically stated what facts must be present, or absent, in order for these services to qualify. From an economic perspective, a market cannot be meaningfully described as "competitive" if it remains a monopoly – a single firm cannot

control the market, or have enough market power to effectively determine the overall level of prices charged in the marketplace.

In competitive markets, the workings of supply and demand and the interaction of all market participants determine what prices are charged. If this is the same concept that the legislature had in mind when it chose to include the word "competitive" in the statutory framework, then the statute has a built in protection which ensures that traditional regulation will not be removed unless consumers have viable alternatives to the incumbent carrier's offerings, and thus do not need continued protection from monopoly power.

Under this view of the statute, alternative wireline, wireless or broadband services would not be viewed as "competitive" except to the extent the Commission finds these alternative offerings are reasonably close substitutes for TDS' services, offered at prices that are relatively similar, and there is a significant degree of cross elasticity of demand for the services in question (customers readily substitute one service for the other, in response to differences in prices).

Q. How does the economist's concept of product substitution relate to your view of the appropriate way to interpret the statutory requirement that services be "competitive"?

A. These concepts are closely related. Tthe mere fact that product X can

be substituted for product Y under some circumstances does not indicate that competition from product X will be sufficient to regulate the price of product Y, or that products X and Y should be classifed as being "competitive" with one another. To the contrary, if products X and Y are quite different, and they are only substituted by a limited subset of all consumers, or they are only substituted under a limited set of circumstances, then these products would not normally be viewed as being "competitive" with each other.

Recall that the essence of competition is a situation in which both buyers and sellers view prices as being outside their individual control. Four conditions are typically considered sufficient to ensure that sellers will behave as "price takers." These same four conditions are also good predictors of whether competition is adequately serving, or is capable of serving, as an effective regulator of prices – preventing monopoly pricing and protecting consumers from the abuses of market power. If any one of these conditions is absent, competition cannot necessarily be counted on to serve as an effective regulator of prices, and it is less appropriate to classify two products as being "competitive".

First, no one firm can have an overwhelmingly dominant share of the market. In general, this condition is violated in the provision of any service where one firm's market share is considerably greater than that of all of its competitors combined.

Second, the products of the supplying firms must be reasonably uniform (from the perspective of the buyers in the market). If consumers view the product or service as unique, the firm will not need to behave as a "price taker" and the prospects for effective competition are diminished.

Third, the number of supplying firms must be large enough so that the total amount supplied to the market cannot be easily restricted by the actions of one or two firms. It always is in the interest of suppliers to limit the total amount supplied to the market, because by limiting supply, they can charge a higher rate and earn greater returns (economic profits) than under the conditions of competition. But, in highly competitive markets, there are usually many firms participating, who are collectively capable of quickly ramping up their supply of the product or service, if one or two firms were to reduce or eliminate their supply.

Fourth, firms must be free to enter and exit the market. If another firm decides to offer the service in question, no substantial legal, financial, or other barrier must stand in its way. Patents or trademarks (such as brand names) and other legal barriers can preclude effective entry, making competition less effective, or impossible. Among other reasons, ease of entry and exit are important because they provide an “escape valve” that will push prices back down in the event existing firms set prices at excessive

levels relative to cost, due to collusion, cooperation, or any other non-competitive behavior pattern by existing firms.

The concepts of functional equivalence and product substitution are particularly important in this context. These concepts pertain to the second criteria just mentioned – reasonable uniformity of competing products. To the extent consumers perceive two products to have very similar attributes, and thus consider them to be close substitutes, then these products are likely to be competitive with each other. Conversely, the more dissimilar two products are, and the less consumers treat them as close substitutes, the less appropriately it is to classify them as competitive. Among other reasons, dissimilar products, which are not considered by consumers to be close substitutes, will tend to have prices that are largely independent of each other. If the changes in the price of one product has minimal impact on the price of the other price, the products in question will generally not be considered "competitive".

Q. You mentioned that there are no wireline CLECs operating in TDS' service territories. Are there any providers of wireless or broadband services in the TDS' service territories?

A. Yes. In fact, the availability of wireless and broadband services is the main factual support offered by TDS for its petitions.

Q. Let's discuss cell phones and wireless services. What data does TDS provide concerning wireless providers in its service area?

A. TDS witness Reed states: "Five different wireless providers serve all or portions of the MCT territory..." [Reed Direct, p. 5] "Six different wireless providers serve all or portions of the KCT territory..." [Id. pp. 5-6] "Four different wireless providers serve all or portions of the WCT territory..." [Id. p. 6] And, "f]ive different wireless providers serve all or portions of the HCT territory..." [Id.]

Q. Does TDS provide any more specific evidence regarding the extent to which wireless service is available in each of its exchanges?

A. TDS has estimated the percentage of each service area served by each of the wireless carriers. [See, Reed Direct, Confidential Attachments A-D] It did not perform the analysis on an exchange by exchange basis, as required by RSA 374:3-b, I. TDS claims that such information is "available at the Company level only". [Confidential Attachment 0073, provided in response to Staff DR 1-66]

Q. How did TDS estimate the percentages of its service territories served by wireless carriers?

A. TDS witness Reed explains that the wireless coverage information was

gathered using ***Begin Confidential End Confidential*** which displays service deployment coverage areas of wireless carriers. This product was used in conjunction with ***Begin Confidential End Confidential*** [Reed Direct, p. 8]

Q. Do you consider wireless services to be a close substitute for, or functionally equivalent to, TDS' wireline services?

A. No. To adequately address the question of whether these wireless services are competitive with TDS' offerings, it must first be demonstrated that, among other things, wireless and wireline services are close substitutes – as indicated by a very high degree of similarity in the underlying functions they perform (with respect to their intended use).

Unquestionably, some degree of substitution is feasible between wireless and wireline services. And, some consumers do substitute one form of communication for the other (e.g. due to budget constraints), but a limited degree of substitution is not sufficient in this context – any more than occasional decisions by some consumers to substitute chicken for steak would necessarily indicate that these different foods are competing in the same product market, or that the price of chicken is effectively be regulated by competition from the providers of steak. Consumers can and do make trade-offs between all sorts of products and services that are not close substitutes.

In this context, it is important to realize that product substitution can vary depending on the circumstances of specific consumers, and it may not be perfectly symmetrical. Some consumers may be ready to substitute filet mignon whenever sirloin is unavailable, or overpriced, but other consumers may not consider that to be a viable option – they can't afford filet mignon, and would grudgingly pay the higher price of sirloin, or go without purchasing any steak, if the store runs out, or the price is too high. The reverse might also be true – consumers who normally buy filet mignon may not consider sirloin to be an adequate substitute, regardless of how much lower it is priced.

Q. Would you please briefly elaborate on the basic concept of product substitution in the context of standard economic theory?

A. Yes. One text defines substitutes as

> products that have a relation such that an increase in the price of one will increase the demand for the other or a decrease in the price of one will decrease the demand for the other. [Economics, Robert B. Ekelund, Jr. and Robert D. Tollison, Little, Brown and Company, 1986, p. 74]

A simple example of this concept would be apples and oranges. Many people like both of these fruits and they tend to purchase some

of each. It is fair to primarily classify these fruits as substitutes because, when the price of apples goes up, consumers tend to decrease their consumption of apples and increase their consumption of oranges. Although they are substitutes, apples and oranges are not close substitutes, as indicated by the fact that people tend to eat oranges (rather than apples) at breakfast, and they tend to use apples (rather than oranges) when baking a pie. Thus, it is unlikely that competition from apple growers would be an adequate regulator of orange prices. Nor would we normally speak of orange growers competing with apple growers – these farmers are participating in different product markets, and apples are not competing with oranges any more than apples and oranges are competing with bread or detergent (except in the colloquial sense that all of these products are "competing" for a share of the household budget).

If a single firm were to purchase all of the world's commercial orange groves, thereby acquiring 100% share of the global orange market, competition would no longer be an effective regulator of the price of oranges – notwithstanding the existence of numerous independent apple growers, or the fact that some limited amount of substitution would take place as people reduce their consumption of oranges in response to higher prices, and increase their consumption of watermelon, strawberries, apples and various other products.

The opposite concept in economics is that of complements. In

the same text, Ekelund and Tollison define this concept as

> products that have a relation such that an increase in the price of one will decrease the demand for the other or a decrease in the price of one will increase the demand for the other. [Id.]

An example here would be peanut butter and jelly. Since many people like to consume these products together on sandwiches, if the price for one increases, consumption of both goods will typically decrease. If a poor peanut crop leads to more expensive peanut butter, for example, consumers will tend to buy less jelly. Another good example of complements are copier toner and paper.

In many cases, products have characteristics that allow them to be both substitutes and complements–it is simply a matter of degree. If goods and services are close complements, an increase in the price will typically lead to a decrease in the consumption of the other. However, some degree of substitution may also be possible. Similarly, goods may be fairly close substitutes, so that a decrease in the price of one product may lead most consumers to decrease their consumption of the other product. Yet, there may be limited exceptions under some circumstances, or for some consumers. Thus, it is more meaningful to think about these concepts as matters of degree.

In this regard, it is helpful to realize that some goods and services may be almost totally unrelated, and thus it would be impossible to classify them as substitutes or complements without careful empirical research. Consider, for example, the relationship between eggs and gasoline. Fluctuations in the price of eggs will have virtually no measurable impact on consumption of gasoline, and the reverse would also be true except, perhaps, for what is referred to as an "income effect" (the impact of a price change on the consumer's overall budget constraint).

Some products have characteristics that potentially would allow them to be substitutes, but in practice they may accurately be classified as complements. For example, from a consumer perspective, hamburger buns and hamburger meat are complementary. I am not aware of any empirical studies evaluating the pricing relationship between these two goods, but I suspect they would be appropriately classified as complements. Thus, for example, an increase in the price of hamburger probably leads to a decrease in the demand for hamburger buns. Of course, upon reflection one realizes that it is possible to substitute one of these products for the other, at least under some circumstances. For example, when planning a school picnic, if the price of hamburger meat increases, it is possible to buy less meat and more buns, putting a smaller burger on each bun. Some folks will eat more potato salad, others will eat an extra burger, but

the overall level of caloric consumption may be about the same–at lower cost than if larger burgers were served. However, this situation is the exception to the general rule. More typically, the limited degree of substitution that is possible between hamburger buns and meat will be swamped by the complementary characteristics of these products.

Q. How do wireless and wireline service relate to this discussion?

A. While a limited degree of substitution occurs in practice, up to this point, these services are primarily complementary to each other. Some consumers may stop purchasing TDS' service when they obtain a mobile phone, but even these consumers don't necessarily consider these services to be "close substitutes" nor do they necessarily think they are functionally equivalent. Perhaps they want the functional advantages of a mobile telephone, they can't afford (or don't want to pay for) two telephones, and they can live without the functional advantages of a wireline telephone.

In the more typical situation, a consumer will continue to use their wireline telephone after they get a mobile phone. In fact, their total volume of calling may increase, and there will be calls from their wireline phone to their mobile phone and vice versa. For instance, they may start calling their spouse at home during their afternoon commute–calls that did not occur before they obtained wireless service. Rather than reducing the benefit of having a wireline phone

at home, their mobile phone will serve a complementary function, increasing the value of that phone. For instance, when shopping for groceries they can call home to find out whether they need to buy more of a certain item (or to obtain their spouse's opinion concerning which brand to buy).

Of course, it is also true that once a consumer purchases wireless service, they may use their mobile phone for some conversations that would otherwise have occurred using a conventional phone. Yet, even these consumers typically continue to have a wireline phone, and they continue to use that phone for certain calls. In reality, many consumers primarily use a mobile phone when they need to place a call while traveling around–following this practice because of the usage fees associated with wireless calls, perceived poorer sound quality, physical discomfort associated with the smaller form factor of cell phones and their tendency to become warmer as they are used more, and for various other reasons.

Q. Has TDS provided any direct evidence regarding the extent to which its customers have been substituting wireless service for its wireline services?

A. Mr. Reed states that, during 2006, ***Begin Confidential End Confidential*** customers dropped their land line in favor of wireless service. Needless to say, this is not strong evidence that

wireless service is competitive with the wireline services offered by TDS. Based upon the average number of TDS access lines during 2006, this data indicates that ***Begin Confidential End Confidential*** % of TDS' lines were dropped for wireless in 2006. Statistics like these confirm that most consumers do not view wireless and wireline service as close substitutes. To the contrary, most consumers view wireline and wireless services as largely complementary services, which can be substituted to a limited degree under some circumstances. The fact is, few consumers today solely rely on a cell phone, and even fewer consumers switch back and forth between wireless and wireline services due to fluctuations in their respective prices. If wireless and wireline service were close substitutes or functionally equivalent, we would see most users eliminating one service or the other, and we would frequently see consumers switching back and forth between these alternatives, in response to marketing promotions, special trial offers, and other price signals.

The fact that so many consumers continue to use both wireless and wireline services strongly suggests these services are not competitive – if they were close substitutes, one or the other of these two services would effectively be redundant, and therefore a waste of money.

Q. Earlier you mentioned the importance of similar attributes when determining the extent to which two products are close substitutes. Can a comparison of the attributes of wireless and wireline services help the Commission determine the extent to which wireless services are "competitive" with TDS' services?

A. Yes. Comparing these services on a detailed basis may help the Commission to gain a better understanding of why so many consumers choose to pay for both services, rather than selecting one or the other. In fact, I believe this detailed analysis confirms that these services offer distinctly different methods of communicating, and that they are <u>not</u> considered close substitutes by most consumers. There are many functional differences between these services, which vary in their importance depending upon the specific situation and the tastes and preferences of the individual consumer. The relative importance of specific attributes, and the extent to which a specific attribute represents an advantage or a disadvantage can vary from customer to customer and, in some cases, even from call to call, but overall it is fair to say that wireless service is not generally competitive with the services provided by TDS.

Q. What advantages does wireless service have over wireline services?

A. The primary advantage of traditional wireless services is mobility,

particularly in comparison with traditional wireline service. Wireline services can offer a limited amount of mobility. For example, with cordless phones one can talk while roaming around one's house or yard, and possibly even while walking short distances from one's property. Also, with the use of extension phones, and/or through the use of call forwarding, one can place and receive calls at other fixed locations. However, the mobility offered by wireline phones is not equivalent to the mobility offered by wireless services.

With a wireless phone, one can make and receive calls on the same line from literally anywhere in the country, as long as the location is close enough to a wireless tower or antenna. With wireless services, one can make calls and be reached by acquaintances while traveling around town, out of town, or across the country. Even within a single town or city, the mobility provided by wireless services is far superior to that offered by wireline service. Customers can place and receive calls while traveling around town and they can even start a conversation in one location, continue talking while walking to their car, and can then finish the call while driving to another location. This type of flexibility is only offered by wireless services, and it largely explains why these services have grown so popular, despite their initially much higher price level. In this respect, wireline services are not functionally equivalent to, or a close substitute for, traditional wireless services.

Q. Are there other differences between wireline and wireless services that help explain why relatively few consumers simply pick one or the other?

A. Yes. I have identified 8 key attributes of wireline services that distinguish them from wireless services.

First, there are ergonomic differences between conventional and mobile phones. Due to differences in the size and shape of the phone instrument, as well as the fact that some mobile phones warm up during usage, people may find a conventional phone to be more comfortable to use than a mobile phone, particularly during long phone calls, and thus they will opt to use their wireline service whenever feasible.

Second, wireline services typically provide higher quality, more reliable communication than wireless services. Calls placed over land lines are typically dropped less often than calls placed over wireless facilities. Further, land line calls are less subject to weather interference; they are not subject to structural interference; they are less subject to congestion problems; they are less frequently subject to cross talk; and, they are less frequently subject to static, noise, fading, and other aspects of poor sound reproduction. Wireless services cannot serve as a close substitute for wireline services for those consumers who care about having consistently accurate, noise-

free sound reproduction. Given a choice between pulling a cell phone out of their pocket or walking across the room to use a conventional phone, consumers will often choose the latter option because of these differences in sound quality and reliability.

Third, wireline services provide the ability to have multiple (extension) phones share the same line and the same phone number. Most residential consumers have more than one phone in their home. It is not uncommon to have a phone in the living room, the kitchen, and every bedroom. Many small businesses also have multiple phones sharing a single line. Functionally, wireless service is very different. Customers are typically provided with a separate wireless account for each phone desired, although they can "share" the same package of minutes. Even if the minutes associated with a single account are "shared," the consumer is required to pay substantial additional monthly fees for each additional phone. Furthermore, each wireless phone will have a separate phone number, which defeats one of the purposes of extension phones.

Fourth, wireline services allow multiple family members or employees to share the same line. With multiple wireless phones, other parties need to dial different numbers, depending upon which family member or employee they are trying to reach. With wireline service, a family or business can be reached at a single number, and anyone can take the call from any location within the house or

business. In contrast, with wireless service multiple accounts and phone numbers are typically maintained. Whether this is an advantage or disadvantage will depend on the context, but clearly there is a functional difference in the way the two services are offered and used.

Fifth, wireline services allow consumers to conveniently and reliably transmit and receive faxes. While it may be theoretically possible to transmit faxes using wireless service, in practice consumers do not use mobile phones for this purpose. From the perspective of most consumers, only wireline service offers the option of transmitting and receiving paper Faxes.

Sixth, wireline service subscribers automatically have their phone number listed in the telephone directory for free. Wireless subscribers have the option of having their number listed, but they must pay an additional monthly fee. In practice, most consumers do not opt to have their mobile number listed, and thus a major functional difference exists. If another party wants to talk with a wireless subscriber, they cannot do so unless they somehow discover, or are told, the mobile phone number.

Seventh, there are safety concerns (real or perceived) associated with wireless services that do not apply to wireline services. For example, there are concerns that extensive hand-held mobile phone usage can cause brain cancer or other medical

complications. As well, many gasoline stations have warnings on their gas pumps advising customers to leave their cell phones in their cars while fueling because of the danger of sparks from the phone igniting fumes from the gas line or the automobile fuel tank. Due to these warnings and concerns, even if they are not well founded, some consumers may refuse to use a wireless phone, or they may try to avoid using one as much as possible.

Eighth, wireline services currently provide better access to emergency services, due to differences in 911 services. As explained by the FCC:

> Because wireless phones are by their very nature mobile, they are not associated with one fixed location or address. A caller using a wireless phone could be calling from anywhere. While the location of the cell tower used to carry a 911 call may provide a very general indication of the location of the caller, that information is not usually specific enough for rescue personnel to deliver assistance to the caller quickly. [See, http://www.fcc.gov/cgb/consumerfacts/wireless911srvc.html]

By adopting certain wireless 911 rules, the FCC is encouraging the wireless industry to develop a nationwide, seamless system for emergency services, that will include "the provision of location information for wireless 911 calls" [Id.] The FCC's basic wireless 911 rules require wireless carriers to transmit all 911 calls to a Public Safety Answering Point (PSAP), regardless of whether the caller subscribes to the carrier's service or not. [Id.] Phase I of the FCC's

E911 wireless rules "require wireless carriers, within six months of a valid request by a PSAP, to provide the PSAP with the telephone number of the originator of a wireless 911 call and the location of the cell site or base station transmitting the call." [Id.]

Phase II of the FCC's E911 wireless rules "require wireless carriers, within six months of a valid request by a PSAP, to begin providing more precise location information to PSAPs, specifically, the latitude and longitude of the caller." [Id.] The FCC has adopted certain accuracy standards which require the caller to be pinpointed to within 50-300 meters, depending upon the technology being used. [Id.] The extent to which wireless carriers have complied with these rules varies from carrier to carrier and region to region.

Even if the Phase II rules are fully adopted, there will continue to be significant differences between wireless and wireline 911 services, at least in high rise apartments and office buildings. In those locations, a wireline phone can often pinpoint the specific cubicle or apartment where the call is coming from, whereas the signal generated by a cell phone may be too weak to offer much precision. Even if the source of the call is pinpointed to a range of plus or minus 100 meters, that could encompass the entirety of a 20 story office building containing hundreds of different offices or apartments. Needless to say, this could be an important consideration for anyone considering the possibility of "cutting the cord" and relying

exclusively on mobile wireless service, particularly if they live or work in a large building.

Q. Do these differences help explain why consumers use both wireline and wireless services?

A. Yes. Because of these functional differences, wireline and wireless services are often used for different purposes. As a result, most consumers who choose to purchase wireless service also continue to purchase wireline service. Whether consumers perceive particular differences to be significant advantages or disadvantages can vary, depending on their respective tastes and preferences, as well as the particular purposes for which the service will be used.

While apples and oranges may be substitutes, most families buy both, because they are so different, even though they are both types of fruit, and they share many similarities (e.g. general size and shape). Much the same can be said for wireless and wireline services. Consumers who want, and can afford, greater mobility will purchase a wireless service, but that doesn't mean they necessarily completely stop using their wireline service, or that competition from cell phone providers can serve as an effective regulator of the price of wireline service.

The differences between apples and oranges may range from highly significant to relatively unimportant, depending on the tastes

and preferences of each consumer as well as the particular purpose for which the fruit will be used. Admittedly, there are particular situations where oranges might plausibly be thought of as being somewhat competitive with apples (e.g. in deciding what fruit to purchase for use in a still life, an artist might see both options as viable alternatives). But as a general matter, apples and oranges are not competitive with each other, as indicated by the fact that the price of apples doesn't impose much downward pressure on the price of oranges, or vice versa.

The same is true for wireless and wireline services. Some customers' top priority may be mobility and giving all their friends a single number where they can always be reached. In that case, they may decide to save money by dropping their wireline service. Another consumer's top priority may be quality and reliability of service, in which case they may not obtain a mobile phone, or they may use it as little as feasible. Either way, there are currently very few consumers who view the choice of wireline and wireless services as competitive alternatives in the same way they would view the wireless services of Verizon, AT&T and Alltel. This is confirmed by the fact that very few customers move back and forth between wireless and wireline services based on minor differences in their relative prices – a phenomena that is much more common within the wireless market.

Q. Are there any other significant differences between wireless and wireline services?

A. Yes. There are important pricing differences between wireless and wireline services that can influence consumer purchasing decisions. Wireline services are typically priced on a flat fee (unlimited local usage) basis. Wireless services, on the other hand, are typically priced on a monthly volume of calling basis. The more you expect to use the phone, the higher your monthly bill. This difference in pricing structure follows directly from differences in the underlying cost characteristics of the two technologies. Wireless costs are primarily a function of the usage. A wireless carrier incurs little, if any, additional cost with the addition of more phone "lines" (actually, just additional phone numbers and entries in its data base). In contrast, wireline costs are primarily a function of the number of access lines on their network. A wireline carrier incurs very little additional cost as more local phone calls are placed over its network.

Consistent with this underlying cost difference, the pricing structure of wireline services typically allows users to pick up the phone as often as they want, and allows them to talk as much as they want, without having to be concerned they might receive a large bill at the end of the month. The limited number of package minutes available with most wireless services, and the very high charges

imposed on excess usage (typically in the vicinity of 25 to 45 cents per minute), discourage customers from freely using their wireless phone, or they encourage customers to sign up for a usage bundle that exceeds their normal requirements. This aspect of wireless service makes it relatively attractive for customers who make relatively few local calls, and those who value the convenience of mobility more than the ability to talk for hours on the phone without being concerned about the cost. For many consumers, this gives an incentive to keep, and to continue to use, their wireline phone even after they sign up with a wireless carrier (rather than "cutting the cord").

Q. Can you give some specific examples of pricing differences between wireline and wireless services?

A. As I discussed in section 3 of my testimony, TDS' residential local exchange rates range from a low of $6.72 to a high of $14.59. With applicable surcharges and taxes, residential customers in TDS' service territories can purchase basic local exchange service for less than $15.00 to $25.00 per month. In TDS Attachment 0001, TDS provides rates for Verizon Wireless' "America's Choice Basic" calling plans. Depending upon the number of minutes including in the plan, access charges range from $39.99 to $199.99 per month. The cost per minute for additional minutes range from $0.20 to $0.45, and customers run the risk of incurring substantially higher bills during

any month in which their usage happens to exceed the amount included in their plan. As well, these prices do not include the taxes, surcharges and other fees that will be incurred by customers subscribing to these wireless plans.

While exact comparisons are difficult to make, because of the many differences between wireless and wireline services, it is obvious that wireless service does not offer a cost-effective alternative to basic local exchange service. TDS could increase its basic local exchange rates by 50%, 75% or more without reaching the price levels applicable to most wireless plans.

Q. In your opinion, are wireless and wireline services close enough substitutes so that the Commission can rely on wireless providers to effectively regulate the price of the wireline services offered by TDS?

A. No, not at this time. There are substantial differences between these services, and most wireless customers continue to pay for wireline service–and they would continue to do so even if TDS were to drastically increase the price of its wireline services. Because of these differences, in the absence of regulatory constraints, TDS could significantly increase prices for its wireline services without experiencing a substantial loss of customers. In fact, even amongst customers who already have wireless service, a substantial increase in

TDS' wireline prices would more likely be met by grumbling and irritation rather than by a decision to drop their wireline service and start relying entirely on the cell phone.

Accordingly, I believe it is not appropriate to treat wireless services as "competitive" with the wireline services offered by TDS at this time. Of course, this conclusion could change, if wireless prices were to continue to decline, and consumer attitudes were to evolve to the point where many consumers begin to view these services as close substitutes for traditional wireline phone service. If market conditions were to change in this manner, one would expect to also see a large number of customers freely choosing to subscribe to one or the other service simply based on fluctuations in relative price differences (the cross price elasticity of demand would substantially increase).

Q. Let's discuss cable and VoIP services. What claims does TDS make regarding these forms of intermodal competition?

A. Initially, TDS made some sweeping claims regarding the extent to which cable and DSL services were available throughout its entire service territories. [See, Confidential Attachments A-D]. In DR 1-66, Staff asked TDS to provide the same analysis at the exchange level. In response, TDS identified the cable TV and cable modem provider for each exchange, and estimated the percentage availability of cable and

DSL services. [See, Confidential Attachments 0073-0076]

For MTC's 8 exchanges, TDS notes that Comcast is the cable provider in 5 exchanges, while MCT is the cable provider in the other three exchanges. TDS also notes that MCT only provides cable TV services in these exchanges; cable modem service is not available. For 3 of the 5 Comcast exchanges, TDS estimates cable modem service availability at ***Begin Proprietary . End Proprietary*** Estimates for the other two Comcast exchanges are ***Begin Proprietary . End Proprietary*** TDS estimates that in MCT's 8 exchanges, DSL availability ranges from ***Begin Proprietary . End Proprietary***

TDS lists Comcast as the cable provider in all 6 of KTC's exchanges. TDS estimates that cable modem service availability ranges from ***Begin Proprietary End Proprietary*** TDS estimates that in KCT's 6 exchanges, DSL availability ranges from ***Begin Proprietary . End Proprietary***

TDS lists Comcast as the cable provider in WTC's only exchange. TDS estimates cable modem availability to be ***Begin Proprietary End Proprietary*** in this exchange. TDS estimates that DSL is available to ***Begin Proprietary End Proprietary*** of these customers.

TDS lists Charter as the cable provider in HTC's only exchange. TDS estimates cable modem availability to be ***Begin Proprietary

End Proprietary* in this exchange. TDS estimates that DSL is available to ***Begin Proprietary **End Proprietary*** of these customers.

Q. How did TDS calculate these availability percentages?

A. DSL availability was estimated from TDS' own internal records. Cable and cable modem availability was estimated from information provided in cable operators' websites, as well as "actual visual data provided by TDS' technicians and supervisors who are familiar with the outside plant in every exchange..." [TDS response to Staff DR 2-21] VoIP availability was estimated by overlaying "the estimated competitors' broadband network over known Petitioners' DSL network using detailed maps". [Id.]

Q. Can you comment on the data TDS has presented regarding the availability of broadband services?

A. I won't dwell on the data, because I don't think these services are competing with TDS' wireline voice services, and thus the data is not especially relevant. However, I would note that in some TDS exchanges cable broadband service is not available, or it is available to less than 50% of the customers. It is also worth noting that all of TDS' cable availability estimates are in increments of 5% (E.g., 5%, 60%, 75%). In exchanges where TDS estimates the availability of

cable modem service to be 50%, the service may or may not be available to a "majority" of the customers in the exchange, given the limited level of precision involved in the availability estimates developed by the Company.

Q. Is TDS the only provider of DSL service in its service territories?

A. Yes, according to TDS. In response to Staff DR 1-28, TDS states: "To the best of our knowledge, the Petitioners are the only providers of wholesale or retail DSL service at this time in their exchanges". TDS does not offer "naked" DSL. In other words, customers who purchase TDS' DSL service must also purchase basic local exchange service from TDS. [See, TDS responses to Staff DRs 1-31 and 2-10]. Thus, DSL service is not "competitive" with the Company's basic local exchange service by any stretch of the imagination.

Q. What data is available to help the Commission determine the extent to which customers are using cable or DSL as a substitute for TDS' voice services?

A. One indicator of the extent to which customers are substituting these forms of intermodal competition for TDS' ordinary voice telephone service is the frequency of requests TDS has received to port phone numbers over to these competitors. During the discovery process,

TDS revealed that no phone numbers have been ported "to a cable provider or a CLEC acting on behalf of the cable provider". [TDS response to OCA DR 1-53] TDS also clarified that it has not ported any numbers over to VoIP providers. [TDS response to Staff DR 1-22]

Q. Is it possible for a customer to drop TDS' local exchange service, and use broadband or cable modem service instead?

A. Yes. In fact, according to TDS, during 2006, ***Begin Proprietary End Proprietary*** customers said they "went to Cable Modem", and ***Begin Proprietary End Proprietary*** customers "dropped a line to go to DSL". [Reed Direct Testimony, p. 9] However, I suspect that many, if not all, of those customers were dropping a second phone line that they had previously used to make dial-up phone calls to an internet service provider (ISP). When customers subscribe to broadband internet service from their cable carrier, they may no longer need a second phone line, which was needed to avoid tieing up their main phone line while connected to the internet us a dial up ISP.

Similarly, since TDS does not offer "naked" DSL, and therefore requires a customer to purchase basic exchange service along with DSL service, the ***Begin Proprietary End Proprietary*** customers who dropped their TDS-provided local phone service "to go to DSL" probably were not completely

abandoning their TDS service, but were most likely eliminating second lines used largely for internet access. TDS was asked about this anomaly during the discovery process. In response to discovery, TDS confirmed this common-sense explanation for these lost lines: "These are most likely related to the customers dropping a second line or an additional line when they decided to have DSL". [TDS response to Staff DR 1-35]

Q. What about the customers that "went to Cable Modem"? Are you suggesting these customers were replacing an additional TDS line with service provided over a cable connection?

A. Yes. While I can't be certain, it is very likely that these customers were discontinuing the use of a second line that was previously used to place calls to an dial-up internet service provider. As I explained, TDS has not received any requests to port a number over to any VoIP providers. This suggests that most, if not all, of these customers upon subscribing to high speed access from the cable television provider were simply discontinuing their use of a second line for internet access, rather than completely eliminating their use of TDS voice telephone service.

Q. Is the data you have just discussed consistent with TDS' claims regarding the extent to which customers are relying on cable

and DSL service as a substitute for TDS' local exchange services?

A. No. TDS goes much farther, implying that customers are abandoning the TDS network entirely, in favor of services offered by cable television carriers:

> Wireless service is growing, and cable companies are now able to offer quality telephony service over expansive cable networks. The growth of the internet, along with the growth of broadband providers, is driving down measured minutes of use from access and increasing the time for local usage. An increasing number of users are simply dropping off the network altogether and instead relying on Voice over the Internet Protocal (VoIP), wireless phones or other substitutes. [Ulrich Direct Testimony, pp. 4-5]

Q. How can such claims be reconciled with the actual data regarding the extent to which customers are substituting intermodal alternatives for TDS' local exchange services?

A. In part, I would note that these claims apparently are not specific to the TDS exchanges in New Hampshire. When asked about these claims, TDS clarifies as follows: "Mr. Ulrich's statement is made in reference to rural ILECs throughout the country..." [TDS response to Staff DR 1-85] And, "Mr. Ulrich's testimony at the referenced section is referring to 'cable companies' offering service in 'rural areas' in general, not to those specifically in New Hampshire". [TDS response to Staff DR 1-88]

Not only is this testimony not specifically describing the current situation in New Hampshire, the testimony is also rather vague. While it might be true that an "increasing number of users" in rural areas are relying on Voice over the Internet Protocal (VoIP), such a description could apply to an increase from .0001% of the customers to .0002% of the customers. Even a doubling of the number of VoIP customers isn't necessarily significant, if the growth is from one number near zero to another number near zero.

Q. Is the mere fact that broadband internet service is available in various TDS exchanges from TDS as well as from cable television carriers, sufficient to ensure that these services are "competitive" with TDS' wireline voice grade telephone services?

A. No, not at this point. To be sure, there are some areas in the nation, and in New Hampshire, where cable TV carriers are offering cable telephony services that are functionally very similar – although not exactly equivalent – to TDS' traditional voice telephone services. Some of these services are competitive with certain voice wireline services. The extent to which specific cable telephony offerings are competitive with specific wireline offerings varies depending on the factual circumstances. For instance, in some locations around the country, cable carriers are offering basic telephone service on an

unbundled basis at prices that are similar to those charged by the incumbent wireline carrier, and without requiring the customer to also purchase cable television or broadband internet service. In those situations, it is fair to say that the cable telephony services in question are competing with at least some of the incumbent carrier's voice local exchange services.

However, these stand alone cable telephony services are fundamentally different from "add on" VoIP services like those offered by Vonage and Skype. The latter services are not close substitutes for traditional wireline voice grade services. As well, not all cable carriers are offering this sort of "unbundled" telephone service. More commonly, cable carriers are offering various packages of enhanced services, which compete with some of the incumbent local telephone company's services, but they are not necessarily competitive with the ILEC's basic local exchange service.

Q. Are cable companies offering this type of unbundled voice grade telephony service in TDS' exchanges?

A. No, it does not appear so. TDS lists Comcast as the cable provider in most of its exchanges. [See, TDS response to OCA DR 1-48] TDS affiliate MCT Cable is the video provider in several TDS exchanges, and Charter Communications is the video provider in one TDS exchange. [Id.] Aside from being an affiliated company (and thus not

in a position to provide "competitive" services), as I explained previously, MCT Cable only provides video services. It does not provide cable modem services. Similarly, based on my review of the relevant discovery responses, it does not appear that Charter Communications is currently providing voice services in HTC's exchange. [See, http://www.charter.com/Visitors/LocalArea.aspx?zipcode=03049] Finally, Comcast's voice-providing affiliate, Comcast Phone, does not provide its cable telephony services in any of the TDS exchanges.

> Comcast Phone nor any of its affiliates offers any voice services whatsoever in the exchanges served by the TDS Petitioners, let alone unlimited calling plans. As a result, even though Comcast Phone's cable affiliates offer broadband service within these exchanges, Comcast Phone is unable to offer telecommunications services there. [Comcast Phone, Petition to Intervene, p. 3]

Q. What about VoIP providers like Skype and Vonage? Do you consider their offerings to be "competitive" with the basic voice telephony services provided by TDS in New Hampshire?

A. No. To be sure, customers that have purchased a broadband internet connection from TDS or the cable carrier can potentially use these "add on" VoIP services as a substitute for traditional voice grade communications. However, this is not a cost-effective option for customers that do not have a broadband connection. And, these

services are not yet perceived by most customers as offering a viable alternative to traditional phone service. Hence, very few customers are ready to completely abandon their regular phone line – despite the fact that some of these add-on VoIP services are offered free of charge, or are priced far below traditional phone service. In part, this lack of substitution could be due to perceptions that VoIP is not as reliable, or doesn't offer the same quality of service. In part, the problem may simply be that VoIP technologies are in their infancy, and therefore many customers view these offerings as too risky to be viewed as a competitive alternative to traditional wireline service.

It is also important to remember that not all customers have, or can afford, an internet connection. This is particularly true for low income customers. While they might like to have broadband internet service, they can't necessarily afford it. For these customers, a free Skype account, or a $25 per month Vonage account, isn't competitive with TDS' traditional phone services, because these “add on” VoIP services require customers to purchase high speed internet service – which can cost as much as $40, $50 or even $60 per month. It is also worth remembering that many broadband customers receive their internet service from TDS. Needless to say, it doesn't make sense to think of a VoIP service that is “added onto” DSL as being “competitive” with the services offered by TDS, when the underlying DSL service is provided by TDS.

Q. You've indicated that "add on" VoIP services are not yet perceived as viable alternatives to traditional phone service. Can you elaborate on some of the differences between TDS' wireline services and these "add on" VoIP services?

A. First, "add on" providers tend to offer lower, less consistent voice quality. Add on VoIP services are transmitted over a standard internet connection, which doesn't offer the high degree of reliability engineered into TDS' wireline network. For example, in its Terms of Service agreement, Vonage states:

> Dialing does not function in the event of a power failure or disruption. If there is an interruption in the power supply, the Service, including 911 Dialing, will not function until power is restored. Following a power failure or disruption, you may need to reset or reconfigure the Device prior to utilizing the Service. [See, http://www.vonage.com/features_terms_service.php]

Similarly, AT&T's VoIP Subscriber Agreement provides:

> Since voice over IP is dependent on the broadband connection, the availability of an adequate power supply and correct TA configuration, AT&T does not guarantee that the service will be continuous or error-free. In addition, Service may, from time to time, be interrupted for equipment, network, or facility upgrades or modifications. [See, https://www.callvantage.att.com/cvterms]

As well, there is uncertainty about the effects of congestion due to increased usage of video and other high bandwidth applications. Even if the average level of sound quality is passable, customers may experience unacceptably poor quality during some phone calls (e.g. if several of their neighbors are downloading videos at the same time they are trying to carry on a conversation). There are no regulations requiring any specific level of sound quality or system reliability for VoIP services.

Second, because VoIP service is an "add on" service, it requires special equipment and an internet (typically broadband) connection. For example, AT&T's VoIP Subscriber Agreement provides:

> AT&T CallVantage Service requires: (a) specialized customer premises equipment called a telephone adapter ("TA") obtained through AT&T or a third party that allows connectivity from a regular telephone handset (which you need to supply) to your broadband connection and which you are responsible for installing pursuant to instructions provided to you by AT&T or a third party supplier or an AT&T Softphone obtained through AT&T or a third party that allows connectivity through your computer to your broadband connection and which you are responsible for installing pursuant to instructions provided to you by AT&T or a third party supplier (TA and AT&T Softphone individually and collectively referred to as "AT&T Equipment" or "Equipment"); and (b) a broadband connection via cable modem (2-way cable), DSL or fiber with broadband capability of at least 90 Kbps upstream speed for use with the TA and 256 Kbps upstream

> and downstream for use with the AT&T Softphone that you have a right to use at your own expense. [See, https://www.callvantage.att.com/cvterms]

This make VoIP largely irrelevant for customers who don't want, or can't afford, high speed internet service.

Third, VoIP services do not support certain types of equipment and certain functions that have traditionally been used in conjunction with TDS' wireline services. For example, some answering machines and fax machines may not be compatible with VoIP services. Similarly, some home alarms and security systems may not function with VoIP.

Fourth, VoIP doesn't necessarily offer the safety features associated with the E911 services that are provided with TDS' wireline services. For example, AT&T provides this warning statement in conjunction with its CallVantage VoIP service:

> YOU WILL NOT BE ABLE TO PLACE TRADITIONAL WIRELINE 911 OR E-911 CALLS FROM TELEPHONES CONNECTED TO THE TA OR FROM COMPUTERS DOWNLOADED WITH THE AT&T SOFTPHONE PROVIDED FOR THIS SERVICE. YOU ACKNOWLEDGE THAT WE HAVE TOLD YOU THAT THE SERVICE DOES NOT SUPPORT TRADITIONAL WIRELINE 911. YOU AGREE TO ADVISE ALL INDIVIDUALS OF THIS LIMITATION WHO MAY HAVE OCCASION TO PLACE CALLS OVER THIS SERVICE FROM THE LOCATION AT WHICH YOU HAVE INSTALLED IT. YOU ACKNOWLEDGE THAT AT&T DOES NOT OFFER PRIMARY LINE OR LIFELINE SERVICES, AND THAT AT&T STRONGLY RECOMMENDS THAT YOU ALWAYS HAVE AN

> ALTERNATIVE MEANS OF ACCESSING 911 SERVICES VIA A TRADITIONAL PHONE LINE OR A WIRELESS PHONE. [See, https://www.callvantage.att.com/cvterms]

Q. In response to OCA Drs 1-46 and 1-47, TDS claims that Comcast may begin providing voices services in portions of TDS' service territories at some point in the future. If cable companies do start providing stand alone voice services, will these services be competitive with some of TDS' services?

A. Without knowing more about these potential future offerings, it is a little difficult to speculate about how competitive they might or might not be. However, it is fair to say that, of all the potential sources of competition, stand-alone cable telephony services are the most likely to qualify in the near future as being "competitive" with at least some TDS voice telephone services. These cable telephony services come close to providing functional equivalence to at least some traditional wireline services. However, many cable telephony services suffer from some of the same deficiencies associated with "add on" VoIP services. For example, because cable voice service relies on a modem, it will not work during a power outage without battery backup. Nor will it work during a disruption in the broadband connection. Comcast states:

> You understand and acknowledge that you will not be able to use the Services, including 911/E911, under certain circumstances, including but not

> limited to the following: (i) if our network or facilities are not operating or (ii) if normal electrical power to the MTA is interrupted and the MTA does not have a functioning battery backup. You also understand and acknowledge that the performance of the battery backup is not guaranteed: The battery may not have been properly installed in the MTA; the battery may have been removed from the MTA; the battery may fail; the battery may provide power for only a limited time; or the battery may be exhausted. If the battery backup does not provide power, the Services will not function until normal power is restored. You also understand and acknowledge that you will not be able to use online features of the Services, where we make those features available, under certain circumstances including but not limited to the interruption of your Internet connection. [See, http://www.comcast.com/MediaLibrary/1/1/About/PhoneTermsOfService/PDF/DigitalVoice/SubscriberAgreement/Z33T86CDV%20Agreement1103051.pdf]

Like "add on" VoIP, cable voice services may not be compatible with certain equipment or services. For example, in its Digital Voice Subscriber Agreement, Comcast states:

> You acknowledge and understand that the Services may not support or be compatible with:
>
> i. Non-Recommended Configurations as defined in Section 3.b (including but not limited to MTAs not currently certified by Comcast as compatible with the Services);
>
> ii. Certain non-voice communications equipment, including certain makes or models of alarm and home security systems, certain medical monitoring devices, certain fax machines, and

> certain "dial-up" modems;
> iii. Rotary-dial phone handsets, pulse-dial phone handsets, and models of other voice-related communications equipment such as private branch exchange (PBX) equipment, answering machines, and traditional Caller ID units;
> iv. Casual/dial around (10-10) calling; 976, 900, 700, or 500 number calling;
> v. 311, 511, or other x11 calling (other than 411, 611, 711, and 911); and
> vi. Other call types not expressly set forth in our product literature (e.g., outbound shore-to-ship calling). [See, http://www.comcast.com/MediaLibrary/1/1/About/PhoneTermsOfService/PDF/DigitalVoice/SubscriberAgreement/Z33T86CDV%20Agreement1103051.pdf]

Finally, E911 may be less reliable with cable voice services. Comcast states:

> The Services include 911/Enhanced 911 function ("911/E911") that may differ from the 911 or Enhanced 911 function furnished by other providers. As such, it may have certain limitations. CAREFULLY READ THE INFORMATION BELOW. YOU ACKNOWLEDGE AND ACCEPT ANY LIMITATIONS OF 911/E911. YOU AGREE TO CONVEY THESE LIMITATIONS TO ALL PERSONS WHO MAY HAVE OCCASION TO PLACE CALLS OVER THE SERVICES. IF YOU HAVE ANY QUESTIONS ABOUT 911/E911, CALL 1-800-COMCAST.
>
> Correct Address: In order for your 911/E911 calls to be properly directed to emergency services, Comcast must have your correct service address. If you move the Services to a different address without

Comcast's approval, 911/E911 calls may be directed to the wrong emergency authority, may transmit the wrong address, and/or the Services (including 911/E911) may fail altogether. Therefore, you must call 1-800-COMCAST before you move the Services to a new address. Comcast will need several business days to update your service address in the E911 system so that your 911/E911 calls can be properly directed. As noted in Section 3.e below, all changes in service address require Comcast's prior approval.

Service Interruptions: CDV uses the electrical power in your home. If there is an electrical power outage, 911 calling may be interrupted if the battery backup in the associated MTA (defined below) is not installed, fails, or is exhausted after several hours. Furthermore, calls, including calls to 911/E911, may not be completed if there is a problem with network facilities, including network congestion, network/equipment/power failure, or another technical problem. [See, http://www.comcast.com/MediaLibrary/1/1/About/PhoneTermsOfService/PDF/DigitalVoice/SubscriberAgreement/Z33T86CDV%20Agreement1103051.pdf]

Conclusions and Recommendations

Q. Let's turn to the final section of your testimony. Can you begin by summarizing your conclusions?

A. RSA 374:3-b contemplates a fact finding process, in which the Commission must determine, among other things, whether competitive alternatives are available to a majority of the retail

customers in each of the exchanges served by TDS, and whether the proposed Plan preserves universal access to affordable basic telephone service.

Q. Has TDS proven that competitive alternatives are available to a majority of the retail customers in each of its exchanges?

A. No. The record indicates that there are no wireline competitors operating within any of TDS' exchanges. No cable companies are currently offering voice telephone services within TDS' service territories. TDS is the only provider of DSL service in its serving areas, and does not offer "naked" DSL.

Furthermore, very few (or no) customers in the TDS exchanges are actively substituting wireless or VoIP services for TDS' basic local exchange services, or vice versa. For example, TDS' own records indicate that only a very small fraction of its local exchange customers have dropped their land line to rely entirely on their wireless service. This smattering of customers are an exception to the general pattern, which indicates that the vast majority of customers view wireless and wireline services as distinct services which compliment each other. Similarly, TDS admits that the small number of lines that have been dropped in favor of DSL were secondary or additional lines. Finally, the record indicates that TDS has received no requests to port any numbers over to VoIP providers.

As I explained in the previous section, given the current factual situation, it is not appropriate to view wireless service as being competitive with the services offered by TDS – particularly its basic local exchange services. Wireless primarily are a complement to wireline service, rather than a competitive alternative. I am not suggesting this service cannot evolve into a competitive substitute for wireline services. While the potential for future convergence exists, given the current factual situation, I do not believe wireless services are appropriately treated as "competitive" with any TDS voice grade services – and particularly not its basic local exchange services.

I will readily concede that wireless service has grown enormously, and that some customers may react to extreme increases in TDS' wireline prices by abandoning their traditional phone, but for most customers this is not a viable option, because wireless service is functionally so different, and because they primarily use wireless service for different purposes. The vast majority of consumers who purchase wireless service also purchase wireline service, and customers do not switch back and forth between wireless and wireline services in response to small changes in relative prices. In sum, there is no more reason to classify these services as being competitive than to classify apples and oranges as being competitive.

VoIP technologies are in their infancy, and for many customers these offerings are still seen as too risky to be viable competitive

alternatives to TDS' traditional wireline services. As well, these technologies are only relevant for customers who have a broadband internet connection. Of course, this situation may change over time, as the technologies mature, and particularly if the cost of a broadband connection were to decline substantially.

Finally, I would note that the TDS' petitions fall farthest short of the statutory criteria with regard to basic local exchange service. As I explained earlier, both wireless and VoIP services typically are provided as a package offering which includes various enhanced services and long distance services. As a result, they are generally priced far higher than TDS' stand alone basic exchange service. Further, in the case of VoIP provided over a DSL line, customers will still need to purchase basic local exchange service from TDS, plus they need to purchase DSL service, both from TDS itself, and thus VoIP can hardly be considered "competitive" with TDS' basic local exchange service.

Q. TDS witnesses have cited declines in the number of access lines and switched access minutes. Can you please comment on these changes?

A. Yes. The Company testimony points to reductions in access lines, basic area revenue, access minutes and switched access revenues as indicators of the impact competition is having on its operations. [See.

Confidential Attachments A-D] However, as I have already noted, these changes are not necessarily attributable to the increased presence of other services. For instance, it is well understood that many incumbent phone carriers have experienced a loss in access lines because customers have been dropping second lines that were previously used for internet access and/or fax service. These customers are increasingly relying instead on broadband internet access services, and increasingly sending emails rather than sending faxes. However, for many customers this substitution merely involves replacing a TDS second phone line with DSL service that is also provided by TDS. Under such circumstances, the reductions in basic local revenues associated with dropped additional lines are more than offset by the additional revenues from TDS' DSL service – although that revenue is classified differently for regulatory and accounting purposes.

It is also true, however, that some customers are now placing long distance calls over a wireless phone that otherwise might have been placed over their wireline phone. Thus, some unknown portion of the reduction in access minutes and access revenues that has been experienced by TDS might be attributable to customers placing long distance calls on their wireless phone, or using other modes of communication such as email, rather than placing a phone call over their wireline service, or sending a long distance fax. For this reason,

it would be appropriate to look at the long distance market separately from the market for basic local exchange service, and in an appropriately structured alternative regulatory plan, basic services would be placed in a separate basket from long distance toll and enhanced services, with greater pricing freedom provided to the latter category.

Q. Has TDS proven that its proposed Plan preserves universal access to affordable basic telephone service?

A. No. As I explained in section 3 of my testimony, capping TDS' basic local exchange rates at the levels charged by Verizon is not sufficient to prevent TDS from substantially increasing its prices. For example, these caps would apparently allow TDS to more than double its local exchange rates over the first 4 years of the Plan in certain exchanges, and would allow TDS to increase rates even further in subsequent years. TDS has not offered any evidence concerning the impact of such severe rate increases on universal access to affordable basic telephone service.

Q. What action do you recommend the Commission take in this proceeding?

A. I recommend the Commission reject all of the TDS petitions. TDS has

not proven that competitive alternatives are available to a majority of the retail customers in each exchange nor has it proven that its proposed Plan would preserve universal access to affordable basic telephone service. This is particularly true with regard to basic local exchange service, which could be subjected to severe rate increases. The Commission should reject the proposed Plan.

Q. Does this conclude your testimony filed on October 12, 2007?

A. Yes, it does.

Appendix A

Qualifications

Present Occupation

Q. What is your present occupation?

A. I am a consulting economist and President of Ben Johnson Associates, Inc.®, a firm of economic and analytic consultants specializing in the area of public utility regulation.

Educational Background

Q. What is your educational background?

A. I graduated with honors from the University of South Florida with a Bachelor of Arts degree in Economics in March 1974. I earned a Master of Science degree in Economics at Florida State University in September 1977. The title of my Master's Thesis is a "A Critique of Economic Theory as Applied to the Regulated Firm." Finally, I graduated from Florida State University in April 1982 with the Ph.D. degree in Economics. The title of my doctoral dissertation is "Executive Compensation, Size, Profit, and Cost in the Electric Utility Industry."

Clients

Q. What types of clients employ your firm?

A Much of our work is performed on behalf of public agencies at every level of government involved in utility regulation. These agencies include state regulatory

commissions, public counsels, attorneys general, and local governments, among others. We are also employed by various private organizations and firms, both regulated and unregulated. The diversity of our clientele is illustrated below.

Regulatory Commissions

- Alabama Public Service Commission—Public Staff for Utility Consumer Protection
- Alaska Public Utilities Commission
- Arizona Corporation Commission
- Arkansas Public Service Commission
- Connecticut Department of Public Utility Control
- District of Columbia Public Service Commission
- Idaho Public Utilities Commission
- Idaho State Tax Commission
- Iowa Department of Revenue and Finance
- Kansas State Corporation Commission
- Maine Public Utilities Commission
- Minnesota Department of Public Service
- Missouri Public Service Commission
- National Association of State Utility Consumer Advocates
- Nevada Public Service Commission
- New Hampshire Public Utilities Commission
- North Carolina Utilities Commission—Public Staff
- Oklahoma Corporation Commission
- Ontario Ministry of Culture and Communications
- Staff of the Delaware Public Service Commission
- Staff of the Georgia Public Service Commission
- Texas Public Utilities Commission
- Virginia State Corporation Commission
- Washington Utilities and Transportation Commission

West Virginia Public Service Commission—Division of Consumer Advocate

Wisconsin Public Service Commission

Wyoming Public Service Commission

Public Counsels

Arizona Residential Utility Consumers Office

Colorado Office of Consumer Counsel

Colorado Office of Consumer Services

Connecticut Consumer Counsel

District of Columbia Office of People's Counsel

Florida Public Counsel

Georgia Consumers' Utility Counsel

Hawaii Division of Consumer Advocacy

Illinois Small Business Utility Advocate Office

Indiana Office of the Utility Consumer Counselor

Iowa Consumer Advocate

Maryland Office of People's Counsel

Minnesota Office of Consumer Services

Missouri Public Counsel

New Hampshire Consumer Counsel

Ohio Consumer Counsel

Pennsylvania Office of Consumer Advocate

Utah Department of Business Regulation—Committee of Consumer Services

Attorneys General

Arkansas Attorney General

Florida Attorney General—Antitrust Division

Idaho Attorney General

Kentucky Attorney General

Michigan Attorney General

Minnesota Attorney General

Nevada Attorney General's Office of Advocate for Customers of Public Utilities

South Carolina Attorney General

Utah Attorney General

Virginia Attorney General

Washington Attorney General

Local Governments

City of Austin, TX

City of Corpus Christi, TX

City of Dallas, TX

City of El Paso, TX

City of Galveston, TX

City of Norfolk, VA

City of Phoenix, AZ

City of Richmond, VA

City of San Antonio, TX

City of Tucson, AZ

County of Augusta, VA

County of Henrico, VA

County of York, VA

Town of Ashland, VA

Town of Blacksburg, VA

Town of Pecos City, TX

Other Government Agencies

Canada—Department of Communications
Hillsborough County Property Appraiser
Provincial Governments of Canada
Sarasota County Property Appraiser
State of Florida—Department of General Services
United States Department of Justice—Antitrust Division
Utah State Tax Commission

Regulated Firms

Alabama Power Company
Americall LDC, Inc.
BC Rail
CommuniGroup
Florida Association of Concerned Telephone Companies, Inc.
LDDS Communications, Inc.
Louisiana/Mississippi Resellers Association
Madison County Telephone Company
Montana Power Company
Mountain View Telephone Company
Nevada Power Company
Network I, Inc.
North Carolina Long Distance Association
Northern Lights Public Utility
Otter Tail Power Company
Pan-Alberta Gas, Ltd.
Resort Village Utility, Inc.
South Carolina Long Distance Association
Stanton Telephone

Teleconnect Company
Tennessee Resellers' Association
Westel Telecommunications
Yelcot Telephone Company, Inc.

Other Private Organizations

Arizona Center for Law in the Public Interest
Black United Fund of New Jersey
Casco Bank and Trust
Coalition of Boise Water Customers
Colorado Energy Advocacy Office
East Maine Medical Center
Georgia Legal Services Program
Harris Corporation
Helca Mining Company
Idaho Small Timber Companies
Independent Energy Producers of Idaho
Interstate Securities Corporation
J.R. Simplot Company
Merrill Trust Company
MICRON Semiconductor, Inc.
Native American Rights Fund
PenBay Memorial Hospital
Rosebud Enterprises, Inc.
Skokomish Indian Tribe
State Farm Insurance Company
Twin Falls Canal Company
World Center for Birds of Prey

Prior Experience

Q. Before becoming a consultant, what was your employment experience?

A. From August 1975 to September 1977, I held the position of Senior Utility Analyst with Office of Public Counsel in Florida. From September 1974 until August 1975, I held the position of Economic Analyst with the same office. Prior to that time, I was employed by the law firm of Holland and Knight as a corporate legal assistant.

Q. In how many formal utility regulatory proceedings have you been involved?

A. As a result of my experience with the Florida Public Counsel and my work as a consulting economist, I have been actively involved in approximately 400 different formal regulatory proceedings concerning electric, telephone, natural gas, railroad, and water and sewer utilities.

Q. Have you done any independent research and analysis in the field of regulatory economics?

A. Yes, I have undertaken extensive research and analysis of various aspects of utility regulation. Many of the resulting reports were prepared for the internal use of the Florida Public Counsel. Others were prepared for use by the staff of the Florida Legislature and for submission to the Arizona Corporation Commission, the Florida Public Service Commission, the Canadian Department of Communications, and the Provincial Governments of Canada, among others. In addition, as I already mentioned, my Master's thesis concerned the theory of the regulated firm.

Q. Have you testified previously as an expert witness in the area of public utility regulation?

A. Yes. I have provided expert testimony on more than 250 occasions in proceedings before state courts, federal courts, and regulatory commissions throughout the United States and in Canada. I have presented or have pending expert testimony before 35 state commissions, the Interstate Commerce Commission, the Federal Communications Commission, the District of Columbia Public Service Commission, the Alberta, Canada Public Utilities Board, and the Ontario Ministry of Culture and Communication.

Q. What types of companies have you analyzed?

A. My work has involved more than 425 different telephone companies, covering the entire spectrum from AT&T Communications to Stanton Telephone, and more than 55 different electric utilities ranging in size from Texas Utilities Company to Savannah Electric and Power Company. I have also analyzed more than 30 other regulated firms, including water, sewer, natural gas, and railroad companies.

Teaching and Publications

Q. Have you ever lectured on the subject of regulatory economics?

A. Yes, I have lectured to undergraduate classes in economics at Florida State University on various subjects related to public utility regulation and economic theory. I have also addressed conferences and seminars sponsored by such institutions as the National Association of Regulatory Utility Commissioners (NARUC), the Marquette University College of Business Administration, the Utah Division of Public Utilities and the University of Utah, the Competitive Telecommunications Association (COMPTEL), the

International Association of Assessing Officers (IAAO), the Michigan State University Institute of Public Utilities, the National Association of State Utility Consumer Advocates (NASUCA), the Rural Electrification Administration (REA), North Carolina State University, and the National Society of Rate of Return Analysts.

Q. Have you published any articles concerning public utility regulation?

A. Yes, I have authored or co-authored the following articles and comments:

"Attrition: A Problem for Public Utilities—Comment." *Public Utilities Fortnightly*, March 2, 1978, pp. 32-33.

"The Attrition Problem: Underlying Causes and Regulatory Solutions." *Public Utilities Fortnightly*, March 2, 1978, pp. 17-20.

"The Dilemma in Mixing Competition with Regulation." *Public Utilities Fortnightly,* February 15, 1979, pp. 15-19.

"Cost Allocations: Limits, Problems, and Alternatives." *Public Utilities Fortnightly,* December 4, 1980, pp. 33-36.

"AT&T is Wrong." *The New York Times,* February 13, 1982, p. 19.

"Deregulation and Divestiture in a Changing Telecommunications Industry," with Sharon D. Thomas. *Public Utilities Fortnightly*, October 14, 1982, pp. 17-22.

"Is the Debt-Equity Spread Always Positive?" *Public Utilities Fortnightly,* November 25, 1982, pp. 7-8.

"Working Capital: An Evaluation of Alternative Approaches." *Electric Rate-Making,* December 1982/January 1983, pp. 36-39.

"The Staggers Rail Act of 1980: Deregulation Gone Awry," with Sharon D. Thomas. *West Virginia Law Review,* Coal Issue 1983, pp. 725-738.

"Bypassing the FCC: An Alternative Approach to Access Charges." *Public Utilities Fortnightly*, March 7, 1985, pp. 18-23.

"On the Results of the Telephone Network's Demise—Comment," with Sharon D. Thomas. *Public Utilities Fortnightly*, May 1, 1986, pp. 6-7.

"Universal Local Access Service Tariffs: An Alternative Approach to Access Charges." In *Public Utility Regulation in an Environment of Change,* edited by Patrick C. Mann and Harry M. Trebing, pp. 63-75. Proceedings of the Institute of Public Utilities Seventeenth Annual Conference. East Lansing, Michigan: Michigan State University Public Utilities Institute, 1987.

With E. Ray Canterbery. Review of *The Economics of Telecommunications: Theory and Policy* by John T. Wenders. *Southern Economic Journal* 54.2 (October 1987).

"The Marginal Costs of Subscriber Loops," A Paper Published in the Proceedings of the Symposia on Marginal Cost Techniques for Telephone Services. The National Regulatory Research Institute, July 15-19, 1990 and August 12-16, 1990.

With E. Ray Canterbery and Don Reading. "Cost Savings from Nuclear Regulatory Reform: An Econometric Model." *Southern Economic Journal,* January 1996.

Professional Memberships

Q. Do you belong to any professional societies?

A. Yes. I am a member of the American Economic Association.